TRAFFIC IMPACT STUDY

6136-6588 NINTH LINE
DRAFT PLAN OF SUBDIVISION
CITY OF MISSISSAUGA,
REGIONAL MUNICIPALITY OF PEEL

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CROZIER
CONSULTING ENGINEERS

Revision Number	Date	Comments
Rev. 0	May 2019	Draft Circulation
Rev. 1	June 2019	First Submission

1.0 Executive Summary

Background

C.F. Crozier & Associates Inc. (Crozier) was retained by Mattamy Homes to prepare a Traffic Impact Study in support of the Draft Plan of Subdivision application for a proposed residential development located at 6136-6588 Ninth Line in the City of Mississauga, Regional Municipality of Peel. The purpose of the study is to evaluate the transportation-related impacts of the proposed development on the boundary road network and to recommend any required mitigation measures, if warranted.

Per the Concept Plan prepared by Glen Schnarr & Associates Inc. (dated June 6, 2019), the development will be divided into two separate residential Draft Plan of Subdivisions to be built-out at separate times, with Draft Plan 1 (North Draft Plan) expected to be built-out by 2023 and Draft Plan 2 (South Draft Plan) expected to be built-out by 2026. The full build-out of the proposed development will consist of a combination of detached homes, condominium townhouse and apartment units with a total unit count ranging from 1039-2109 units.

The Traffic Impact Study analyzes the following intersections:

- Winston Churchill Boulevard and Highway 401 West Ramp Terminal
- Winston Churchill Boulevard and Highway 401 West Ramp Terminal
- Derry Road West and Highway 407 West Ramp Terminal
- Derry Road West and Highway 407 East Ramp Terminal
- Derry Road West and Ninth Line
- Ninth Line and Doug Leavens Boulevard
- Ninth Line and Foxwood Avenue
- Ninth Line and Osprey Boulevard
- Ninth Line and future site connections
- Britannia Road West and Ninth Line
- Britannia Road West and Highway 407 West Ramp Terminal
- Britannia Road West and Highway 407 East Ramp Terminal

Existing Traffic Operations

The boundary road network is currently operating at acceptable levels of service during the weekday a.m. and p.m. peak hours, with the exception of the intersection of Britannia Road West and Ninth Line which is currently operating at capacity during the weekday a.m. peak hour. These operations are attributed to the eastbound through/right-turn and southbound through/right-turn movements operating near capacity. The eastbound and southbound through movements experience heavy volumes during the weekday a.m. peak hour. Additionally, the northbound through/right-turn movement is operating near capacity during the weekday p.m. peak hour. These operations are not uncommon at urban signalized arterial intersections.

The off-ramp approaches at the Highway 407 West Terminal at Derry Road West, and Highway 401 West Ramp Terminal at Winston Churchill Boulevard are operating near capacity during the p.m. peak hour. However, queue lengths at the off-ramp approaches of the ramp terminals do not extend to the freeway segments of Highway 407 nor Highway 401 and are thus contained within the off-ramp segments.

Overall, the boundary road network is currently operating at acceptable levels of service.

Future Background Conditions

The assumed build-out dates of the proposed development are 2023 (North Draft Plan) and 2026 (South Draft Plan). Accordingly, the following horizon years were analyzed: 2023 (North Draft Plan build-out), 2026 (full build-out), 2031 (five-year horizon) and 2036 (ten-year horizon). Growth rates from the Ninth Line Corridor Study Transportation Assessment prepared by MMM Group (July 2017) that were provided by the City of Mississauga and Ministry of Transportation of Ontario (MTO) were applied to this analysis.

The following background developments in the study area identified in the MMM study were accounted for under future background conditions.

- Erin Mills Development;
- 407 Transitway; and
- Emerging Land Use Concept on Ninth Line.

The following roadway improvements have been identified in the study area by the City of Mississauga, Region of Halton and the Region of Peel, as follows:

- Widening of Ninth Line from Eglinton Avenue West to Derry Road West to five-lanes, with a centre median or turn lane (details to be confirmed upon completion of municipal review);
- Widening of Winston Churchill Boulevard from Highway 401 to Steeles Avenue to six lanes;
- Widening of Derry Road West from Tremaine Road to Highway 407 to six lanes; and
- Widening of Britannia Road West from Tremaine Road to Highway 407 to six lanes.

Analysis of future background traffic operations indicates that the intersections of Derry Road West and Ninth Line, and Britannia Road West and Ninth Line are expected to operate at capacity with several movements operating above capacity. The MMM study also identified operational issues at the aforementioned intersections under 2041 future background conditions, and thus recommended that Derry Road West and Britannia Road West be widened from four lanes to six lanes from Highway 407 to Winston Churchill Boulevard. Accordingly, 2036 future background and total conditions were modelled under two scenarios: with and without the additional roadway improvements (the widening of Derry Road West and Britannia Road West in the study area).

Future Background Traffic Operations

The following intersections are expected to operate near or at capacity under 2036 future background conditions:

- Derry Road West and Highway 407 South Ramp Terminal during the weekday p.m. peak hour;
- Derry Road West and Ninth Line during the weekday a.m. and p.m. peak hours; and
- Britannia Road West and Ninth Line during the weekday a.m. and p.m. peak hours.

These intersections, as well as the other Highway 407 ramp terminals on Derry Road West and Britannia Road West, are expected to operate with movements exceeding critical volume-to-capacity thresholds, as well as 95th percentile queue lengths for turning movements exceeding their designated storage length. These operations are attributed to the high volumes forecasted on the Derry Road West and Britannia Road West corridors under 2036 future background conditions and with no roadway improvements to the aforementioned corridors within the City of Mississauga.

The widening of Derry Road West and Britannia Road West in the study area as recommended in the MMM study is expected to improve traffic operations under 2036 future background conditions so that all intersections are operating at overall acceptable levels of service.

Site Generated Traffic

The full build-out of the proposed development is expected to generate a total of 724 and 855 total two-way trips during the weekday a.m. and p.m. peak hours, respectively. Trips were assigned to the boundary road network using a combination of 2016 Transportation Tomorrow Survey (TTS) data, expected destinations, and existing travel patterns.

External Roadway Improvements

Analysis of external roadway improvements to support the North Draft Plan build-out for 2023 assuming the existing two-lane cross-section on Ninth Line indicates that an auxiliary northbound left-turn lane is **not** warranted at the Street "B" site connection to Ninth Line, and that an auxiliary northbound left-turn lane with a minimum of 15 metres of storage is required at the signalized site connection on Ninth Line at Doug Leavens Boulevard.

However, the existing runout lane at the south approach of Ninth Line and Doug Leavens Boulevard can be repurposed via pavement marking revisions to function as a northbound left-turn lane in the interim condition prior to the widening of Ninth Line. Therefore, no road widenings are required under 2023 future total conditions in the interim scenario.

Analysis of external roadway improvements under 2036 future total conditions has resulted in the following key findings:

- Traffic signals are **not** warranted at the proposed unsignalized site connections to Ninth Line;
- An auxiliary northbound left-turn lane is required at the Street "B" site connection to Ninth Line with a storage length of 25 metres, deceleration length of 95 metres, and taper between 85-95 metres (North Draft Plan build-out);
- An auxiliary northbound left-turn lane is required at the Street "K" site connection to Ninth Line with a storage length of 95 metres, deceleration length of 95 metres, and taper between 85-95 metres (full build-out);
- An auxiliary northbound left-turn lane is required at the Street "O" site connection to Ninth Line at Foxwood Avenue with a storage length of 65 metres, deceleration length of 95 metres, and taper between 85-95 metres (full build-out);
- An auxiliary northbound left-turn lane is required at the signalized connection on Ninth Line at Doug Leavens Boulevard with a storage length of 15 metres, deceleration length of 95 metres, and taper between 85-95 metres (North Draft Plan build-out);
- An auxiliary northbound left-turn lane is required at the signalized connection on Ninth Line at Osprey Boulevard with a storage length of 15 metres, deceleration length of 95 metres, and taper between 85-95 metres (full build-out); and
- An auxiliary southbound right-turn lane should be provided on Ninth Line at the Street "O" site connection opposite Foxwood Avenue with a storage length of 30 metres, deceleration length between 150-195 metres, and taper of 80 metres (full build-out).

The configuration of the required auxiliary turn lanes on Ninth Line should be established at a later stage when details of the future Ninth Line cross-section and centre median are confirmed.

Site Access Configuration

The proposed site connections to Ninth Line should consist of one outbound left-turn lane and one outbound right-turn lane, with the right-turn lane at the site accesses opposite Doug Leavens Boulevard, Foxwood Avenue and Osprey Boulevard operating as a shared through/right-turn lane.

Future Total Traffic Operations

The following intersections are expected to operate near or at capacity under 2036 future total conditions:

- Derry Road West and Highway 407 South Ramp Terminal during the weekday p.m. peak hour;
- Derry Road West and Ninth Line during the weekday a.m. and p.m. peak hours; and
- Britannia Road West and Ninth Line during the weekday a.m. and p.m. peak hours.

These intersections, as well as the other Highway 407 ramp terminals on Derry Road West and Britannia Road West, are expected to operate with movements exceeding critical volume-to-capacity thresholds, as well as 95th percentile queue lengths for turning movements exceeding their designated storage length. These operations are consistent with 2036 future background conditions, and are attributed to the high volumes forecasted on the Derry Road West and Britannia Road West corridors under 2036 future total conditions and with no background roadway improvements to the aforementioned corridors within the City of Mississauga.

The widening of Derry Road West and Britannia Road West in the study area as recommended in the MMM study is expected to improve traffic operations under 2036 future background conditions so that all intersections are operating at overall acceptable levels of service.

These operations are consistent with future background operations, indicating that the addition of site traffic to the boundary road network is not expected to significantly impact traffic operations. Therefore, the proposed development is supportable from a traffic operations perspective, with the implementation of the noted recommendations.

Safety Analysis

Analysis of safety components associated with the proposed development indicate the following:

- The proposed site connection minimum spacing of 280-300 metres on Ninth Line at the site frontage will reduce the potential for weaving or merging conflicts associated with traffic entering and exiting at the site accesses;
- The proposed site connection spacing exceeds recommended minimum intersection spacing guidelines set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR), June 2017;
- The available sight distance at the proposed site connections exceeds the minimum sight distance requirements set out in the TAC GDGCR;
- Roadway alignment of the boundary road network is not considered to be a traffic safety concern for the proposed development; and
- The available clear throat lengths for the internal roadways connecting to Ninth Line exceed the minimum recommended clear throat lengths set out in the TAC GDGCR.

Recommendations

The conclusions arising from this analysis have resulted in the following development-triggered recommendations to support the proposed development as outlined in **Table E1.**

Table E1: Recommended External Roadway Improvements

Location	Draft Plan	Improvement	Estimated Dimensions	Timing of Implementation
Ninth Line and Street "B"	North Draft Plan – 2023	Auxiliary northbound left-turn lane	25 metres storage 85-95 metres taper 95 metres deceleration	Ninth Line Road Widening
Ninth Line and Street "F" opposite Doug Leavens Boulevard	North Draft Plan – 2023	Auxiliary northbound left-turn lane	15 metres storage 85-95 metres taper 95 metres deceleration	Ninth Line Road Widening
Ninth Line and Street "K"	South Draft Plan – 2026	Auxiliary northbound left-turn lane	95 metres storage 85-95 metres taper 95 metres deceleration	Construction of Site Connection
Ninth Line and Street "O" opposite Foxwood Avenue	South Draft Plan – 2026	Auxiliary northbound left-turn lane	65 metres storage 85-95 metres taper 95 metres deceleration	Construction of Site Connection
		Auxiliary southbound right-turn lane	30 metres storage 80 metres taper 150-195 metres deceleration	
Ninth Line and Street "A" opposite Osprey Boulevard	South Draft Plan – 2026	Auxiliary northbound left-turn lane	15 metres storage 85-95 metres taper 95 metres deceleration	Construction of Site Connection

In addition to the external roadway improvements outlined above, the site connections to Ninth Line should be constructed so that one outbound left-turn lane and one outbound right-turn lane is provided, with the right-turn lane at the site accesses opposite Doug Leavens Boulevard, Foxwood Avenue and Osprey Boulevard operating as a shared through/right-turn lane.

The configuration of the required auxiliary turn lanes on Ninth Line should be established at a later stage when details of the future Ninth Line cross-section and centre median are confirmed.

Appendix M contains conceptual drawings for the recommended external roadway improvements, as well as the recommended configurations of the proposed site connections to Ninth Line.

Conclusion

The analysis contained within this report was prepared using the Concept Plan prepared by Glen Schnarr & Associates Inc. (dated June 6, 2019). Any minor revisions to the development concept are not expected to affect the conclusions contained with this report.

In conclusion, the proposed development can be supported from a transportation operations and safety perspective, with the implementation of the noted recommendations.

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2.0 Introduction

2.1 Background

C.F. Crozier & Associates Inc. (Crozier) was retained by Mattamy Homes to prepare a Traffic Impact Study in support of the Draft Plan of Subdivision application for a proposed residential development located at 6136-6588 Ninth Line in the City of Mississauga, Regional Municipality of Peel.

The subject property is located within the Ministry of Transportation of Ontario (MTO)'s permit control area, which includes the area within 395 metres of the centre point of a controlled-access highway and within 45 metres of the right-of-way. The subject property is bound by Highway 407 to the west, and is thus within the MTO's permit control area.

2.2 Development Proposal

Per the Concept Plan prepared by Glen Schnarr & Associates Inc. (dated June 6, 2019), the development will be divided into two separate residential Draft Plan of Subdivisions to be built-out at separate times. **Appendix A** contains the Concept Plan.

Table 1 outlines the proposed development statistics for both Draft Plans, as well as the expected year of build-out and proposed access connections.

Table 1: Development Proposal

Draft Plan of Subdivision	Unit Type	Total Units	Assumed Build-Out	Proposed Access Connections
1 (North Draft Plan)	Rear Lane Detached	30	2023	Street "B" at Ninth Line (new intersection) Street "F" at Ninth Line and Doug Leavens Boulevard
	Rear Lane Townhouse	67		
	Street Townhouse	101		
	Condominium Apartments	140-200		
	Total	**338-398**		
2 (South Draft Plan)	Rear Lane Townhouse	109	2026	Street "K" at Ninth Line (new intersection) Street "O" at Ninth Line and Foxwood Avenue Street "A" at Ninth Line and Osprey Boulevard [1]
	Street Townhouse	94		
	Condominium Duplex	148		
	Condominium Apartments	350-1360		
	Total	**701-1711**		
Full Build-Out	Rear Lane Detached	30	--	--
	Rear Lane Townhouse	176		
	Street Townhouse	195		
	Condominium Duplex	148		
	Condominium Apartments	490-1560		
	Total	**1039-2109**		

Note 1: Although not shown on Draft Plan, the proponent has confirmed a non-public road connection to Ninth Line and Osprey Boulevard.

2.3 Purpose and Scope

The purpose of the study is to evaluate the transportation-related impacts of the proposed development on the boundary road network and to recommend any required mitigation measures, if warranted.

The study reviews the following main aspects of the proposed development from a transportation engineering perspective:

- Existing, future background, and future total traffic operations on the boundary road network during the weekday a.m. and p.m. peak hours;
- Forecasted trip generation and distribution of the proposed development;
- Mitigation measures to support the proposed development, if required; and
- Transportation safety components, including: sight distance requirements at the site accesses, access spacing and restrictions, and general safety issues pertaining to road users.

The study has been completed in accordance with the following guidelines:

- Guidelines for the Preparation of Traffic Impact Studies (MTO, September 2014); and
- Traffic Impact Study Guidelines (City of Mississauga).

The study has also been completed in accordance with Terms of Reference established with City of Mississauga staff (City staff) and MTO staff. **Appendix B** contains the correspondence outlining the approved terms of reference.

A comprehensive Transportation Demand Management (TDM) Plan has been prepared and submitted separately to support the development application. The TDM Plan analyzes existing and future TDM opportunities to reduce single-occupant vehicle (SOV) trips to and from the site and promote alternate modes of transportation.

3.0 Existing Conditions

3.1 Development Lands

The subject property is located in a residential neighbourhood and is bound by a Union Gas Limited building to the north, an existing church to the south, Ninth Line to the east, and Parkland Belt lands and Highway 407 Express Toll Route (ETR) to the west. The subject property is zoned as D "Development" Lands per the City of Mississauga's Zoning By-Law.

The Draft Plans make allowance for the future bus-rapid transit (BRT) 407 Transitway planned by the MTO will span through the subject property running parallel to Highway 407. The 407 Transitway is currently proceeding through the environmental assessment process. While the exact alignment of the transitway is still under evaluation by the MTO, the Draft Plans reflect the more restrictive alignment Option 2. The 407 Transitway is discussed in more detail in **Section 4.3.**

A key map illustrating the location of the subject property is included on the Concept Plan included as **Appendix A**.

3.2 Study Intersections

The Traffic Impact Study analyzes the following intersections:

- Winston Churchill Boulevard and Highway 401 West Ramp Terminal
- Winston Churchill Boulevard and Highway 401 West Ramp Terminal
- Derry Road West and Highway 407 West Ramp Terminal
- Derry Road West and Highway 407 East Ramp Terminal
- Derry Road West and Ninth Line
- Ninth Line and Doug Leavens Boulevard
- Ninth Line and Foxwood Avenue
- Ninth Line and Osprey Boulevard
- Ninth Line and future site connections
- Britannia Road West and Ninth Line
- Britannia Road West and Highway 407 West Ramp Terminal
- Britannia Road West and Highway 407 East Ramp Terminal

3.3 Boundary Road Network

The provincial and regional boundary road network at the site frontage is described in **Table 2**.

Table 2: Boundary Road Network – Provincial and Regional Roads

Feature	Roadway			
	Highway 401	**Highway 407**	**Derry Road West**	**Britannia Road West**
Direction	Two-way (East-West)	Two-way (North-South) [1]	Two-way (North-South)	Two-way (North-South) [1]
Classification	Provincial Freeway	Provincial Freeway – Express Toll Route (ETR)	Regional Arterial (Regional Road 5)	Regional Arterial (Regional Road 3)
Jurisdiction	MTO	407 ETR	Region of Peel	Region of Peel
Speed Limit	100 km/h *Off-Ramp advisory speed is 60 km/h*	100 km/h *Off-Ramp advisory speed is 60 km/h*	60 km/h	80 km/h
Number of lanes	Six	Six	Four	Four
Median type	Jersey Barrier (typical freeway separation)	Jersey Barrier (typical freeway separation)	Raised concrete median (west of Ninth Line) Centre lane (east of Ninth Line)	Raised concrete median (west of Ninth Line) Centre lane (east of Ninth Line)

Note 1: While Highway 407 primarily spans east-west, the segment parallel to Ninth Line spans north-south.

The municipal boundary road network at the site frontage is described in **Table 3**.

Table 3: Boundary Road Network – City of Mississauga Roads

Feature	Roadway		
	Winston Churchill Boulevard	**Ninth Line**	**Doug Leavens Boulevard Foxwood Avenue Osprey Boulevard**
Direction	Two-way (North-South)	Two-way (North-South)	Two-way (East-West)
Classification	Arterial	Arterial	Minor Collector
Jurisdiction	City of Mississauga [1]	City of Mississauga	City of Mississauga
Surrounding Uses	Commercial	Residential	Residential
Speed Limit	60 km/h	70 km/h	50 km/h assumed [1]
Number of lanes	Four (north of Highway 401 overpass) Six (south of Highway 401 overpass)	Two	Two
Median type	Raised centre median	None – north of Foxwood Avenue Centre lane – south of Foxwood Avenue	None

Note 1: Winston Churchill Boulevard is under the jurisdiction of the Region of Peel north of Highway 401 through its span in the City of Brampton.
Note 2: Speed limit of 50 km/h assumed per municipal regulation.

Table 4 outlines the existing traffic control, configurations, and pedestrian crossing provisions at the study intersections on the boundary road network.

Table 4: Boundary Road Network – Study Intersections

Intersection	Control	Approaches	Major Street	Auxiliary Turn Lanes	Pedestrian Crossing
Winston Churchill Boulevard and 401 West Ramp Terminal	Signal Semi-Actuated	3	Winston Churchill Boulevard	WBL WBR	None
Winston Churchill Boulevard and 401 East Ramp Terminal	Signal Semi-Actuated	3	Winston Churchill Boulevard	EBL EBR	None
Derry Road West and 407 South Ramp Terminal	Signal Semi-Actuated	3	Derry Road West	SBL SBR	None
Derry Road West and 407 North Ramp Terminal	Signal Semi-Actuated	3	Derry Road West	NBL NBR	None
Derry Road West and Ninth Line	Signal Semi-Actuated	4	Derry Road West	EBL WBL NBL NBR SBL SBR	All approaches (crossings delineated by ladder markings)
Ninth Line and Doug Leavens Boulevard	Signal Semi-Actuated	3	Ninth Line	WBL WBR NBR SBL	All approaches (crossings delineated by edge markings)
Ninth Line and Foxwood Avenue	Stop Controlled (Minor Street)	3	Ninth Line	WBL [1] WBR [1] SBL	East approach
Ninth Line and Osprey Boulevard	Signal Semi-Actuated	3	Ninth Line	WBL WBR NBR SBL	All approaches (crossings delineated by edge markings)
Britannia Road West and Ninth Line	Signal Semi-Actuated	4	Britannia Road West	EBL WBL WBR NBL SBL	All approaches (crossings delineated by ladder markings)
Britannia Road West and 407 South Ramp Terminal	Signal Semi-Actuated	3	Britannia Road West	SBL SBR	None
Britannia Road West and 407 North Ramp Terminal	Signal Semi-Actuated	3	Britannia Road West	NBL NBR	None

Note 1: Although not marked, Foxwood Avenue is wide enough to allow for exclusive westbound left-turns and right-turns.

Figure 1 illustrates the existing boundary road network, including lane configurations, storage lengths, and intersection control.

3.4 Transit Operations

There are several MiWay Transit and GO Transit bus routes that operate in the surrounding area of the subject property. **Table 5** outlines the existing transit routes, direction, days of operation, peak hour headways, and the location of bus stops in the study area.

Table 5: Existing Transit Services

MiWay Transit					
Route	**Start and End Points**	**Span near study area**	**Days of Operation**	**Peak Hour Headways (min)**	**Bus Stop(s) near study area**
32 Lisgar GO	Lisgar GO station to Tenth Line and Aquitaine Avenue	Lisgar Drive (north of Doug Leavens Boulevard)	Monday - Friday Peak Periods only	15-25 min	Derry Road West at Lisgar Drive Lisgar Drive at Doug Leavens Boulevard
39 Britannia	Meadowvale Town Centre to Renforth Station	Derry Road West (east of Lisgar Drive) Lisgar Drive Osprey Boulevard (west of Lisgar Drive) Ninth Line (south of Osprey Boulevard) Britannia Road West (east of Ninth Line)	Monday - Sunday	20-25 min	Britannia Road West at Ninth Line Ninth Line at Parkgate Drive Ninth Line at Osprey Boulevard Lisgar Drive at Osprey Boulevard Lisgar Drive at Foxwood Avenue Lisgar Drive at Doug Leavens Boulevard Lisgar Drive at Derry Road West
90 Terragar-Copenhagen Loop	Meadowvale Town Centre to Rosehurst Drive and Terragar Boulevard	Derry Road West (east of Lisgar Drive)	Monday - Saturday	20-40 – A.M. Peak 9-26 – P.M. Peak	Derry Road West east of Lisgar Drive
GO Transit					
Route	**Start and End Points**	**Span near study area**	**Days of Operation**	**Peak Hour Headways (min)**	**Bus Stop(s) near study area**
21 Milton	Milton to Toronto	Derry Road West (Branch A, B, N)	Monday - Sunday	Varies from 10-60 min	Derry Road West at Ninth Line Derry Road West, west of Lisgar Drive
27 Milton/North York	Milton to North York	Derry Road West (Branch A, C)	Monday - Sunday	Varies from 15-35 min	Derry Road West at Ninth Line Derry Road West, west of Lisgar Drive
48 407 West	University of Guelph to Toronto	Derry Road West (Branch A, B)	Monday - Sunday	Varies from 20-30 min	Derry Road West at Ninth Line Derry Road West, west of Lisgar Drive

As outlined above, there are several routes that operate within the surrounding area that provide connectivity to major transit terminals in the area such as Meadowvale Town Centre, Meadowvale GO Station, and Lisgar GO Station. These transit terminals provide connectivity to the rest of the Greater Toronto Area (GTA) via other bus routes and the Milton GO Train line to Union Station in Toronto.

The nearest bus stops in the study area are primarily located on Lisgar Drive which runs parallel to Ninth Line. These bus stops are located within 350 metres of Ninth Line, thus being walkable from Ninth Line via the existing pedestrian sidewalks on the local and collector roadways connecting Ninth Line to Lisgar Drive.

Therefore, the existing transit services in the study area are sufficient to promote transit as a viable mode of transportation.

The boundary road network in **Figure 1** illustrates the existing bus stop locations in the study area, including Lisgar Drive. **Appendix C** contains relevant transit information.

3.5 Active Transportation Network

The existing active transportation facilities on the boundary road network are described in **Table 6**.

Table 6: Active Transportation Network

Roadway	Pedestrian Facilities	Separation from Roadway	Cycling Facilities	Separation from Roadway
Winston Churchill Boulevard	1.5 metre concrete sidewalk (Highway 401 overpass, both sides; south of East Ramp Terminal, west side)	None	None	N/A
Derry Road West	1.5 metre concrete sidewalk (Highway 407 overpass, both sides)	None	Multi-use trail east of Ninth Line, north side	Grass Boulevard
Ninth Line	1.5 metre concrete sidewalk (between Osprey Boulevard and multi-use trail, east side)	None	Multi-use trail north of Derry Road West, east side; south of Osprey Boulevard, east side) [1]	Grass Boulevard
Britannia Road West	1.5 metre concrete sidewalk (east of Ninth Line, south side)	Grass Boulevard	Multi-use trail east of Ninth Line, north side	Grass Boulevard
Doug Leavens Boulevard	1.5 metre concrete sidewalk (both sides)	Grass Boulevard	None	N/A
Foxwood Avenue	1.5 metre concrete sidewalk (both sides)	Grass Boulevard	None	N/A
Osprey Boulevard	1.5 metre concrete sidewalk (both sides)	Grass Boulevard	None	N/A

Note 1: Segment of multi-use trail south of Osprey Boulevard is part of the Lisgar Meadow Brook Trail.

It is noted that the Lisgar Meadow Brook Trail runs north-south about 700 metres east of Ninth Line. Thus, while not located on the immediate boundary road network, the provision of a multi-use trail provides active transportation opportunities relatively close to the subject property.

The boundary road network in **Figure 1** illustrates the existing pedestrian and cycling facilities in the study area.

3.6 Traffic Data

Turning movement counts were conducted by Spectrum Traffic Data Inc. staff at the study intersections on Tuesday April 30, 2019 between 6:00 a.m. – 10:00 a.m. and 3:00 p.m. – 7:00 p.m. These time periods are reflective of commuter peak hours and thus were considered appropriate for traffic analysis of the proposed development.

Signal timing plans for the Highway 401 ramp terminals at Winston Churchill Boulevard were provided by the MTO. Signal timing plans for the regional intersections of Ninth Line and Derry Road West, and Ninth Line and Britannia Road West were provided by the Region. Signal timing plans for the municipal intersections of Ninth Line and Doug Leavens Boulevard, and Ninth Line and Osprey Boulevard were provided by the City. Signal timing plans for the Highway 407 ramp terminals at Derry Road West and Britannia Road West were requested, but 407 ETR has not provided the signal timings at the time of this analysis.

The traffic count data and signal timing data are contained in **Appendix D**. **Figure 2** illustrates the 2019 existing traffic volumes that were recorded.

3.7 Traffic Modelling

The boundary road network was modelled in Synchro 9.2 using existing roadway geometrics, collected traffic data and signal timings from the provided timing plans.

As 407 ETR did not provide signal timing plans for the Highway 407 ramp terminals, signal timings were estimated by viewing the camera footage collected during the traffic counts.

The results for signalized intersection operations were derived from Synchro. The results for unsignalized intersection operations were derived using HCM2000 methodology. 95th percentile queue lengths were derived from Synchro. The Level of Service (LOS) definitions for signalized and unsignalized intersections are included in **Appendix E**.

The intersection of Foxwood Avenue and Ninth Line was modelled with an exclusive outbound left-turn and right-turn lane despite the movements not being designated separately by pavement markings nor signage. The width of the roadway is wide enough that left-turning vehicles and right-turning vehicles can wait for a gap in traffic without queuing in front of each other, thus operating similarly to an approach with exclusive left and right-turn lanes. This operation was confirmed through review of camera footage.

3.7.1. City of Mississauga Modelling Guidelines

The intersections under the jurisdiction of the City of Mississauga were modelled in Synchro 9.2 in conformance with the modelling guidelines per the City of Mississauga's "Traffic Impact Study Guidelines." **Table 7** summarizes the Synchro modelling parameters set out by the City's guidelines.

Table 7: City of Mississauga Synchro Modelling Parameters

Parameter	Value
Ideal (base) saturation flow rate	Protected left-turn: 1,860 veh/hr/lane Exclusive through: 1,900 veh/hr/lane Exclusive right-turn: 1,640 veh/hr/lane
Lost Time [1]	Protected left-turn: 1.0 s Back-to-back left-turns: 1.0 s Main Phase: 5.0 s
Peak Hour Factor	As calculated
Lane widths	As measured

Note 1: Lost time refers to the total lost time for the respective phase (intergreen minus lost time adjustment). Lost time adjustments were calculated so that the total lost time for the respective phases are equal to the values set out in the City's guidelines.

The modelling guidelines outlined above were applied to the following intersections:

- Winston Churchill Boulevard and Highway 401 West Ramp Terminal
- Winston Churchill Boulevard and Highway 401 West Ramp Terminal
- Ninth Line and Doug Leavens Boulevard
- Ninth Line and Foxwood Avenue
- Ninth Line and Osprey Boulevard

The off-ramp approaches were modelled with an ideal (base) saturation flow rate of 1,900 veh/hr/lane (similar to through movements) given that the approaches operate with no opposing traffic nor pedestrian interference.

Intersection analysis was conducted utilizing peak hour factors (PHFs) as calculated for each intersection during each time period

3.7.2. Region of Peel Modelling Guidelines

The intersections under the jurisdiction of the Region of Peel were modelled in Synchro 9.2 in conformance with the modelling guidelines per the Region of Peel's "Regional Guidelines for Using Synchro Version 7.73 Rev 8." **Table 9** summarizes the Synchro modelling parameters set out by the Region's guidelines.

Table 8: Region of Peel Synchro Modelling Parameters

Parameter	Value
Ideal (base) saturation flow rate	1,900 veh/hr/lane
Lost Time	No parameters specified
Peak Hour Factor	1.00 for all intersection movements
Lane width	3.7 metres for through and shared through/turn lanes 3.5 metres for exclusive turn lanes

The modelling guidelines outlined above were applied to the following intersections:

- Derry Road West and Highway 407 West Ramp Terminal
- Derry Road West and Highway 407 East Ramp Terminal
- Derry Road West and Ninth Line
- Ninth Line and Britannia Road West
- Britannia Road West and Highway 407 West Ramp Terminal
- Britannia Road West and Highway 407 East Ramp Terminal

3.7.3. Critical Volume-To-Capacity Thresholds

The MTO considers a movement to be critical when the volume-to-capacity exceeds 0.75 for an off-ramp approach at a ramp terminal or exceeds 0.85 for all other movements at an intersection under MTO jurisdiction. The Highway 401 and Highway 407 ramp terminals were evaluated using these thresholds.

The Region's guidelines set out thresholds for critical volume-to-capacity ratios for through/shared through movements, and for exclusive turning movements, with thresholds of 0.90 and 1.00 for a through/shared through or exclusive turning movement, respectively. The intersections of Ninth Line and Derry Road West, and Ninth Line and Britannia Road West were evaluated using these thresholds.

The City of Mississauga consider a movement to be critical when the volume-to-capacity exceeds 0.85 for any intersection movement. The intersections of Ninth Line and Doug Leavens Boulevard, Ninth Line and Foxwood Avenue, and Ninth Line and Osprey Boulevard were evaluated using this threshold.

3.7.4. Left-Turn on Intergreen Adjustments

In addition to the City and Region's modelling guidelines, adjustments were applied to account for left-turn on intergreens.

At intersections with high through volumes, left-turning vehicles waiting for gaps in the opposing traffic stream during a permissive phase may only be able maneuver through the intersection during the intergreen period. This behavior is typically observed at intersections approaching capacity, and was confirmed by viewing the camera footage collected during the traffic counts.

In accounting for the increased capacity of left-turning vehicles at the intersections in the boundary road network, the Canadian Capacity Guide recommends that up to two passenger cars can be reasonably discharged during each intergreen period for permissive phases.

The number of vehicles that are expected to discharge per intergreen period is determined by the following formula on page 3-20 in the Canadian Capacity Guide:

$$Q_{LTOI} = n * X_{LTOI},$$

Where;
Q_{LTOI} *= left-turn flow on intergreen (pcu/hr)*
n = number of cycles per hour
X_{LTOI} *= average number of left-turn passenger car units per intergreen period (2 assumed)*

Left turning volumes were analyzed with a reduction in volumes when movements were found to experience a volume-to-capacity ratio in excess of 1.00 under existing, future background or future

total scenarios. This adjustment was not applied to left-turn movements with no opposing traffic volumes (e.g. the Highway 401 off-ramp terminals on Winston Churchill Boulevard).

These modifications are in conformance with standard industry practice.

3.7.5. Ramp Terminal Right-Turn on Red Adjustments

The Highway 401 off-ramp terminals at Winston Churchill Boulevard consist of an exclusive left-turn lane, a shared left-turn/right-turn lane, and an exclusive right-turn lane. The ramp terminals were modelled with these existing geometrics. However, it was observed from the camera footage collected at the Highway 401 ramp terminals during the traffic counts that most of the right-turn movements are occurring in the exclusive right-turn curb lane, and that the shared left-turn/right-turn lane primarily consists of left-turn movements. Therefore, the Synchro modelling of the off-ramp approaches was calibrated to reflect observed operations.

The observed operations suggest that the actual Saturation Flow Rate for Right-turn on Reds (RTORs) is higher than the default calculated Saturation Flow Rate for RTORs in Synchro.

The following formula from the Highway Capacity Manual (HCM) is used to calculate Saturation Flow Rate for ROTRs:

$$sRTOR = vRTOR * C/r$$

Where;
sRTOR = Saturation Flow Rate for RTOR (veh/hr)
vRTOR = observed RTOR volume (veh/hr)
C = cycle length
R = red time

For the westbound ramp terminal, the existing cycle length is 160 seconds (resulting in 22 cycles per hour) and the total red time for the off-ramp approach is 101 seconds during the critical weekday p.m. peak period. Observations of the camera footage indicate an average of approximately 10 vehicles per cycle conducting a RTOR movement, primarily in the curb lane (which is equivalent to approximately 220 vehicles per hour). Using the formula above, the Saturation Flow Rate for RTORs would be approximately 349 vehicles per hour which is higher than the default calculated Saturation Flow Rate of 68 vehicles per hour for RTORs.

For the eastbound ramp terminal, the existing cycle length is 160 seconds (resulting in 22 cycles per hour) and the total red time for the off-ramp approach is 118 seconds during the critical weekday p.m. peak period. Observations of the camera footage also indicate an average of approximately 5 vehicles per cycle conducting a RTOR movement, primarily in the curb lane (which is equivalent to approximately 110 vehicles per hour). Using the formula above, the Saturation Flow Rate for RTORs would be approximately 149 vehicles per hour which is higher than the default calculated Saturation Flow Rate of 46 vehicles per hour for RTORs.

Accordingly, this adjustment was applied to the Highway 401 ramp terminals at Winston Churchill Boulevard during the weekday p.m. peak period for all scenarios. Where signal timings were optimized under future background and total conditions, the RTOR Saturation Flow Rate was re-calculated using the red time from the optimized signal timings.

3.8 Intersection Operations

The existing intersection operations at the study intersections were analyzed using the existing traffic volumes illustrated in **Figure 2.** Detailed capacity analysis worksheets are included in **Appendix F**.

Table 9 outlines the 2019 existing traffic operations.

Table 9: 2019 Existing Traffic Operations

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length [3]
Derry Road West and 407 North Ramp Terminal	Signal	A.M.	A	6.3 s	0.68 (NBR)	None
		P.M.	A	6.4 s	0.63 (NBR)	None
Derry Road West and 407 South Ramp Terminal	Signal	A.M.	A	4.2 s	0.50 (EBT)	None
		P.M.	C	23.3 s	0.86 (SBR)	129.9 m > 120 m (SBR)
Derry Road West and Ninth Line	Signal	A.M.	D	37.0 s	0.86 (SBT)	93.7 m > 75 m (EBL)
		P.M.	C	34.2 s	0.84 (SBT)	None
Ninth Line and Doug Leavens Boulevard	Signal	A.M.	B	10.0 s	0.61 (NBT)	None
		P.M.	A	8.3 s	0.53 (SBT)	None
Ninth Line and Foxwood Avenue	Stop (Minor)	A.M.	C	16.3 s	0.16 (WBR)	None
		P.M.	C	17.3 s	0.08 (WBL)	None
Ninth Line and Osprey Boulevard	Signal	A.M.	B	10.4 s	0.55 (NBT)	31.4 m > 15 m (WBL)
		P.M.	B	10.0 s	0.65 (NBT)	19.9 m > 15 m (WBL)
Britannia Road West and Ninth Line	Signal	A.M.	E	57.0 s	0.99 (EBTR) 0.95 (SBTR)	None
		P.M.	D	49.3 s	0.97 (NBTR)	None
Britannia Road West and 407 North Ramp Terminal	Signal	A.M.	A	7.3 s	0.73 (NBR)	None
		P.M.	A	5.6 s	0.54 (NBR)	None
Britannia Road West and 407 South Ramp Terminal	Signal	A.M.	A	5.0 s	0.40 (SBL)	None
		P.M.	B	11.6 s	0.69 (SBL)	None
Winston Churchill Boulevard and 401 East Ramp Terminal	Signal	A.M.	B	13.6 s	0.63 (EBL)	None
		P.M.	B	16.2 s	0.70 (EBL)	None
Winston Churchill Boulevard and 401 West Ramp Terminal	Signal	A.M.	B	12.5 s	0.68 (WBL)	None
		P.M.	C	28.3 s	0.84 (WBL)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection where the maximum v/c ratio does not exceed the critical thresholds. All v/c ratios that exceed the critical thresholds outlined in Section 3.7 are outlined and highlighted.

Note 3: 95th percentile queue lengths which exceed the designated storage length of the turn lane but can be accommodated by a centre turn lane were not documented in this table.

The boundary road network is currently operating at LOS "D" or better during the weekday a.m. and p.m. peak hours, with the exception of the intersection of Britannia Road West and Ninth Line which is currently operating at LOS "E" during the weekday a.m. peak hour. These operations are attributed to the eastbound through/right-turn and southbound through/right-turn movements operating near capacity. The eastbound and southbound through movements experience heavy volumes during the weekday a.m. peak hour. Additionally, the northbound through/right-turn movement is operating near capacity during the weekday p.m. peak hour. These operations are not uncommon at urban signalized arterial intersections.

The 95th percentile queue length for the northbound left-turn movement at the intersection of Britannia Road West and Ninth Line currently extends beyond the designated storage length during the weekday a.m. and p.m. peak hours, but were not observed to interfere with through traffic on Ninth Line. This is because Ninth Line has a painted centre median area that allows vehicles to queue beyond the designated storage length. Queues were observed to generally dissipate within one cycle length, which is reflected in the Synchro traffic operations as this movement is not operating near capacity.

The 95th percentile queue length for the eastbound left-turn movement at the intersection of Derry Road West and Ninth Line currently extends beyond the designated storage length during the weekday a.m. peak hour, but is contained within the left-turn lane taper. Queues were observed to generally dissipate within one cycle length, which is reflected in the Synchro traffic operations as these movements are not operating near capacity. Additionally, the eastbound left-turn movement is currently operating as a permissive turn type during the weekday a.m. peak hour. If the movement were to operate with a protected-permissive turn type, the 95th percentile queue length is expected to decrease.

The 95th percentile queue length for the westbound left-turn movement at the intersection of Ninth Line and Osprey Boulevard currently extends beyond the designated storage length during the weekday a.m. and p.m. peak hours. However, the road width of Osprey Boulevard east of the westbound left-turn lane was observed to allow for separation of queued westbound left-turn vehicles from westbound right-turn vehicles.

The southbound right-turn movement at the Highway 407 West Ramp Terminal at Derry Road West is operating above the MTO critical volume-to-capacity ratio of 0.75 during the weekday p.m. peak hour. This movement experiences heavy southbound right-turn volumes during the weekday p.m. peak hour. However, the existing queue lengths at the off-ramp approaches of the ramp terminals do not extend to the freeway segment of Highway 407 and are thus contained within the off-ramp segments. The distance from the gore area of the freeway segment to the stop bar at the ramp terminal is approximately 500 metres.

The westbound left-turn movement at the Highway 401 West Ramp Terminal at Winston Churchill Boulevard is operating above the MTO critical volume-to-capacity ratio of 0.75 during the weekday p.m. peak hour. The off-ramp approach experiences heavy volumes exiting Highway 401 westbound during the weekday p.m. peak hour. However, Winston Churchill Boulevard is planned to be widened to six lanes in the short-term horizon, which is expected to increase intersection capacity and improve traffic operations. Additionally, the existing queue lengths at the off-ramp approaches of the ramp terminals do not extend to the freeway segment of Highway 401 and are thus contained within the off-ramp segments. The distance from the gore area of the freeway segment to the stop bar at the ramp terminal is approximately 560 metres.

Overall, the boundary road network is currently operating at acceptable levels of service.

4.0 Future Background Conditions

4.1 Horizon Years

The north Draft Plan is expected to be built-out by 2023 and the south Draft Plan is expected to be built-out by 2026. In addition to analysis of the horizon year for each Draft Plan build-out, the MTO's guidelines require analysis of the five-year and ten-year horizons beyond the estimated year of full build-out (2026). Therefore, the following horizon years were analyzed: 2023 (North Draft Plan build-out), 2026 (full build-out), 2031 (five-year horizon) and 2036 (ten-year horizon).

4.2 Growth Rate

4.2.1. City and Regional Arterial Roads

The Ninth Line Corridor Study Transportation Assessment prepared by MMM Group (July 2017, herein referred to as the "MMM study") for the City of Mississauga forecasted future background traffic volumes on arterial roads in the surrounding area using compounded growth rates provided by City staff from the City's EMME model projections. The City provided growth rates for Ninth Line, Winston Churchill Boulevard, Derry Road West and Britannia Road West.

Appendix G contains excerpts from the MMM study.

Table 10 outlines the growth rates on the boundary road network.

Table 10: Boundary Road Network Growth Rates

Street	Winston Churchill Boulevard	
Direction	**Northbound**	**Southbound**
A.M. Peak Hour	1.15%	2.76%
P.M. Peak Hour	3.37%	1.30%
Street	**Derry Road West**	
Direction	**Eastbound**	**Westbound**
A.M. Peak Hour	1.94%	2.04%
P.M. Peak Hour	1.67%	1.45%
Street	**Britannia Road West**	
Direction	**Eastbound**	**Westbound**
A.M. Peak Hour	2.71%	2.04%
P.M. Peak Hour	1.85%	2.39%
Street	**Ninth Line**	
Direction	**Northbound**	**Southbound**
A.M. Peak Hour	1.00% [1 2]	0.50% [2]
P.M. Peak Hour	0.50% [1 2]	1.05% [2]

Note 1: For analysis, a growth rate of 0.5% compounded annually was applied in lieu of a zero percent growth rate.
Note 2: A growth rate of 0.5% compounded annually was applied to movements entering and exiting Doug Leavens Boulevard, Foxwood Avenue and Osprey Boulevard (see Section 4.2.2).

4.2.2. City Collector Roads

At the Ninth Line intersections of Doug Leavens Boulevard, Foxwood Avenue and Osprey Boulevard, the growth rates outlined in **Table 10** were applied to through movements only. A growth rate of 0.5% compounded annually was applied to movements entering and exiting the local roads, as the surrounding residential neighbourhood east of Ninth Line is fully built-out and thus would not be expected to experience significant background traffic growth.

4.2.3. Highway 401 and 407 Ramp Terminals

As stated in the MMM study, the MTO instructed MMM to apply a growth rate of 2% compounded annually at the off-ramp approaches at ramp terminals. For consistency, this growth rate was applied to the off-ramp approaches at the Highway 401 and Highway 407 ramp terminals in this analysis.

4.3 Background Developments

Background developments were identified in the study area from the MMM study, and thus were accounted for under future background conditions. The developments are outlined in **Table 11.**

Table 11: Background Developments

Development	Location	Development Proposal	Statistics
Erin Mills Development	North-east quadrant of Highway 403 and Highway 407	Industrial Park including retail and office uses	112,630 sq. m of industrial park 6,762 sq. m of retail 8,074 sq. m of office
407 Transitway	Future stations in study area: Britannia Road and Derry Road	Provincial transit system with exclusive right-of-way parallel to Highway 407; includes running way, stations, platforms, parking, and passenger pick-up and drop-off facilities.	Britannia Station – 640 parking spaces Derry Station – 2,160 spaces (interim); 3,360 spaces (ultimate)
Emerging Land Use Concept	Ninth Line (west side) from Highway 403 to Highway 401	Greenfield community consisting of residential, commercial retail, general office and general light industrial uses divided into seven zones along Ninth Line.	3,543 residential units 5,467 sq. ft of retail 40,009 sq. ft of general office 296,191 sq. ft of general light industrial

The MMM study forecasts traffic on the boundary road network generated by the developments outlined above. The background development traffic added to the boundary road network in the MMM study was applied to this analysis. **Appendix G** contains excerpts from the MMM study on the background developments.

4.3.1. Timing of Developments

The timing of the Erin Mills development is unknown; thus, this development was accounted for during all horizon years.

The timing of the 407 Transitway completion in the study area is unknown at this time, as the MTO is in the process of reviewing the design alternatives from the "Parkway Belt West Plan/407 Transitway EA study." However, the Transit Project Assessment Process (TPAP) is expected to be completed by the end of 2020, thus completing approvals for the entire 407 Transitway corridor. Thus, it can be assumed that the 407 Transitway segment within the study area will be completed by the 2023 horizon year. Traffic generated by the Britannia and Derry stations was accounted for during all horizon years.

The Emerging Land Use Concept for Ninth Line aims to achieve the City's population and employment growth targets by 2031. Per the "Ninth Line Lands Municipal Comprehensive Review" prepared for Peel Region by Macaulay Shiomi Lowson Ltd. (May 2017), it is anticipated that the Ninth Line lands will need to be developed prior to 2031.

While the exact timing of the Ninth Line lands build-out is unknown, it was assumed that the lands will be partially built-out by both 2023 and 2026 to accelerate the City's growth targets. It was assumed that approximately 25% of the Emerging Land Use Concept will be build-out by 2023, approximately 50% of the Emerging Land Use Concept will be built-out by 2026, and full build-out for 2031 and 2036.

4.3.2. Development Traffic

The MMM study forecasted traffic for the Emerging Land Use Concept for various non-auto modal split scenarios: 5%, 10%, 15%, and 20%. For the purposes of conservative analysis, the site traffic volumes for the lowest non-auto modal split scenario (5%) was applied to this analysis.

Zone "5" of the Emerging Land Use Concept spans from Britannia Road West to Derry Road West, and includes the subject property (see **Appendix G** for excerpts from the MMM study). The background site traffic associated with the area of Zone "5" that overlaps the subject property was removed from the site accesses to the Zone "5" property: Doug Leavens Boulevard and Osprey Boulevard. However, for the purposes of conservative analysis, these site traffic volumes were not subtracted on the greater boundary road network.

Figure 3 illustrates the background traffic associated with the Erin Mills development. **Figure 4** illustrates the background traffic associated with the Britannia Road and Derry Road stations of the 407 Transitway initiative. **Figure 5** illustrates the 2023 background traffic associated with the assumed 25% build-out of the Emerging Land Use Concept. **Figure 6** illustrates the 2026 background traffic associated with the assumed 50% build-out of the Emerging Land Use Concept. **Figure 7** illustrates the 2031 and 2036 background traffic associated with the full build-out of the Emerging Land Use Concept.

4.4 Planned Roadway Improvements

The City of Mississauga will be undertaking a Municipal Class Environmental Assessment for the widening of Ninth Line from Eglinton Avenue West to Derry Road West. The study is scheduled to begin early 2020, with an anticipated construction date of 2023 as advised by City staff (see **Appendix B** for correspondence).

Details regarding the widening are unknown at this time. However, it is assumed that Ninth Line will be widened from two lanes to five lanes (four travel lanes and a centre turn lane or centre median), and active transportation facilities such as bike lanes and a continuous sidewalk or multi-use trail. These assumptions are supported by the conceptual design prepared by CIMA+ for the segment of Ninth Line south of the study area and within the Region of Halton (see **Appendix H**).

It is assumed that auxiliary right-turn lanes will be implemented on Ninth Line at the north and south approaches of the intersection of Britannia Road West given that these movements are expected to increase in volumes with future traffic growth and background development traffic.

In addition to the widening of Ninth Line, other roadway improvements have been identified in the study area by the Region of Halton and the Region of Peel.

Table 12 outlines the future roadway improvements in the study area.

Table 12: Planned Roadway Improvements in Study Area

Roadway	Segment or Intersection	Jurisdiction	Improvement	Anticipated Year of Completion
Ninth Line	Eglinton Avenue West to Derry Road West	City of Mississauga	Widen to five lanes and provide urban cross-section	2023 [1]
Winston Churchill Boulevard	Highway 401 to Steeles Avenue	Region of Peel	Widen to six lanes and provide urban cross-section	2021 [2]
Derry Road West	Tremaine Road to Highway 407	Region of Halton	Widen to six lanes and provide urban cross-section	2028 - 2031 [3]
Britannia Road West	Tremaine Road to Highway 407	Region of Halton	Widen to six lanes and provide urban cross-section	2022 [4]

Note 1: Estimate provided by City staff.
Note 2: Source: Peel Long Range Transportation Master Plan (Update 2012).
Note 3: Source: Halton Region Budget and Business Plan, 2019.
Note 4: Source:https://www.halton.ca/For-Residents/Roads-Construction/Construction-Projects/Britannia-Road-Corridor-Improvements

These roadway improvements were also accounted for in the MMM study. The Ninth Line, Winston Churchill Boulevard and Britannia Road West improvements were accounted for during the 2026, 2031 and 2036 horizon years. However, given the uncertainty of the timing of the Derry Road West improvements, the widening was accounted for during the 2031 and 2036 horizon years. **Appendix I** contains excerpts on future roadway improvement information from the noted sources above.

4.5 Additional Roadway Improvements

Analysis of 2031 and 2036 future background traffic operations indicates that the intersections of Derry Road West and Ninth Line, and Britannia Road West and Ninth Line are expected to operate at capacity with several movements operating above capacity. The MMM study also identified operational issues at the aforementioned intersections under 2041 future background conditions. The 2031 and 2036 horizon years account for the full operation of the 407 Transitway and the full build-out of the Emerging Land Use Concept.

The MMM study recommended that Derry Road West and Britannia Road West be widened from four lanes to six lanes from Highway 407 to Winston Churchill Boulevard. Their justification was that the City's EMME forecasted growth rates for Derry Road West and Britannia Road West reflect the widening of the roadways within the Region of Halton and resultant increased through traffic on the corridors.

Thus, the intersections on Derry Road West and Britannia Road West were modelled under 2036 future background conditions under two scenarios: with and without the widening of Derry Road West and Britannia Road West in the study area. It is assumed that auxiliary right-turn lanes would be implemented on both Derry Road West and Britannia Road West at the intersection of Ninth Line as part of a future road widening.

4.6 Intersection Modelling

The following existing permissive left-turn movements were modelled as protected-permissive under future background conditions:

- Eastbound left-turn at Derry Road West and Ninth Line (weekday a.m. peak);
- Westbound left-turn at Derry Road West and Ninth Line (weekday p.m. peak);
- Southbound left-turn at Derry Road West and Ninth Line (weekday a.m. and p.m. peaks);
- Westbound left-turn at Britannia Road West and Ninth Line (weekday p.m. peak); and
- Southbound left-turn at Ninth Line and Doug Leavens Boulevard (weekday a.m. and p.m. peaks).

The signalized intersections of Ninth Line and Doug Leavens Boulevard, and Ninth Line and Osprey Boulevard operate in free-mode with various cycle lengths, which is common at low-to-medium volume intersections. However, with the widening and urbanization of Ninth Line and the forecasted increase in traffic volumes, it is assumed that these intersections will be co-ordinated and operate under a semi-actuated mode of control (with Ninth Line operating as the major street). Therefore, these intersections were modelled under future background conditions with a semi-actuated mode of control and a cycle length of 100 seconds.

Auxiliary northbound and southbound right-turn lanes were modelled on Ninth Line at the intersection of Britannia Road West and Ninth Line, as these lanes are assumed to be provided as part of the Ninth Line corridor widening and urbanization.

Under the 2036 future background scenario with additional improvements (Derry Road West and Britannia Road West widening within the City of Mississauga), auxiliary right-turn lanes were modelled at the Derry Road West and Britannia Road West intersections with Ninth Line, as these lanes are assumed to be provided as part of the corridor widenings.

4.7 Intersection Operations

The future background intersection operations at the study intersections were analyzed using the 2023, 2026, 2031 and 2036 future background traffic volumes illustrated in **Figures 8-11**, and optimized signal timings. Detailed capacity analysis worksheets are included in **Appendix F**.

2036 future background conditions were modelled under two scenarios: with and without the additional improvements (Derry Road West and Britannia Road West widening within the City of Mississauga).

Tables 13-16 outline the 2023, 2026, 2031 and 2036 future background traffic operations. **Table 17** outlines the 2036 future background traffic operations with additional improvements (Derry Road West and Britannia Road West widening within the City of Mississauga).

Table 13: 2023 Future Background Traffic Operations

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length [3]
Derry Road West and 407 North Ramp Terminal	Signal	A.M.	A	8.6 s	0.73 (NBR)	None
		P.M.	A	6.8 s	0.65 (NBR)	None
Derry Road West and 407 South Ramp Terminal	Signal	A.M.	A	4.7 s	0.62 (EBT)	None
		P.M.	C	26.7 s	0.88 (SBR)	147.1 m > 120 m (SBR)
Derry Road West and Ninth Line	Signal	A.M.	D	39.1 s	0.79 (SBT)	83.3 m > 75 m (EBL)
		P.M.	D	43.2 s	0.89 (SBT)	None
Ninth Line and Doug Leavens Boulevard	Signal	A.M.	B	10.3 s	0.55 (WBL)	None
		P.M.	A	7.7 s	0.44 (WBL)	None
Ninth Line and Foxwood Avenue	Stop (Minor)	A.M.	B	13.7 s	0.15 (WBL)	None
		P.M.	B	14.6 s	0.08 (WBL)	None
Ninth Line and Osprey Boulevard	Signal	A.M.	A	8.1 s	0.53 (WBL)	38.4 m > 15 m (WBL)
		P.M.	A	5.9 s	0.39 (SBT)	25.0 m > 15 m (WBL)
Britannia Road West and Ninth Line	Signal	A.M.	E	61.2 s	0.91 (SBT)	None
		P.M.	D	43.6 s	0.85 (SBT)	None
Britannia Road West and 407 North Ramp Terminal	Signal	A.M.	B	12.6 s	0.79 (NBR)	73.2 m > 70 m (NBR)
		P.M.	A	5.6 s	0.57 (NBR)	None
Britannia Road West and 407 South Ramp Terminal	Signal	A.M.	C	25.4 s	0.88 (SBL)	None
		P.M.	C	21.7 s	0.85 (SBL)	None
Winston Churchill Boulevard and 401 East Ramp Terminal	Signal	A.M.	B	14.6 s	0.64 (EBL)	None
		P.M.	B	15.7 s	0.70 (EBL)	None
Winston Churchill Boulevard and 401 West Ramp Terminal	Signal	A.M.	B	13.6 s	0.68 (WBL)	None
		P.M.	C	26.2 s	0.78 (WBL)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection where the maximum v/c ratio does not exceed the critical thresholds. All v/c ratios that exceed the critical thresholds outlined in Section 3.7 are outlined and highlighted.

Note 3: 95th percentile queue lengths which exceed the designated storage length of the turn lane but can be accommodated by a centre turn lane were not documented in this table.

Table 14: 2026 Future Background Traffic Operations

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length [3]
Derry Road West and 407 North Ramp Terminal	Signal	A.M.	A	9.8 s	0.75 (NBR)	None
		P.M.	A	7.2 s	0.66 (NBR)	None
Derry Road West and 407 South Ramp Terminal	Signal	A.M.	A	5.1 s	0.66 (EBT)	None
		P.M.	C	29.3 s	0.90 (SBR)	160.6 m > 120 m (SBR)
Derry Road West and Ninth Line	Signal	A.M.	D	44.3 s	0.83 (SBT)	102.3 m > 75 m (EBL)
		P.M.	D	49.8 s	0.91 (SBT)	81.3 m > 75 m (EBL) 71.7 m > 70 m (SBR)
Ninth Line and Doug Leavens Boulevard	Signal	A.M.	B	10.5 s	0.56 (WBL)	None
		P.M.	A	7.8 s	0.45 (WBL)	None
Ninth Line and Foxwood Avenue	Stop (Minor)	A.M.	B	14.1 s	0.16 (WBL)	None
		P.M.	C	15.1 s	0.08 (WBL)	None
Ninth Line and Osprey Boulevard	Signal	A.M.	A	8.3 s	0.54 (WBL)	39.0 m > 15 m (WBL)
		P.M.	A	6.1 s	0.42 (SBT)	25.6 m > 15 m (WBL)
Britannia Road West and Ninth Line	Signal	A.M.	E	64.9	0.94 (EBTR) 0.94 (SBT)	None
		P.M.	D	46.9 s	0.88 (SBT)	None
Britannia Road West and 407 North Ramp Terminal	Signal	A.M.	B	14.0 s	0.80 (NBR)	81.9 m > 70 m (NBR)
		P.M.	A	5.8 s	0.59 (NBR)	None
Britannia Road West and 407 South Ramp Terminal	Signal	A.M.	C	26.1 s	0.88 (SBL)	None
		P.M.	C	22.5 s	0.86 (SBL)	None
Winston Churchill Boulevard and 401 East Ramp Terminal	Signal	A.M.	B	15.6 s	0.65 (EBL)	None
		P.M.	B	16.6 s	0.71 (EBL)	None
Winston Churchill Boulevard and 401 West Ramp Terminal	Signal	A.M.	B	14.6 s	0.69 (WBL)	None
		P.M.	C	28.4 s	0.80 (WBL)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection where the maximum v/c ratio does not exceed the critical thresholds. All v/c ratios that exceed the critical thresholds outlined in Section 3.7 are outlined and highlighted.

Note 3: 95th percentile queue lengths which exceed the designated storage length of the turn lane but can be accommodated by a centre turn lane were not documented in this table.

Table 15: 2031 Future Background Traffic Operations

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length [3]
Derry Road West and 407 North Ramp Terminal	Signal	A.M.	B	12.3 s	0.77 (NBR)	None
		P.M.	A	9.7 s	0.75 (NBR)	None
Derry Road West and 407 South Ramp Terminal	Signal	A.M.	A	5.9 s	0.73 (EBT)	None
		P.M.	D	37.8 s	0.88 (WBT) 0.93 (SBR)	198.8 m > 120 m (SBR)
Derry Road West and Ninth Line	Signal	A.M.	E	62.7 s	0.90 (EBL)	151.8 m > 75 m (EBL)
		P.M.	E	63.9 s	1.03 (WBTR) 0.99 (NBT) 0.96 (SBT)	94.1 m > 75 m (EBL) 77.3 m > 70 m (SBR)
Ninth Line and Doug Leavens Boulevard	Signal	A.M.	B	10.9 s	0.57 (WBL)	None
		P.M.	A	8.7 s	0.50 (SBT)	None
Ninth Line and Foxwood Avenue	Stop (Minor)	A.M.	C	15.0 s	0.18 (WBL)	None
		P.M.	C	15.9 s	0.09 (WBL)	None
Ninth Line and Osprey Boulevard	Signal	A.M.	A	8.5 s	0.55 (WBL)	41.2 m > 15 m (WBL)
		P.M.	A	6.6 s	0.47 (SBT)	26.7 m > 15 m (WBL)
Britannia Road West and Ninth Line	Signal	A.M.	E	69.4 s	1.04 (EBTR) 1.00 (SBT)	None
		P.M.	E	55.4 s	0.92 (NBT) 0.91 (SBT)	85.6 m > 60 m (EBL)
Britannia Road West and 407 North Ramp Terminal	Signal	A.M.	B	17.0 s	0.82 (NBR)	96.6 m > 70 m (NBR)
		P.M.	A	6.8 s	0.66 (NBR)	None
Britannia Road West and 407 South Ramp Terminal	Signal	A.M.	C	27.5 s	0.89 (SBL)	None
		P.M.	C	24.6 s	0.87 (SBL)	None
Winston Churchill Boulevard and 401 East Ramp Terminal	Signal	A.M.	B	17.2 s	0.67 (EBL)	None
		P.M.	B	18.5 s	0.73 (EBL)	None
Winston Churchill Boulevard and 401 West Ramp Terminal	Signal	A.M.	B	16.7 s	0.71 (WBL) 0.71 (WBR)	None
		P.M.	C	33.1 s	0.84 (WBL)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection where the maximum v/c ratio does not exceed the critical thresholds. All v/c ratios that exceed the critical thresholds outlined in Section 3.7 are outlined and highlighted.

Note 3: 95th percentile queue lengths which exceed the designated storage length of the turn lane but can be accommodated by a centre turn lane were not documented in this table.

Table 16: 2036 Future Background Traffic Operations (Without Additional Improvements)

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length [3]
Derry Road West and 407 North Ramp Terminal	Signal	A.M.	B	15.0 s	0.80 (NBR)	None
		P.M.	B	13.5 s	0.81 (NBR)	None
Derry Road West and 407 South Ramp Terminal	Signal	A.M.	A	8.0 s	0.82 (EBT)	None
		P.M.	E	60.1 s	0.96 (WBT) 0.98 (SBR)	237.5 m > 120 m (SBR)
Derry Road West and Ninth Line	Signal	A.M.	E	73.3 s	0.96 (EBTR) 0.94 (SBT)	186.5 m > 75 m (EBL)
		P.M.	E	75.4 s	1.09 (WBTR) 1.05 (NBT) 1.02 (SBT)	107.0 m > 75 m (EBL) 87.2 m > 70 m (SBR)
Ninth Line and Doug Leavens Boulevard	Signal	A.M.	B	11.2 s	0.57 (WBL)	None
		P.M.	A	8.9 s	0.52 (SBT)	None
Ninth Line and Foxwood Avenue	Stop (Minor)	A.M.	C	15.3 s	0.19 (WBL)	None
		P.M.	C	16.2 s	0.10 (WBL)	None
Ninth Line and Osprey Boulevard	Signal	A.M.	A	8.7 s	0.56 (WBL)	41.8 m > 15 m (WBL)
		P.M.	A	6.7 s	0.48 (SBT)	27.1 m > 15 m (WBL)
Britannia Road West and Ninth Line	Signal	A.M.	E	77.7 s	1.14 (EBTR) 1.09 (SBT)	None
		P.M.	E	62.6 s	0.94 (NBT) 0.95 (SBT)	105.6 m > 60 m (EBL)
Britannia Road West and 407 North Ramp Terminal	Signal	A.M.	C	20.7 s	0.85 (NBR)	111.7 m > 70 m (NBR)
		P.M.	A	8.4 s	0.73 (NBR)	None
Britannia Road West and 407 South Ramp Terminal	Signal	A.M.	C	29.1 s	0.89 (SBL)	None
		P.M.	C	26.9 s	0.88 (SBL)	None
Winston Churchill Boulevard and 401 East Ramp Terminal	Signal	A.M.	B	19.0 s	0.68 (EBL) 0.68 (EBR)	None
		P.M.	C	21.2 s	0.75 (EBL)	None
Winston Churchill Boulevard and 401 West Ramp Terminal	Signal	A.M.	B	18.9 s	0.74 (WBR)	None
		P.M.	D	39.4 s	0.90 (WBL) 0.91 (NBT)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection where the maximum v/c ratio does not exceed the critical thresholds. All v/c ratios that exceed the critical thresholds outlined in Section 3.7 are outlined and highlighted.

Note 3: 95th percentile queue lengths which exceed the designated storage length of the turn lane but can be accommodated by a centre turn lane were not documented in this table.

The following intersections are expected to operate near or at capacity under 2036 future background conditions:

- Derry Road West and Highway 407 South Ramp Terminal during the weekday p.m. peak hour;
- Derry Road West and Ninth Line during the weekday a.m. and p.m. peak hours; and
- Britannia Road West and Ninth Line during the weekday a.m. and p.m. peak hours.

These intersections, as well as the other Highway 407 ramp terminals on Derry Road West and Britannia Road West, are expected to operate with movements exceeding critical volume-to-capacity thresholds, as well as 95th percentile queue lengths for turning movements exceeding their designated storage length. These operations are attributed to the high volumes forecasted on the Derry Road West and Britannia Road West corridors under 2036 future background conditions and with no roadway improvements to the aforementioned corridors within the City of Mississauga.

The forecasted 95th percentile queue lengths for the off-ramp approaches at the Highway 401 and 407 ramp terminals will not extend to the freeway segments of Highway 401 and 407 as the off-ramp lengths are in the order of 500 metres or more.

The forecasted 95th percentile queue lengths for most of the turning movements at the intersections of Derry Road West and Ninth Line, and Britannia Road West and Ninth Line are expected to be accommodated by the taper lengths and centre turn-lane extensions from these turn lanes, and thus not interfere with through traffic. The exception is the eastbound left-turn at both of the aforementioned intersections, for which the queue lengths are currently extending beyond the designated storage lengths. However, these movements are not expected to operate near capacity, and thus it is assumed that these queues will dissipate within one cycle length (consistent with existing conditions).

The intersections on Ninth Line are expected to operate at LOS "C" or better under 2036 future background conditions, with minor control delays and no critical volume-to-capacity ratios. The 95th percentile queue length for the westbound left-turn movement at the intersection of Ninth Line and Osprey Boulevard is expected to extend beyond the designated storage length during the weekday a.m. and p.m. peak hours, as consistent with existing conditions. However, the road width of Osprey Boulevard east of the westbound left-turn lane was observed to allow for separation of queued westbound left-turn vehicles from westbound right-turn vehicles.

These operations indicate that the widening of Derry Road West and Britannia Road West within the City of Mississauga would improve future background traffic operations, as recommended in the MMM study.

Table 17: 2036 Future Background Traffic Operations (With Additional Improvements)

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length [3]
Derry Road West and 407 North Ramp Terminal	Signal	A.M.	B	11.5 s	0.78 (NBR)	None
		P.M.	B	10.4 s	0.79 (NBR)	None
Derry Road West and 407 South Ramp Terminal	Signal	A.M.	A	4.5 s	0.58 (EBT)	None
		P.M.	C	29.2 s	0.91 (SBR)	185.1 m > 120 m (SBR)
Derry Road West and Ninth Line	Signal	A.M.	D	40.1 s	0.82 (EBL) 0.82 (SBT)	111.4 m > 75 m (EBL)
		P.M.	D	48.8 s	0.93 (SBL)	123.3 m > 75 m (EBL) 77.1 > 70 m (SBR)
Britannia Road West and Ninth Line	Signal	A.M.	D	43.0 s	0.88 (SBT)	99.5 m > 50 m (NBL)
		P.M.	D	47.1 s	0.89 (NBT) 0.89 (SBT)	78.6 m > 60 m (EBL)
Britannia Road West and 407 North Ramp Terminal	Signal	A.M.	B	15.7 s	0.83 (NBR)	104.2 m > 70 m (NBR)
		P.M.	A	7.9 s	0.73 (NBR)	None
Britannia Road West and 407 South Ramp Terminal	Signal	A.M.	C	23.7 s	0.88 (SBL)	None
		P.M.	C	21.9 s	0.87 (SBL)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection where the maximum v/c ratio does not exceed the critical thresholds. All v/c ratios that exceed the critical thresholds outlined in Section 3.7 are outlined and highlighted.

Note 3: 95th percentile queue lengths which exceed the designated storage length of the turn lane but can be accommodated by a centre turn lane were not documented in this table.

These operations indicate that the Derry Road West and Britannia Road West corridors are expected to operate at LOS "D" or better under 2036 future background conditions with the widening of the aforementioned corridors within the City of Mississauga. This indicates that operations are expected to improve with the widening of the corridors and the implementation of auxiliary right-turn lanes.

These results reinforce the recommendations from the MMM study to widen Derry Road West and Britannia Road West within the City of Mississauga in the study area.

It should be noted that the operations outlined above can still be considered conservative, as the background traffic associated with the Emerging Land Use Scenario Zone "5" that overlaps the subject property was not removed from the Derry Road West and Britannia Road West intersections.

5.0 Site Generated Traffic

The proposed development will result in additional vehicles on the boundary road network that would otherwise not exist. The proposed development will also result in additional turning movements at the study intersections.

5.1 Trip Generation

Trip generation for the proposed development was forecasted using published data from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. The ITE Trip Generation Manual is a compendium of industry collected trip generation data across North America for a variety of land uses, and is used industry-wide as a source for trip generation forecasts.

The following Land Use Categories (LUC) were applied to the proposed residential development:

- LUC 210 "Single-Family Detached Housing" was applied to the rear-lane detached units;
- LUC 220 "Multifamily Housing (Low-Rise)" was applied to the townhouse and condominium duplex units; and
- LUC 222 "Multifamily Housing (High-Rise)" was applied to the high-density condominium apartment units.

A fitted curve equation is provided for all land use categories outlined above, and the number of data plot points exceeds 20 data points. Therefore, the fitted curve equation was used to forecast trip generation for the proposed development.

The development proposes a range of unit counts for condominium apartments, with a range of 140-200 units for the north Draft Plan and 350-1360 for the south Draft Plan. For the purposes of conservative analysis, the upper threshold of unit counts was accounted for in this analysis.

Table 18 outlines the trip generation for both the north and south Draft Plans, as well as full build-out of the proposed development.

Table 18: Trip Generation

North Draft Plan (2023)					
ITE Land Use Category	**Units**	**Peak Hour**	**Trips Generated**		
			Inbound	**Outbound**	**Total**
LUC 210 "Single-Family Detached Housing"	30	A.M.	6	20	26
		P.M.	20	12	32
LUC 220 "Multifamily Housing (Low-Rise)"	168	A.M.	18	60	78
		P.M.	59	35	94
LUC 222 "Multifamily Housing (High-Rise)"	200	A.M.	17	52	69
		P.M.	47	30	77
Total	**398**	**A.M.**	**41**	**132**	**173**
		P.M.	**126**	**77**	**203**
South Draft Plan (2026)					
ITE Land Use Category	**Units**	**Peak Hour**	**Trips Generated**		
			Inbound	**Outbound**	**Total**
LUC 220 "Multifamily Housing (Low-Rise)"	351	A.M.	36	121	157
		P.M.	114	67	181
LUC 222 "Multifamily Housing (High-Rise)"	1360	A.M.	94	300	394
		P.M.	287	184	471
Total	**1,711**	**A.M.**	**130**	**421**	**551**
		P.M.	**401**	**251**	**652**
Full Build-Out (2026)					
ITE Land Use Category	**Units**	**Peak Hour**	**Trips Generated**		
			Inbound	**Outbound**	**Total**
Development Total	**2,109**	**A.M.**	**171**	**553**	**724**
		P.M.	**527**	**328**	**855**

The full build-out of the proposed development is expected to generate a total of 724 and 855 total two-way trips during the weekday a.m. and p.m. peak hours, respectively. Given the sole residential land use, no internal synergy trips or pass-by trips are expected for the proposed development.

5.2 Trip Distribution

The trips generated by the proposed development were distributed to the boundary road network based on 2016 Transportation Tomorrow Survey (TTS) data. TTS is a comprehensive survey of transportation characteristics of households in the Greater Toronto Area (GTA) and surrounding areas.

For the proposed development, TTS results were filtered to auto trips exiting 2006 GTA Zones 3615, 3616, 3809, 3810 and 3811 during the weekday a.m. peak period. These zones consist of the residential zones

along the Ninth Line corridor, and thus were considered to be appropriate for trip distribution analysis. The row variable was set to "Planning District of Destination" and the column variable was set to "Use of 407" to quantify the number of trips travelling to each destination that use Highway 407 ETR.

From this query, trip destinations were determined and percentage of trips assigned to each destination was accounted for. Trips were assumed to travel to and from their destination points based on the most convenient route, taking into account trips using Highway 407 ETR and trips not using Highway 407 ETR.

It was determined that approximately 65% of the total outbound trips exiting the study area during the weekday a.m. peak period are internal to Mississauga. Accordingly, trip distribution internal to Mississauga was determined using a combination of existing travel patterns, expected destinations, and TTS results for trips travelling within Planning District "Mississauga."

The MTO has requested that the Highway 401 ramp terminals at Winston Churchill Boulevard be analyzed. From the trip distribution analysis, it was assumed that approximately 30% of all site generated traffic would arrive from and depart to the east via Derry Road West. These trips are primarily assigned to and from Meadowvale West, the employment areas surrounding Highway 401, and Highway 401 (east). Trips accessing Highway 401(east) are primarily expected to do so at the Mississauga Road interchange via Derry Road West. However, for the purposes of conservative analysis, it was assumed that half of the 30% of trips to and from the east via Derry Road West would access Highway 401 via the Winston Churchill Boulevard interchange.

The resultant trip distribution is outlined in **Table 19.** The breakdown of trips arriving from and departing to the east via Derry Road West is outlined to quantify trips that are assumed to access Highway 401 via the Winston Churchill Boulevard interchange.

Table 19: Trip Distribution

Arriving From / Departing To	Percentage
Derry Road West (east)	**30%**
Meadowvale, Employment Areas, and Highway 401 (east) via Mississauga Road	*15%*
Highway 401 (east) via Winston Churchill Boulevard	*15%*
Derry Road West (west)	**5%**
Ninth Line (north)	**10%**
Ninth Line (south)	**30%**
Highway 407 (north)	**10%**
Highway 407 (south)	**5%**
Britannia Road West (east)	**5%**
Doug Leavens Boulevard (east)	**5%**
Total	**100%**

Figures 12 and 13 outline the trip distribution for both the north and south Draft Plans, respectively. **Appendix J** contains the TTS data.

5.3 Trip Assignment

The trip distribution outlined in **Section 5.2** was applied to the site trip generation to calculate the trip assignment for both Draft Plans. Trips were assumed to travel to and from their destination points based on the most convenient route.

Figures 14 and 15 outline the trip assignment for both the north and south Draft Plans, respectively. **Figure 16** outlines the net trip assignment for the full build-out of the proposed development.

6.0 Future Total Conditions

6.1 Basis of Assessment

The site generated traffic volumes illustrated in **Figure 14** were added to the 2023 future background traffic volumes in **Figure 8** to determine 2023 future total traffic volumes. **Figure 17** illustrates the 2023 future total traffic volumes.

The site generated traffic volumes illustrated in **Figure 16** were added to the 2026, 2031 and 2036 future background traffic volumes in **Figures 9-11** to determine 2026, 2031 and 2036 future total traffic volumes. **Figures 18-20** illustrate the 2026, 2031 and 2036 future total traffic volumes.

6.2 Signal Warrant Analysis

A signal warrant analysis was conducted for the unsignalized site accesses to Ninth Line (Street "B", Street "K", and Street "O" opposite Foxwood Avenue) under 2036 future total conditions. The analysis followed the procedures specified in Chapter 4 of the "Ontario Traffic Manual – Book 12", March 2012. Justifications 1 (Minimum Vehicular Volume), 2 (Delay to Cross Traffic), 3 (Combination of Justifications 1 and 2), and 4 (4-Hour Volume) were selected as the most appropriate warrants with which to assess the site connections.

The average hour volume was determined using the following formula from OTM Book 12:

$$AHV = (amPHV + pmPHV) / 4$$

Where;

AHV = average hour volume
PHV = peak hour volume

Despite the existing speed limit of 70 km/h on Ninth Line being considered "free flow" in the signal warrant analysis, an "urban" operating environment was applied to the signal warrant analysis to reflect the future urbanization of Ninth Line and surrounding future developments.

Table 20 outlines the results of the signal warrant analysis.

Table 20: Signal Warrant Analysis Results

Location	Draft Plan	Operating Environment	Horizon Year	Number of lanes on major road	Traffic Signals Warranted?
Street "B" and Ninth Line (new intersection)	1 (North)	Urban	2036 Future Total	Four	No
Street "K" and Ninth Line (new intersection)	2 (South)	Urban	2036 Future Total	Four	No
Street "O" and Ninth Line at Foxwood Avenue	2 (South)	Urban	2036 Future Total	Four	No

The results of the signal warrant analysis indicate that traffic signals are not warranted at the site accesses to Ninth Line (Street "B", Street "K", and Street "O" opposite Foxwood Avenue).

Appendix K contains the signal warrant sheets.

6.3 Auxiliary Left-Turn Lane Analysis – Unsignalized Intersections

Auxiliary left-turn lane warrant analysis was conducted at the proposed site connections to Ninth Line under 2036 future total conditions. The analysis was conducted using the Ministry of Transportation (MTO)'s "Design Supplement for TAC Geometric Design Guide for Canadian Roads – June 2017" for the unsignalized site accesses to Ninth Line (Street "B", Street "K", and Street "O" opposite Foxwood Avenue). As the proposed site accesses will be located on the west side Ninth Line, the northbound left-turn movement was analyzed for left-turn lane requirements.

The design speed of a roadway in an urban environment is typically 10-20 km/h greater than the posted speed limit. The posted speed limit on Ninth Line is 70 km/h. Therefore, a design speed of 90 km/h was assumed for the left-turn lane warrant analysis.

As the future cross-section of Ninth Line is assumed to consist of a centre turn lane or centre median, the warrant for "Left Turn Storage Lanes Four-Lane Divided Highways Unsignalized" was applied to the 2036 horizon year.

An auxiliary left-turn lane warrant analysis was also conducted at the proposed unsignalized Street "B" site connection to Ninth Line under 2023 future total conditions assuming the existing two-lane cross-section on Ninth Line. This analysis was conducted using the warrant for "Left Turn Storage Lanes Two Lane Highways Unsignalized." This analysis was conducted to determine if the North Draft Plan build-out would trigger a northbound left-turn lane on Ninth Line at Street "B" prior to the road widening.

Table 21 outlines the results of the left-turn lane warrant analysis for the unsignalized site connections.

Table 21: Left-Turn Lane Warrant Analysis Results – Unsignalized Intersections

Location	Draft Plan	Movement	Design Speed	Horizon Year	Number of lanes on major road	Left-Turn Lane Storage Requirement?
Street "B" and Ninth Line (new intersection)	1 (North)	Northbound Left-Turn	90 km/h	2036	Four	25 metres
				2023	Two	None
Street "K" and Ninth Line (new intersection)	2 (South)	Northbound Left-Turn	90 km/h	2036	Four	95 metres
Street "O" and Ninth Line at Foxwood Avenue	2 (South)	Northbound Left-Turn	90 km/h	2036	Four	65 metres

The results of the left-turn lane analysis indicate that an auxiliary northbound left-turn lane is warranted at the unsignalized site connections at Ninth Line under 2036 future total conditions for the five-lane cross-section of Ninth Line. The reasoning for the required storage is the southbound opposing volumes during the weekday p.m. peak hour despite the relatively low inbound northbound left-turn volumes.

An auxiliary northbound left-turn lane is not warranted under 2023 future total conditions assuming the existing two-lane cross-section on Ninth Line at Street "B". This is attributed to the low forecasted inbound left-turn volumes during the weekday a.m. and p.m. peak hours consisting of a low percentage of the total approach volumes and thus not triggering the left-turn lane warrant thresholds.

Therefore, the warranted auxiliary northbound left-turn lane under 2036 future total conditions at Street "B" and Ninth Line should be implemented in conjunction with the Ninth Line road widening, and the warranted auxiliary northbound left-turn lanes under 2036 future total conditions at Street "K" and Ninth Line, and Street "O" and Ninth Line opposite Foxwood Avenue should be implemented upon construction of the site connections (assuming that Ninth Line has already been widened prior to the construction of the South Draft Plan site connections).

Appendix L contains the left-turn warrant analysis worksheets.

The northbound left-turn lanes are also required to provide a deceleration lane and taper.

A taper length range of approximately 85-95 metres must be provided for the northbound left-turn lanes per the TAC GDGCR. This taper length range is based on an assumed design speed of 90 km/h on River Road west, and the corresponding minimum taper ratio of 27:1 (i.e. 27 metres of taper length must be provided for every 1.0 metre of lane width) per Table 9.17.1. The range of 85-95 metres is based on an auxiliary left-turn lane width ranging from 3.0 metres to 3.5 metres (which is equivalent to the width of the through lanes on Ninth Line).

Per Table 2.5.2 of the TAC GDGCR, a design deceleration length of 95 metres must be provided for the northbound left-turn lanes for level roadways.

The cross-sectional details of the future Ninth Line widening is unknown at this time; however, it is assumed that a centre turn lane or centre median will be provided. If the future cross-section of Ninth Line includes a centre turn lane, the northbound left-turn storage requirements for the unsignalized site connections can be accommodated by the centre turn lane. If the future cross-section of Ninth

Line includes a centre median, then auxiliary northbound left-turn lanes will have to be constructed at the site accesses and be integrated with the centre median of Ninth Line.

The configuration of the northbound left-turn lanes should be established at a later stage when details of the future Ninth Line cross-section are confirmed.

Appendix M contains conceptual designs for the recommended auxiliary turn lanes on the future five-lane cross-section of Ninth Line. The conceptual designs illustrate how the auxiliary left-turn lanes could be incorporated into the future centre median or centre turn lane.

6.4 Auxiliary Left-Turn Lane Analysis – Signalized Intersections

Auxiliary northbound left-turn lane requirements were analyzed at the proposed site connections to the signalized intersections on Ninth Line at Doug Leavens Boulevard and Osprey Boulevard under 2036 future total conditions.

Analysis of 95th percentile queue lengths for the northbound left-turn movement at the aforementioned intersections under 2036 future total conditions indicates that a northbound left-turn lane with a designated storage length of 15 metres should be sufficient to accommodate left-turn lane requirements.

As detailed in Section 6.3, the northbound left-turn lanes must provide a taper length between 85-95 metres and a deceleration length of 95 metres. The configuration of the northbound left-turn lanes should be established at a later stage when details of the future Ninth Line cross-section are confirmed.

Auxiliary northbound left-turn lane requirements were analyzed at the proposed site connections to the signalized intersection on Ninth Line at Doug Leavens Boulevard under 2023 future total conditions assuming the existing two-lane cross-section on Ninth Line. This analysis was conducted to determine northbound left-turn lane requirements on Ninth Line at Doug Leavens Boulevard prior to the road widening. It was determined that a northbound left-turn lane with a designated storage length of 15 metres should be sufficient to accommodate left-turn lane requirements, which can be provided by repurposing the existing runout lane at the south approach of Ninth Line at Doug Leavens Boulevard via pavement marking revisions. Therefore, no road widenings are required under 2023 future total conditions in the interim scenario.

Appendix M contains conceptual designs for the recommended auxiliary turn lanes on the future five-lane cross-section of Ninth Line. The conceptual designs illustrate how the auxiliary left-turn lanes could be incorporated into the future centre median or centre turn lane.

6.5 Right-Turn Lane Warrant Analysis

Auxiliary right-turn lane warrant analysis was conducted at the proposed site connections to Ninth Line under 2036 future total conditions. As the proposed site accesses will be located on the west side Ninth Line, the southbound right-turn movement was analyzed for right-turn lane requirements.

Per the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GFGCR), June 2017, a right-turn auxiliary lane on an urban or rural road should be implemented at unsignalized intersections when the volume of decelerating or accelerating vehicles compared with the through traffic volume causes undue hazard.

It is a common convention in traffic engineering that an auxiliary right-turn lane should be provided where right-turn volumes exceed 60 vehicles per hour. The forecasted southbound right-turn volumes at the site connections to Ninth Line under 2036 future total conditions are below 60 vehicles per hour, with the exception of the Street "O" connection to Ninth Line at the existing Foxwood Avenue intersection (forecasted to be 120 vehicles per hour during the weekday p.m. peak hour). The high inbound right-turn volumes at this location is attributed to the location of the high-density condominium apartments blocks within the site.

The forecasted southbound through volume on Ninth Line at this intersection is 1459 vehicles per hour during the weekday p.m. peak period. Additionally, the design speed of Ninth Line is assumed to be 90 km/h, which is reflective of high operating speeds. Therefore, an auxiliary southbound right-turn lane should be provided on Ninth Line at the intersection of Street "O" and Foxwood Avenue, and be implemented upon construction of the Street "O" site connection to Foxwood Avenue in the 2026 horizon year.

Right-turn lane storage lengths for unsignalized intersections is calculated using equation 9.14.1 from the GDGCR as outlined below:

$$S = (N * L) / 30$$

Where;
S = storage length (m)
N = design volume of turning vehicles (veh/hr)
L = length (m) occupied by each design vehicle

As the primary vehicle type for the site accesses is assumed to be primarily passenger cars, a design length of 7.5 metres (a standard passenger car length of 5.6 metres per TAC plus vehicle headway) was applied to the formula above. The resultant southbound right-turn lane storage requirement on Ninth Line at Street "O" and Foxwood Avenue is 30 metres.

The southbound right-turn lane is also required to provide a deceleration lane and taper. Per Chapter 10 of the TAC GDGCR for a design speed of 90 km/h, the auxiliary southbound right-turn lane must provide a taper of 80 metres and a deceleration lane ranging from 150-195 metres to allow vehicles to decelerate from operating speed to a stop condition.

The configuration of the southbound right-turn lane should be established at a later stage when details of the future Ninth Line cross-section are confirmed.

Appendix M contains conceptual designs for the recommended auxiliary turn lanes on the future five-lane cross-section of Ninth Line, including the auxiliary southbound right-turn lane at Street "O" opposite Foxwood Avenue.

6.6 Site Access Configuration

The proposed unsignalized site connections to Ninth Line (Street "B", Street "K", and Street "O" opposite Foxwood Avenue) should consist of one outbound left-turn lane and one outbound through/right-turn lane). The site connections should consist of a three-lane cross-section to allow for two outbound lanes and one inbound lane.

The proposed site connections to the existing signalized intersections of Doug Leavens Boulevard, Foxwood Avenue and Osprey Boulevard should mirror the cross-section of the existing roadways. For

example, the east approach at Ninth Line and Doug Leavens Boulevard currently consists of an exclusive left-turn and right-turn curb lane. The site connection at the west approach of the intersection should also provide an exclusive left-turn lane aligned with the east approach, designating the curb lane as a shared through/right-turn lane. The site connections should consist of a three-lane cross-section to allow for two outbound lanes and one inbound lane.

The auxiliary turn lane conceptual drawings provided **in Appendix M** also illustrate the recommended configurations of the proposed site connections to Ninth Line.

6.7 Intersection Operations

The future total intersection operations at the study intersections were analyzed using the 2023, 2026, 2031 and 2036 future total traffic volumes illustrated in **Figures 17-20**, and optimized signal timings. Detailed capacity analysis worksheets are included in **Appendix F**.

2036 future total conditions were modelled under two scenarios: with and without the additional background improvements (Derry Road West and Britannia Road West widening within the City of Mississauga).

Tables 22-25 outline the 2023, 2026, 2031 and 2036 future total traffic operations. **Table 26** outlines the 2036 future total traffic operations with additional background improvements (Derry Road West and Britannia Road West widening within the City of Mississauga).

Table 22: 2023 Future Total Traffic Operations

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length [3]
Derry Road West and 407 North Ramp Terminal	Signal	A.M.	A	8.6 s	0.73 (NBR)	None
		P.M.	A	6.8 s	0.65 (NBR)	None
Derry Road West and 407 South Ramp Terminal	Signal	A.M.	A	4.8 s	0.63 (EBT)	None
		P.M.	C	26.8 s	0.88 (SBR)	147.1 m > 120 m (SBR)
Derry Road West and Ninth Line	Signal	A.M.	D	40.1 s	0.80 (SBT)	83.8 m > 75 m (EBL)
		P.M.	D	43.8 s	0.89 (SBT)	None
Ninth Line and Doug Leavens Boulevard / Street "F" Site Access	Signal	A.M.	B	13.3 s	0.65 (WBL)	None
		P.M.	B	11.0 s	0.56 (WBL)	None
Ninth Line and Foxwood Avenue	Stop (Minor)	A.M.	C	15.1 s	0.25 (WBLR)	None
		P.M.	C	15.4 s	0.11 (WBL) 0.11 (WBR)	None
Ninth Line and Osprey Boulevard	Signal	A.M.	A	8.6 s	0.57 (WBL)	38.8 m > 15 m (WBL)
		P.M.	A	6.4 s	0.43 (WBL)	25.2 m > 15 m (WBL)
Britannia Road West and Ninth Line	Signal	A.M.	E	62.4 s	0.92 (SBT)	None
		P.M.	D	44.3 s	0.85 (NBT) 0.85 (SBT)	None
Britannia Road West and 407 North Ramp Terminal	Signal	A.M.	B	12.7 s	0.79 (NBR)	74.0 m > 70 m (NBR)
		P.M.	A	5.7 s	0.58 (NBR)	None
Britannia Road West and 407 South Ramp Terminal	Signal	A.M.	C	25.4 s	0.88 (SBL)	None
		P.M.	C	21.7 s	0.85 (SBL)	None
Winston Churchill Boulevard and 401 East Ramp Terminal	Signal	A.M.	B	14.6 s	0.64 (EBL)	None
		P.M.	B	15.7 s	0.70 (EBL)	None
Winston Churchill Boulevard and 401 West Ramp Terminal	Signal	A.M.	B	13.7 s	0.68 (WBL)	None
		P.M.	C	26.5 s	0.78 (WBL)	None
Ninth Line and Street "B" Site Access	Stop (Minor)	A.M.	B	14.2 s	0.06 (EBL)	None
		P.M.	C	19.7 s	0.05 (EBL)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection where the maximum v/c ratio does not exceed the critical thresholds. All v/c ratios that exceed the critical thresholds outlined in Section 3.7 are outlined and highlighted.

Note 3: 95th percentile queue lengths which exceed the designated storage length of the turn lane but can be accommodated by a centre turn lane were not documented in this table.

Table 23: 2026 Future Total Traffic Operations

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length [3]
Derry Road West and 407 North Ramp Terminal	Signal	A.M.	B	10.1 s	0.75 (NBR)	None
		P.M.	A	7.7 s	0.69 (NBR)	None
Derry Road West and 407 South Ramp Terminal	Signal	A.M.	A	6.1 s	0.69 (EBT)	None
		P.M.	C	29.9 s	0.90 (SBR)	162.2 m > 120 m (SBR)
Derry Road West and Ninth Line	Signal	A.M.	E	56.5 s	0.92 (NBL)	109.8 m > 75 m (EBL)
		P.M.	E	56.9 s	0.92 (WBTR) 0.95 (SBT)	83.4 m > 75 m (EBL) 77.4 m > 70 m (SBR)
Ninth Line and Doug Leavens Boulevard / Street "F" Site Access	Signal	A.M.	B	16.8 s	0.74 (EBL)	None
		P.M.	B	14.2 s	0.64 (SBT)	None
Ninth Line and Foxwood Avenue / Street "O" Site Access	Stop (Minor)	A.M.	C	17.4 s (WBLTR)	0.23 (WBL)	None
		P.M.	C	24.7 s (EBLTR)	0.15 (EBL)	None
Ninth Line and Osprey Boulevard / Street "A" Site Access	Signal	A.M.	B	12.2 s	0.64 (WBL)	40.7 m > 15 m (WBL)
		P.M.	A	9.9 s	0.53 (SBT)	26.8 m > 15 m (WBL)
Britannia Road West and Ninth Line	Signal	A.M.	E	68.4 s	1.00 (EBTR) 0.98 (SBT)	None
		P.M.	D	50.7 s	0.91 (NBT)	69.5 m > 60 m (EBL)
Britannia Road West and 407 North Ramp Terminal	Signal	A.M.	B	14.6 s	0.81 (NBR)	85.7 m > 70 m (NBR)
		P.M.	A	6.1 s	0.64 (NBR)	None
Britannia Road West and 407 South Ramp Terminal	Signal	A.M.	C	26.1 s	0.88 (SBL)	None
		P.M.	C	22.5 s	0.86 (SBL)	None
Winston Churchill Boulevard and 401 East Ramp Terminal	Signal	A.M.	B	15.6 s	0.65 (EBL)	None
		P.M.	B	16.6 s	0.71 (EBL)	None
Winston Churchill Boulevard and 401 West Ramp Terminal	Signal	A.M.	B	15.2 s	0.70 (WBL)	None
		P.M.	C	29.7 s	0.81 (WBL)	None
Ninth Line and Street "B" Site Access	Stop (Minor)	A.M.	C	15.9 s	0.07 (EBL)	None
		P.M.	D	25.8 s	0.08 (EBL)	None
Ninth Line and Street "K" Site Access	Stop (Minor)	A.M.	B	16.7 s	0.14 (EBL)	None
		P.M.	D	24.6 s	0.15 (EBL)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection where the maximum v/c ratio does not exceed the critical thresholds. All v/c ratios that exceed the critical thresholds outlined in Section 3.7 are outlined and highlighted.

Note 3: 95th percentile queue lengths which exceed the designated storage length of the turn lane but can be accommodated by a centre turn lane were not documented in this table.

Table 24: 2031 Future Total Traffic Operations

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length [3]
Derry Road West and 407 North Ramp Terminal	Signal	A.M.	B	12.4 s	0.77 (NBR)	None
		P.M.	B	10.6 s	0.77 (NBR)	None
Derry Road West and 407 South Ramp Terminal	Signal	A.M.	A	7.0 s	0.76 (EBT)	None
		P.M.	D	38.9 s	0.89 (WBT) 0.93 (SBR)	198.8 m > 120 m (SBR)
Derry Road West and Ninth Line	Signal	A.M.	E	73.8 s	0.98 (EBTR) 0.97 (SBT)	172.1 m > 75 m (EBL)
		P.M.	E	74.2 s	1.02 (WBL) 1.05 (WBTR) 1.09 (NBL) 1.01 (NBT) 1.02 (SBT)	90.9 m > 75 m (EBL) 79.1 m > 70 m (SBR)
Ninth Line and Doug Leavens Boulevard / Street "F" Site Access	Signal	A.M.	B	17.4 s	0.75 (EBL)	None
		P.M.	B	15.0 s	0.70 (SBTR)	None
Ninth Line and Foxwood Avenue / Street "O" Site Access	Stop (Minor)	A.M.	C	18.9 s (WBLTR)	0.27 (WBL)	None
		P.M.	D	29.4 s (EBLTR)	0.19 (EBL)	None
Ninth Line and Osprey Boulevard / Street "A" Site Access	Signal	A.M.	B	12.7 s	0.65 (WBL)	42.2 m > 15 m (WBL)
		P.M.	B	10.5 s	0.58 (SBT)	27.8 m > 15 m (WBL)
Britannia Road West and Ninth Line	Signal	A.M.	E	71.4 s	1.10 (EBTR) 1.04 (SBT)	None
		P.M.	E	61.9 s	0.98 (NBT) 0.91 (SBT)	113.4 m > 60 m (EBL)
Britannia Road West and 407 North Ramp Terminal	Signal	A.M.	B	17.6 s	0.83 (NBR)	100.2 m > 70 m (NBR)
		P.M.	A	7.9 s	0.73 (NBR)	None
Britannia Road West and 407 South Ramp Terminal	Signal	A.M.	C	27.5 s	0.89 (SBL)	None
		P.M.	C	24.6 s	0.87 (SBL)	None
Winston Churchill Boulevard and 401 East Ramp Terminal	Signal	A.M.	B	17.2 s	0.67 (EBL)	None
		P.M.	B	18.7 s	0.73 (EBL)	None
Winston Churchill Boulevard and 401 West Ramp Terminal	Signal	A.M.	B	17.2 s	0.72 (WBL)	None
		P.M.	C	34.2 s	0.86 (WBL)	None
Ninth Line and Street "B" Site Access	Stop (Minor)	A.M.	C	16.6 s	0.07 (EBL)	None
		P.M.	D	29.6 s	0.09 (EBL)	None
Ninth Line and Street "K" Site Access	Stop (Minor)	A.M.	C	17.6 s	0.16 (EBL)	None
		P.M.	D	28.3 s	0.17 (EBL)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection where the maximum v/c ratio does not exceed the critical thresholds. All v/c ratios that exceed the critical thresholds outlined in Section 3.7 are outlined and highlighted.

Note 3: 95th percentile queue lengths which exceed the designated storage length of the turn lane but can be accommodated by a centre turn lane were not documented in this table.

Table 25: 2036 Future Total Traffic Operations (Without Additional Improvements)

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length [3]
Derry Road West and 407 North Ramp Terminal	Signal	A.M.	B	15.2 s	0.80 (NBR)	None
		P.M.	B	14.6 s	0.82 (NBR)	None
Derry Road West and 407 South Ramp Terminal	Signal	A.M.	A	8.6 s	0.83 (EBT)	None
		P.M.	E	61.7 s	0.97 (WBT) 0.98 (SBR)	237.5 m > 120 m (SBR)
Derry Road West and Ninth Line	Signal	A.M.	E	79.8 s	1.04 (EBTR) 1.02 (WBL) 0.91 (WBTR) 1.07 (NBL) 1.02 (SBT)	191.3 m > 75 m (EBL) 119.8 m > 110 m (NBR)
		P.M.	F	85.7 s	1.05 (EBL) 0.97 (EBTR) 1.10 (WBTR) 1.03 (NBL) 0.94 (NBT) 1.02 (SBL) 1.07 (SBT)	116.8 m > 75 m (EBL) 98.8 m > 70 m (SBR)
Ninth Line and Doug Leavens Boulevard / Street "F" Site Access	Signal	A.M.	B	17.8 s	0.76 (EBL)	None
		P.M.	B	15.4 s	0.72 (SBT)	None
Ninth Line and Foxwood Avenue / Street "O" Site Access	Stop (Minor)	A.M.	C	19.6 s (WBLTR)	0.29 (WBL)	None
		P.M.	D	31.3 s (EBLTR)	0.20 (EBL)	None
Ninth Line and Osprey Boulevard / Street "A" Site Access	Signal	A.M.	B	13.0 s	0.66 (WBL)	43.2 m > 15 m (WBL)
		P.M.	B	10.7 s	0.60 (SBT)	28.7 m > 15 m (WBL)
Britannia Road West and Ninth Line	Signal	A.M.	F	86.5 s	1.16 (EBTR) 1.08 (NBL) 1.14 (SBT)	None
		P.M.	E	70.6 s	0.91 (EBTR) 0.97 (WBT) 0.99 (NBT) 1.02 (SBL) 0.94 (SBT)	123.5 m > 60 m (EBL)
Britannia Road West and 407 North Ramp Terminal	Signal	A.M.	C	21.4 s	0.86 (NBR)	115.7 m > 70 m (NBR)
		P.M.	A	9.7 s	0.78 (NBR)	None
Britannia Road West and 407 South Ramp Terminal	Signal	A.M.	C	29.1 s	0.89 (SBL)	None
		P.M.	C	26.9 s	0.88 (SBL)	None
Winston Churchill Boulevard and 401 East Ramp Terminal	Signal	A.M.	B	19.0 s	0.68 (EBL) 0.68 (EBR)	None
		P.M.	C	21.4 s	0.74 (EBL)	None

Winston Churchill Boulevard and 401 West Ramp Terminal	Signal	A.M.	B	19.6 s	0.73 (WBL) 0.73 (WBR)	None
		P.M.	D	40.9 s	0.93 (WBL) 0.92 (NBT)	None
Ninth Line and Street "B" Site Access	Stop (Minor)	A.M.	C	17.0 s	0.07 (EBL)	None
		P.M.	D	31.0 s	0.10 (EBL)	None
Ninth Line and Street "K" Site Access	Stop (Minor)	A.M.	C	18.0 s	0.16 (EBL)	None
		P.M.	D	29.9 s	0.18 (EBL)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection where the maximum v/c ratio does not exceed the critical thresholds. All v/c ratios that exceed the critical thresholds outlined in Section 3.7 are outlined and highlighted.

Note 3: 95th percentile queue lengths which exceed the designated storage length of the turn lane but can be accommodated by a centre turn lane were not documented in this table.

The following intersections are expected to operate near or at capacity under 2036 future total conditions:

- Derry Road West and Highway 407 South Ramp Terminal during the weekday p.m. peak hour;
- Derry Road West and Ninth Line during the weekday a.m. and p.m. peak hours; and
- Britannia Road West and Ninth Line during the weekday a.m. and p.m. peak hours.

These intersections, as well as the other Highway 407 ramp terminals on Derry Road West and Britannia Road West, are expected to operate with movements exceeding critical volume-to-capacity thresholds, as well as 95th percentile queue lengths for turning movements exceeding their designated storage length. These operations are consistent with 2036 future background conditions, and are attributed to the high volumes forecasted on the Derry Road West and Britannia Road West corridors under 2036 future total conditions and with no background roadway improvements to the aforementioned corridors within the City of Mississauga.

It is noted that while the intersection of Derry Road West and Ninth Line is expected to change from LOS "E" to "F" under future total conditions during the weekday p.m. peak hour, and the intersection of Britannia Road West and Ninth Line is expected to change from LOS "E" to "F" under future total conditions during the weekday a.m. peak hour; the maximum forecasted increase in intersection control delay at these intersections attributed to site traffic is 10.3 seconds (i.e. a maximum increase of approximately 14%). These impacts are considered relatively minor given the already congested conditions at the aforementioned intersections under 2036 future background conditions (in which even a small increase in traffic can exponentially worsen traffic operations).

The impacts of site generated traffic at the Highway 401 and 407 ramp terminals are minimal, with a maximum forecasted increase in intersection control delay of 1.5 seconds compared to 2036 future background conditions. The forecasted 95th percentile queue lengths for the off-ramp approaches at the Highway 401 and 407 ramp terminals will not extend to the freeway segments of Highway 401 and 407 as the off-ramp lengths are in the order of 500 metres or more.

The forecasted 95th percentile queue lengths for most of the turning movements at the intersections of Derry Road West and Ninth Line, and Britannia Road West and Ninth Line are expected to be accommodated by the taper lengths and centre turn-lane extensions from these turn lanes, and thus not interfere with through traffic, as consistent with future background conditions.

The signalized intersections of Ninth Line and Doug Leavens Boulevard, and Ninth Line and Osprey Boulevard are expected to operate at LOS "B" under 2036 future total conditions with minor control delays and no movements operating with critical volume-to-capacity ratios. These operations indicate that the proposed site access connections to these existing intersections are not expected to significantly impact traffic operations.

The unsignalized site connections to Ninth Line are expected to operate at LOS "D" or better under 2036 future total conditions with minor control delays and no movements operating with critical volume-to-capacity ratios. These operations are considered acceptable for stop-controlled accesses to major roadways with heavy traffic volumes during the weekday a.m. and p.m. peak hours.

The operations described above indicate that the widening of Derry Road West and Britannia Road West are required within the City of Mississauga as a background roadway improvement to improve traffic operations, as recommended in the MMM study.

Table 26: 2036 Future Total Traffic Operations (With Additional Improvements)

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length [3]
Derry Road West and 407 North Ramp Terminal	Signal	A.M.	B	11.6 s	0.78 (NBR)	None
		P.M.	B	10.9 s	0.80 (NBR)	None
Derry Road West and 407 South Ramp Terminal	Signal	A.M.	A	4.9 s	0.58 (EBT)	None
		P.M.	C	29.4 s	0.90 (SBR)	185.1 m > 120 m (SBR)
Derry Road West and Ninth Line	Signal	A.M.	D	45.5 s	0.90 (NBL)	119.7 m > 75 m (EBL)
		P.M.	D	52.9 s	1.06 (SBT)	108.5 m > 75 m (EBL) 85.1 m > 70 m (SBR)
Britannia Road West and Ninth Line	Signal	A.M.	D	46.7 s	1.03 (SBT)	104.6 m > 50 m (NBL)
		P.M.	D	51.6 s	0.93 (NBT)	110.8 m > 60 m (EBL)
Britannia Road West and 407 North Ramp Terminal	Signal	A.M.	B	16.2 s	0.83 (NBR)	107.6 m > 70 m (NBR)
		P.M.	A	9.2 s	0.77 (NBR)	None
Britannia Road West and 407 South Ramp Terminal	Signal	A.M.	C	23.7 s	0.88 (SBL)	None
		P.M.	C	21.9 s	0.87 (SBL)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection where the maximum v/c ratio does not exceed the critical thresholds. All v/c ratios that exceed the critical thresholds outlined in Section 3.7 are outlined and highlighted.

Note 3: 95th percentile queue lengths which exceed the designated storage length of the turn lane but can be accommodated by a centre turn lane were not documented in this table.

These operations indicate that the Derry Road West and Britannia Road West corridors are expected to operate at LOS "D" or better under 2036 future total conditions with the future background widening of the aforementioned corridors within the City of Mississauga. This indicates that operations are expected to improve with the widening of the corridors and the implementation of auxiliary right-turn lanes. The maximum forecasted increase in intersection control delay at these intersections attributed to site traffic is 5.4 seconds (i.e. a maximum increase of approximately 13%).

It should be noted that the operations outlined above can still be considered conservative, as the background traffic associated with the Emerging Land Use Scenario Zone "5" that overlaps the subject property was not removed from the Derry Road West and Britannia Road West intersections.

Overall, the addition of site generated traffic to the boundary road network is not expected to significantly impact traffic operations. Therefore, the proposed development is supportable from a traffic operations perspective, with the implementation of the noted recommendations.

7.0 Safety Review

Per the City of Mississauga's guidelines, a safety review of the proposed development is required. The purpose of the safety review is to identify any safety deficiencies for auto drivers, pedestrians and cyclists for the proposed development, and to identify how the development proposes to maximize safety for all road users.

7.1 Access Spacing

The development proposes five site connections on Ninth Line between Britannia Road West and Derry Road West. The proposed site connections are evenly spaced out at the site frontage at a minimum of 280-300 metre spacing. This access spacing will reduce the potential for weaving or merging conflicts associated with traffic entering and exiting at the site accesses.

It is further noted that three of the five proposed site connections will align with existing roadways on Ninth Line: Doug Leavens Boulevard, Foxwood Avenue, and Osprey Boulevard. By locating the proposed site connections to existing intersections, the potential for vehicle-vehicle collisions that would arise from an offset access alignment is reduced.

The Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR), June 2017, suggests a minimum intersection spacing of 200 metres along minor arterial roadways. Thus, the proposed site connection spacing is greater than the minimum suggested intersection spacing per the TAC GDGCR.

7.2 Sight Distance Analysis

The available sightlines at the proposed Ninth Line connections were measured and compared to the standards set out in the TAC GDGCR. Sight distance was measured from the proposed site accesses using the following assumptions:

- A standard driver eye height of 1.08 metres for a passenger car, and
- A 4.4 metre setback from the approximate extension of the outer curb to represent a vehicle waiting to exit the site.

Intersection sight distance is calculated using equation 9.9.1 from the GDGCR as outlined below:

$$ISD = 0.278 * V\ major * tg$$

Where;
ISD = Intersection Sight Distance
V major = design speed of roadway (km/h)
tg = assumed time gap for vehicles to turn from stop onto roadway (s)

The design speed of a roadway in an urban environment is typically 10-20 km/h greater than the posted speed limit. The posted speed limit on Ninth Line is 70 km/h. It is unknown if the speed limit will decrease with the widening of Ninth Line. Therefore, a conservative design speed of 90 km/h was assumed for the sight distance analysis.

Table 27 outlines the sight distance analysis for the proposed Ninth Line connections.

Table 27: Sight Distance Analysis

Feature	Street "B" and "K"	Street "F"	Street "O"	Street "A"
Access Type	Full-Moves	Full-Moves (opposite Doug Leavens Boulevard)	Full-Moves (opposite Foxwood Avenue)	Full-Moves (opposite Osprey Boulevard)
Intersection Control	Stop (Minor Street)	Signals	Stop (Minor Street)	Signals
Posted Speed Limit of Roadway	70 km/h	70 km/h	70 km/h	70 km/h
Assumed Design Speed	90 km/h	90 km/h	90 km/h	90 km/h
Base Time Gap	7.5 s [1]	7.5 s [1]	7.5 s [1]	7.5 s [1]
Additional Time Gap	1.0 (time to cross additional through lane and centre turn lane)	1.0 (time to cross additional through lane and centre turn lane)	1.0 (time to cross additional through lane and centre turn lane)	1.0 (time to cross additional through lane and centre turn lane)
Grade of Roadway	Less than 3%	Less than 3%	Less than 3%	Less than 3%
Horizontal Alignment of Roadway	Straight	Straight	Straight	Straight
Sight Distance Required	215 m [2]	215 m [2]	215 m [2]	215 m [2]
Measured Sight Distance	> 400 m (to north and south)	> 400 m (to north and south)	> 400 m (to north and south)	> 400 m (to north and south)
Minimum Sight Distance Satisfied?	Yes	Yes	Yes	Yes

Note 1: Time gap for left-turning vehicles from a stop onto a two-lane highway with no median and with a grade less than 3%. Value from Table 9.9.3 in the GDGCR.
Note 2: Sight distance values calculated from Intersection Sight Distance equation 9.9.1 in the GDGCR.

As outlined in **Table 7**, minimum sight distance requirements are satisfied at the proposed Ninth Line connections.

Therefore, the proposed development is supportable from a sight distance perspective.

7.3 Roadway Alignment

The horizontal alignment of the boundary road network in the study area is relatively straight, and the vertical alignment of the boundary road network is relatively flat. Therefore, roadway alignment is not considered to be a traffic safety concern for the proposed development.

7.4 Clear Throat Length

Minimum recommended clear throat lengths were analyzed for the site connections to Ninth Line.

Per the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR), Table 8.9.3 "Suggested Minimum Clear Throat Lengths for Major Driveways" indicates that a minimum clear throat length for "apartment" developments exceeding 200 units of 40 metres from arterial roads.

The minimum measured clear throat lengths at the site connections is approximately 45 metres which exceeds the recommended minimum of 40 metres from arterial roads.

Therefore, the available clear throat lengths for the internal roadways connecting to Ninth Line satisfy TAC minimum recommended clear throat lengths.

8.0 Conclusions & Recommendations

8.1 Conclusions

The analysis contained within this report has resulted in the following key findings:

- Analysis of 2019 existing traffic operations indicates that the boundary road network is currently operating at LOS "D" or better during the weekday a.m. and p.m. peak hours, with the exception of the intersection of Britannia Road West and Ninth Line which is currently operating at LOS "E" during the weekday a.m. peak hour.

- These operations are attributed to the eastbound through/right-turn and southbound through/right-turn movements operating near capacity. The eastbound and southbound through movements experience heavy volumes during the weekday a.m. peak hour. Additionally, the northbound through/right-turn movement is operating near capacity during the weekday p.m. peak hour. These operations are not uncommon at urban signalized arterial intersections.

- The off-ramp approaches at the Highway 407 West Terminal at Derry Road West, and Highway 401 West Ramp Terminal at Winston Churchill Boulevard are operating near capacity during the p.m. peak hour. However, queue lengths at the off-ramp approaches of the ramp terminals do not extend to the freeway segments of Highway 407 nor Highway 401 and are thus contained within the off-ramp segments.

- Overall, the boundary road network is currently operating at acceptable levels of service.

- Analysis of 2036 future background traffic operations indicates that the following intersections are expected to operate near or at capacity under 2036 future background conditions:

    - Derry Road West and Highway 407 South Ramp Terminal during the weekday p.m. peak hour;
    - Derry Road West and Ninth Line during the weekday a.m. and p.m. peak hours; and
    - Britannia Road West and Ninth Line during the weekday a.m. and p.m. peak hours.

- These intersections, as well as the other Highway 407 ramp terminals on Derry Road West and Britannia Road West, are expected to operate with movements exceeding critical volume-to-capacity thresholds, as well as 95th percentile queue lengths for turning movements exceeding their designated storage length. These operations are attributed to the high volumes forecasted on the Derry Road West and Britannia Road West corridors under 2036 future background conditions and with no roadway improvements to the aforementioned corridors within the City of Mississauga.

- The widening of Derry Road West and Britannia Road West in the study area is expected to improve traffic operations under 2036 future background conditions so that all intersections are operating at overall acceptable levels of service.

- The full build-out of the proposed development is expected to generate a total of 724 and 855 total two-way trips during the weekday a.m. and p.m. peak hours, respectively.

- Analysis of external roadway improvements to support the North Draft Plan build-out for 2023 assuming the existing two-lane cross-section on Ninth Line indicates that an auxiliary northbound left-turn lane is not warranted at the Street "B" site connection to Ninth Line, and that an auxiliary northbound left-turn lane with a minimum of 15 metres of storage is required at the signalized site connection on Ninth Line at Doug Leavens Boulevard.

- The existing runout lane at the south approach of Ninth Line and Doug Leavens Boulevard can be repurposed via pavement marking revisions to function as a northbound left-turn lane in the interim condition prior to the widening of Ninth Line.

- Therefore, no road widenings are required under 2023 future total conditions in the interim scenario.

- Analysis of external roadway improvements under 2036 future total conditions has resulted in the following key findings:

    - Traffic signals are **not** warranted at the proposed unsignalized site connections to Ninth Line;
    - An auxiliary northbound left-turn lane is required at the Street "B" site connection to Ninth Line with a storage length of 25 metres, deceleration length of 95 metres, and taper between 85-95 metres (North Draft Plan build-out);
    - An auxiliary northbound left-turn lane is required at the Street "K" site connection to Ninth Line with a storage length of 95 metres, deceleration length of 95 metres, and taper between 85-95 metres (full build-out);
    - An auxiliary northbound left-turn lane is required at the Street "O" site connection to Ninth Line at Foxwood Avenue with a storage length of 65 metres, deceleration length of 95 metres, and taper between 85-95 metres (full build-out);

- An auxiliary northbound left-turn lane is required at the signalized connection on Ninth Line at Doug Leavens Boulevard with a storage length of 15 metres, deceleration length of 95 metres, and taper between 85-95 metres (North Draft Plan build-out);
- An auxiliary northbound left-turn lane is required at the signalized connection on Ninth Line at Osprey Boulevard with a storage length of 15 metres, deceleration length of 95 metres, and taper between 85-95 metres (full build-out); and
- An auxiliary southbound right-turn lane should be provided on Ninth Line at the Street "O" site connection opposite Foxwood Avenue with a storage length of 30 metres, deceleration length between 150-195 metres, and taper of 80 metres (full build-out).

- The configuration of the required auxiliary turn lanes on Ninth Line should be established at a later stage when details of the future Ninth Line cross-section and centre median are confirmed.

- The proposed site connections to Ninth Line should consist of one outbound left-turn lane and one outbound right-turn lane, with the right-turn lane at the site accesses opposite Doug Leavens Boulevard, Foxwood Avenue and Osprey Boulevard operating as a shared through/right-turn lane.

- Analysis of 2036 future total traffic operations indicates that the following intersections are expected to operate near or at capacity under 2036 future total conditions:

  - Derry Road West and Highway 407 South Ramp Terminal during the weekday p.m. peak hour;
  - Derry Road West and Ninth Line during the weekday a.m. and p.m. peak hours; and
  - Britannia Road West and Ninth Line during the weekday a.m. and p.m. peak hours.

- These intersections, as well as the other Highway 407 ramp terminals on Derry Road West and Britannia Road West, are expected to operate with movements exceeding critical volume-to-capacity thresholds, as well as 95th percentile queue lengths for turning movements exceeding their designated storage length. These operations are consistent with 2036 future background conditions, and are attributed to the high volumes forecasted on the Derry Road West and Britannia Road West corridors under 2036 future total conditions and with no background roadway improvements to the aforementioned corridors within the City of Mississauga.

- The widening of Derry Road West and Britannia Road West in the study area is expected to improve traffic operations under 2036 future background conditions so that all intersections are operating at overall acceptable levels of service.

- These operations are consistent with future background operations, indicating that the addition of site traffic to the boundary road network is not expected to significantly impact traffic operations.

- Therefore, the proposed development is supportable from a traffic operations perspective, with the implementation of the noted recommendations.

- Analysis of safety components associated with the proposed development indicate the following:

- The proposed site connection minimum spacing of 280-300 metres on Ninth Line at the site frontage will reduce the potential for weaving or merging conflicts associated with traffic entering and exiting at the site accesses;
- The proposed site connection spacing exceeds recommended minimum intersection spacing guidelines set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR), June 2017;
- The available sight distance at the proposed site connections exceeds the minimum sight distance requirements set out in the TAC GDGCR;
- Roadway alignment of the boundary road network is not considered to be a traffic safety concern for the proposed development; and
- The available clear throat lengths for the internal roadways connecting to Ninth Line exceed the minimum recommended clear throat lengths set out in the TAC GDGCR.

8.2 Recommendations

The conclusions arising from this analysis have resulted in the following development-triggered recommendations to support the proposed development as outlined in **Table 28.**

Table 28: Recommended External Roadway Improvements

Location	Draft Plan	Improvement	Estimated Dimensions	Timing of Implementation
Ninth Line and Street "B"	North Draft Plan – 2023	Auxiliary northbound left-turn lane	25 metres storage 85-95 metres taper 95 metres deceleration	Ninth Line Road Widening
Ninth Line and Street "F" opposite Doug Leavens Boulevard	North Draft Plan – 2023	Auxiliary northbound left-turn lane	15 metres storage 85-95 metres taper 95 metres deceleration	Ninth Line Road Widening
Ninth Line and Street "K"	South Draft Plan – 2026	Auxiliary northbound left-turn lane	95 metres storage 85-95 metres taper 95 metres deceleration	Construction of Site Connection
Ninth Line and Street "O" opposite Foxwood Avenue	South Draft Plan – 2026	Auxiliary northbound left-turn lane	65 metres storage 85-95 metres taper 95 metres deceleration	Construction of Site Connection
		Auxiliary southbound right-turn lane	30 metres storage 80 metres taper 150-195 metres deceleration	
Ninth Line and Street "A" opposite Osprey Boulevard	South Draft Plan – 2026	Auxiliary northbound left-turn lane	15 metres storage 85-95 metres taper 95 metres deceleration	Construction of Site Connection

In addition to the external roadway improvements outlined above, the site connections to Ninth Line should be constructed so that one outbound left-turn lane and one outbound right-turn lane is provided, with the right-turn lane at the site accesses opposite Doug Leavens Boulevard, Foxwood Avenue and Osprey Boulevard operating as a shared through/right-turn lane.

The configuration of the required auxiliary turn lanes on Ninth Line should be established at a later stage when details of the future Ninth Line cross-section and centre median are confirmed.

Appendix M contains conceptual drawings for the recommended external roadway improvements, as well as the recommended configurations of the proposed site connections to Ninth Line.

The analysis contained within this report was prepared using the Concept Plan prepared by Glen Schnarr & Associates Inc. (dated June 6, 2019). Any minor revisions to the development concept are not expected to affect the conclusions contained with this report.

In conclusion, the proposed development can be supported from a transportation operations and safety perspective, with the implementation of the noted recommendations.

Respectfully submitted by,

C.F. CROZIER & ASSOCIATES INC.

Alexander J. W. Fleming, MBA, P.Eng.
Associate

C.F. CROZIER & ASSOCIATES INC.

Darren J. Loro, C.E.T.
Transportation Technologist

/DL

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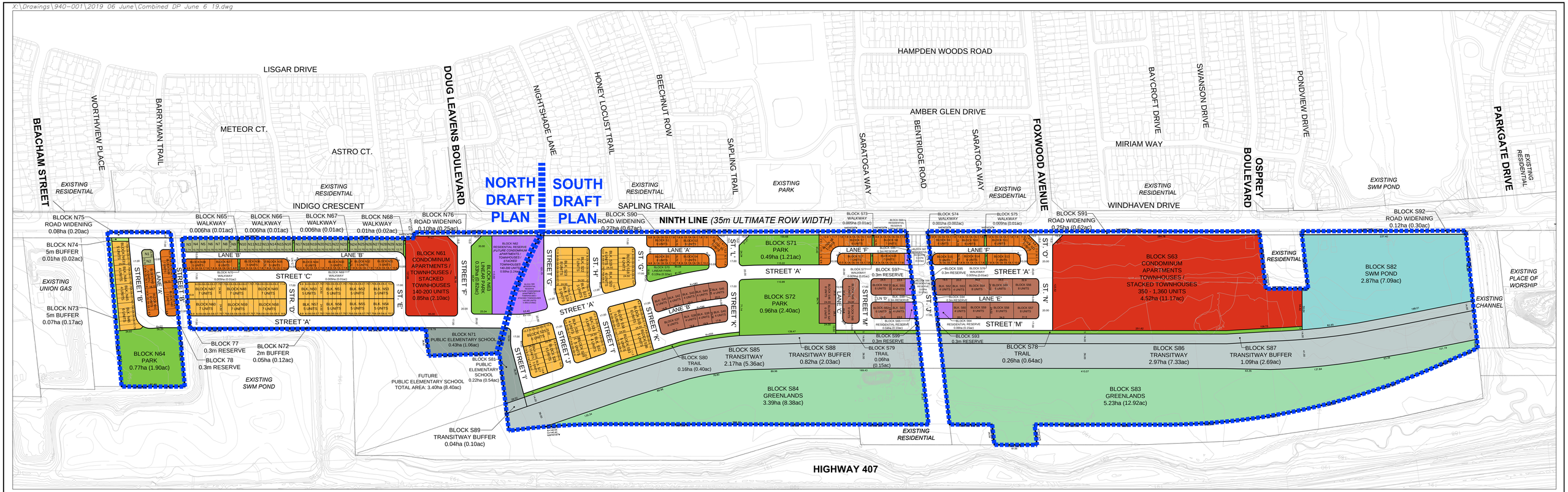
APPENDIX A

Concept Plan



DRAFT PLAN OF SUBDIVISION
DERRY BRITANNIA DEVELOPMENTS LIMITED

PART OF LOTS 6,7,8 & 9, CONCESSION 9, N.S.
CITY OF MISSISSAUGA
REGIONAL MUNICIPALITY OF PEEL

OWNERS CERTIFICATE

I HEREBY AUTHORIZE GLEN SCHNARR & ASSOCIATES INC. TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE CITY OF MISSISSAUGA FOR APPROVAL.

SIGNED _____ DATE: MAY 9, 2019

TIM WARNER, A.S.O.
DERRY BRITANNIA DEVELOPMENTS LIMITED

SURVEYORS CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AS SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE CORRECTLY AND ACCURATELY SHOWN.

SIGNED _____ DATE: MAY 23, 2019

SUNIL PERERA, O.L.S.
J.D. BARNES LIMITED

ADDITIONAL INFORMATION

(UNDER SECTION 51(17) OF THE PLANNING ACT) INFORMATION REQUIRED BY CLAUSES A,B,C,D,E,F,G,J & L ARE SHOWN ON THE DRAFT AND KEY PLANS.

H) MUNICIPAL AND PIPED WATER TO BE PROVIDED
I) SANDY LOAM AND CLAY LOAM
K) SANITARY AND STORM SEWERS TO BE PROVIDED

LAND USE SCHEDULE - NORTH DRAFT PLAN

LAND USE	LOTS / BLOCKS	AREA (ha)	AREA (ac)	TOTAL UNITS	DENSITY (UPNHA)
REAR LANE DETACHED - 10.7m (35')	N1-N30	0.66	1.63	30	45.5
REAR LANE TOWNHOUSE - 6.05m (20')	N31-N42	0.77	1.90	67	87.0
STREET TOWNHOUSE - 6.0m (20')	N43-N60	1.70	4.20	101	59.4
CONDO APARTMENTS / TOWNS / STACKS	N61	0.85	2.10	140-200	164.7-235.3
RESIDENTIAL RESERVE	N62	0.50	1.24		
PARK / WALKWAY	N63-N70	1.13	2.79		
PUBLIC ELEMENTARY SCHOOL	N71	0.43	1.06		
5m BUFFERS	N72-N74	0.13	0.32		
ROAD WIDENINGS	N75,N76	0.18	0.44		
0.3m RESERVES	N77,N78	0.00	0.00		
10.0m LANEWAY (445m LENGTH)		0.46	1.14		
17.0m LOCAL ROW (1,021m LENGTH)		1.75	4.32		
20.0m LOCAL ROW (184m LENGTH)		0.38	0.94		
TOTAL	**78**	**8.94**	**22.09**	**338-398**	**84.9-100**

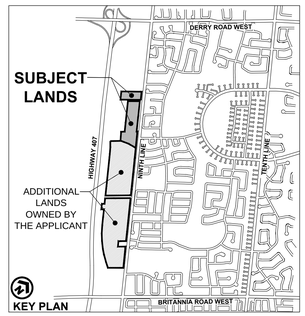
NOTES
-ALL DAYLIGHT ROUNDINGS ARE 5m UNLESS OTHERWISE NOTED

LAND USE SCHEDULE - SOUTH DRAFT PLAN

LAND USE	BLOCKS	AREA (ha)	AREA (ac)	TOTAL UNITS	DENSITY (UPNHA)
REAR LANE TOWNHOUSE - 6.05m (20')	S1-S17	1.29	3.19	109	84.5
STREET TOWNHOUSE - 6.0m (20')	S18-S36	1.73	4.27	94	54.3
CONDOMINIUM DUPLEX	S37-S62	1.71	4.23	148	86.5
CONDO APARTMENTS / TOWNS / STACKS	S63	4.52	11.17	350-1,360	77.4-300.9
RESIDENTIAL RESERVE	S64-S69	0.49	1.21		
PARK / WALKWAY / TRAIL	S70-S80	2.10	5.19		
PUBLIC ELEMENTARY SCHOOL	S81	0.22	0.54		
SWM POND	S82	2.87	7.09		
GREENLANDS	S83,S84	8.62	21.30		
TRANSITWAY / TRANSITWAY BUFFER	S85-S89	7.09	17.52		
ROAD WIDENINGS	S90-S92	0.65	1.61		
0.3m RESERVES	S93-S99	0.00	0.00		
10.0m LANEWAY (813m LENGTH)		0.81	2.00		
17.0m LOCAL ROW (1,299m LENGTH)		2.25	5.56		
20.0m LOCAL ROW (943m LENGTH)		1.80	4.45		
TOTAL	**99**	**36.15**	**89.33**	**701-1,711**	**75.8-185**

LAND USE SCHEDULE - NORTH + SOUTH DRAFT PLAN

LAND USE	AREA (ha)	AREA (ac)	TOTAL UNITS	DENSITY (UPNHA)
REAR LANE DETACHED - 10.7m (35')	0.66	1.63	30	45.5
REAR LANE TOWNHOUSE - 6.05m (20')	2.06	5.09	176	85.4
STREET TOWNHOUSE - 6.0m (20')	3.43	8.48	195	56.9
CONDOMINIUM DUPLEX	1.71	4.23	148	86.5
CONDO APARTMENTS / TOWNS / STACKS	5.37	13.27	490-1,560	91.4-290.5
RESIDENTIAL RESERVE	0.99	2.45		
PARK / WALKWAY / TRAIL	3.23	7.98		
PUBLIC ELEMENTARY SCHOOL	0.65	1.61		
SWM POND	2.87	7.09		
GREENLANDS	8.62	21.30		
TRANSITWAY / TRANSITWAY BUFFER	7.09	17.52		
5m BUFFERS	0.13	0.32		
ROAD WIDENINGS	0.83	2.05		
0.3m RESERVES	0.00	0.00		
10.0m LANEWAY (1,258m LENGTH)	1.27	3.14		
17.0m LOCAL ROW (2,320m LENGTH)	4.00	9.88		
20.0m LOCAL ROW (1,127m LENGTH)	2.18	5.39		
TOTAL	**45.09**	**111.42**	**1,039-2,109**	**78.5-159.4**



SCALE: 1:2000
(24" x 45")
JUNE 6, 2019

mattamyHOMES
GSAI

APPENDIX B

Correspondence

Darren Loro

From: Lagakos, Ted (MTO) <Ted.Lagakos@ontario.ca>
Sent: April-12-19 8:26 AM
To: Darren Loro
Cc: eric.mueller@mattamycorp.com; zain.zia@mississauga.ca
Subject: RE: Ninth Line Draft Plan of Subdivision TIS Terms of Reference

Morning Darren,

Our Traffic Office has reviewed your terms of reference for a possible future Traffic Impact Study submission and we offer the following comments:

- Include Highway 401 and Winston Churchill Blvd (North & South Ramp Terminal) in the analysis. In addition, ensure you include ministry data when finalizing the study.
- Complete existing, future background and future total traffic operations analysis using Synchro 10.

I hope this helps. Please call me if you have any questions.

Take care,
Ted Lagakos
Senior Project Manager
Highway Corridor Management Section – Central Region

Ministry of Transportation
159 Sir William Hearst Avenue, 7th Floor
Toronto, ON M3M 0B7
Tel. (416) 235-3593

E-Mail: ted.lagakos@ontario.ca
Web: www.mto.gov.on.ca/english/engineering/management/corridor

Highway Corridor Management

From: Lagakos, Ted (MTO)
Sent: April-01-19 9:14 AM
To: dloro@cfcrozier.ca
Cc: Shen, Rey (MTO) <Rey.Shen@ontario.ca>; Iannacito, Phil (MTO) <Phil.Iannacito@ontario.ca>; Pekar, Nataliya (MTO) <Nataliya.Pekar@ontario.ca>; eric.mueller@mattamycorp.com; DeRose, Graham (MTO) <Graham.DeRose@ontario.ca>; zain.zia@mississauga.ca
Subject: RE: Ninth Line Draft Plan of Subdivision TIS Terms of Reference

Good morning Darren,

Phil has forwarded your request to my attention. I will be the main ministry contact for any future proposed Subdivision application.

As per our discussion, I will circulate the subject Terms of Reference for review and comment by our Traffic Office. All ministry comments for this file will be **preliminary only** as the site is located within the Parkway Belt West Plan/407 Transitway EA study. Please note that the alignment for the 407 Transitway is still under evaluation, a preferred alternative design will not be available to the public until late 2019, with approval anticipated in or around mid 2020.

I trust that this explains our position on this matter. I will send you our preliminary comments as soon as I hear back from the Traffic Office (typical turnaround for comments is 3 to 4 weeks depending on workload). If you have any further questions, please do not hesitate to contact me at the number below.

Take care,
Ted Lagakos
Senior Project Manager
Highway Corridor Management Section – Central Region

Ministry of Transportation
159 Sir William Hearst Avenue, 7th Floor
Toronto, ON M3M 0B7
Tel. (416) 235-3593

E-Mail: ted.lagakos@ontario.ca
Web: www.mto.gov.on.ca/english/engineering/management/corridor

Highway Corridor Management

From: Darren Loro <dloro@cfcrozier.ca>
Sent: March-28-19 1:39 PM
To: Iannacito, Phil (MTO) <Phil.Iannacito@ontario.ca>; Zain Zia <Zain.Zia@mississauga.ca>
Cc: Alex Fleming <afleming@cfcrozier.ca>
Subject: Ninth Line Draft Plan of Subdivision TIS Terms of Reference

Good morning Phil and Zain,

Hope all is well on your end.

We have been retained by Mattamy Homes to prepare a TIS for the Draft Plan of Subdivision application (plan attached) for the site located on Ninth Line in the City of Mississauga, Regional Municipality of Peel. The subject property is located in a residential neighbourhood and is bound by a Union Gas Limited building to the north, an existing church to the south, Ninth Line to the east, and Parkland Belt lands and Highway 407 to the west.

Table 1 outlines the proposed development statistics.

Table 1
Proposed Development Statistics

Housing Type	Unit Type	Total Units
Freehold	Rear Lane Detached	61
	Street Townhouse	195
	Rear Lane Townhouse	248
	Total	**504**
Condo	Rear Lane Duplex	98
	Rear Lane Townhouse	18
	Back-To-Back Townhouse	88
	Apartments	336
	Total	**540**

We would like to circulate our proposed Terms of Reference with the MTO and City for review and comment. The proposed Terms of Reference is outlined below:

1. The TIS will analyze traffic impacts during the weekday a.m and p.m. peak hours.

2. The following intersections will be analyzed:
    a. Derry Road West and Highway 407 West Ramp Terminal
    b. Derry Road West and Highway 407 East Ramp Terminal
    c. Derry Road West and Ninth Line
    d. Ninth Line and Street "L"
    e. Ninth Line and Doug Leavens Boulevard / Street "B"
    f. Ninth Line and Foxwood Avenue / Street "C"
    g. Ninth Line and Osprey Boulevard / Street "A"
    h. Ninth Line and Britannia Road West
    i. Britannia Road West and Highway 407 West Ramp Terminal
    j. Britannia Road West and Highway 407 East Ramp Terminal

3. Traffic counts will be commissioned at the aforementioned intersection on a typical weekday between the hours of 6:00 a.m. – 10:00 a.m. and 3:00 p.m. – 7:00 p.m.

4. Existing, future background and future total traffic operations will be analyzed using Synchro 9.0. Standard traffic operations metrics for signalized and unsignalized intersections including delays, volume-to-capacity ratios, and 95th percentile queue length will be analyzed and reported on.

5. The development is expected to be fully built-out within seven years (i.e. by 2026). Per the MTO's TIS guidelines, the year of full build-out (2026), five-year horizon (2031) and ten-year horizon (2036) will be analyzed. Additionally, each year of major phases of the proposed development will be analyzed.

6. Background traffic growth will be calculated using the growth rates from the Ninth Line Corridor Study Transportation Assessment prepared for the City of Mississauga by MMM Group (July 2017). MMM applied a growth rate of 2% compounded annually at the off-ramp approaches at 400-series ramp terminals as instructed by the MTO. For consistency, this growth rate will be applied to the off-ramp approaches at Highway 407 ramp terminals in our analysis.

7. Trip generation will be forecasted using the ITE Trip Generation Manual, 10th Edition. Preliminary trip generation estimates indicate that the proposed development is expected to generate in the order of 450-550 total two-way trips during the critical weekday a.m. and p.m. peak hours.

8. Trip distribution will be derived from a combination of 2016 Transportation Tomorrow Survey (TTS) data and existing travel patterns.

9. Future total traffic operations will be compared to future background traffic operations under full build-out conditions to determine what mitigation measures are required on the boundary road network to accommodate the full build-out of the development. These mitigation measures include auxiliary turn lanes, signalization, etc.

10. Auxiliary left-turn lane requirements will be analyzed using the MTO's "Design Supplement for the Geometric Design Guide for Canadian Roads" and traffic signal requirements will be analyzed using the warrants set out in the Ontario Traffic Manual (OTM) Book 12 "Traffic Signals";

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Please review and comment on the terms of reference as outlined above. If this is satisfactory, we will begin our analysis immediately.

If you want to discuss further, please do not hesitate to give me a call.

Cheers,
Darren

Darren Loro C.E.T. | Technologist
C.F. Crozier & Associates Consulting Engineers
40 Huron Street, Suite 301 | Collingwood, ON L9Y 4R3
cfcrozier.ca | dloro@cfcrozier.ca
tel: 705.446.3510 ext: 142

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Darren Loro

From: Greg Borys <Gregory.Borys@mississauga.ca>
Sent: April-08-19 3:41 PM
To: Darren Loro
Subject: RE: Ninth Line Draft Plan of Subdivision TIS Terms of Reference

Good morning Darren,

Thank you for providing the Terms of Reference for the Mattamy Homes development, please find below comments:

- The Traffic consultant is to contact Emily Pelleja (Emily.pelleja@mississauga.ca)in regards to the Ninth Line EA to determine timings and scope of work;
- Should any changes occur to the proposed site plan, the Traffic Impact Study will be required to be updated accordingly

Additionally, the MTO may have further comments regarding the ToR for the proposed development.

Regards,

From: Darren Loro [mailto:dloro@cfcrozier.ca]
Sent: Thursday, March 28, 2019 1:39 PM
To: Phil Iannacito; Zain Zia
Cc: Alex Fleming
Subject: Ninth Line Draft Plan of Subdivision TIS Terms of Reference

Good morning Phil and Zain,

Hope all is well on your end.

We have been retained by Mattamy Homes to prepare a TIS for the Draft Plan of Subdivision application (plan attached) for the site located on Ninth Line in the City of Mississauga, Regional Municipality of Peel. The subject property is located in a residential neighbourhood and is bound by a Union Gas Limited building to the north, an existing church to the south, Ninth Line to the east, and Parkland Belt lands and Highway 407 to the west.

Table 1 outlines the proposed development statistics.

Table 1
Proposed Development Statistics

Housing Type	Unit Type	Total Units
Freehold	Rear Lane Detached	61
	Street Townhouse	195
	Rear Lane Townhouse	248
	Total	**504**
Condo	Rear Lane Duplex	98

	Rear Lane Townhouse	18
	Back-To-Back Townhouse	88
	Apartments	336
	Total	**540**

We would like to circulate our proposed Terms of Reference with the MTO and City for review and comment. The proposed Terms of Reference is outlined below:

1. The TIS will analyze traffic impacts during the weekday a.m and p.m. peak hours.

2. The following intersections will be analyzed:
    a. Derry Road West and Highway 407 West Ramp Terminal
    b. Derry Road West and Highway 407 East Ramp Terminal
    c. Derry Road West and Ninth Line
    d. Ninth Line and Street "L"
    e. Ninth Line and Doug Leavens Boulevard / Street "B"
    f. Ninth Line and Foxwood Avenue / Street "C"
    g. Ninth Line and Osprey Boulevard / Street "A"
    h. Ninth Line and Britannia Road West
    i. Britannia Road West and Highway 407 West Ramp Terminal
    j. Britannia Road West and Highway 407 East Ramp Terminal

3. Traffic counts will be commissioned at the aforementioned intersection on a typical weekday between the hours of 6:00 a.m. – 10:00 a.m. and 3:00 p.m. – 7:00 p.m.

4. Existing, future background and future total traffic operations will be analyzed using Synchro 9.0. Standard traffic operations metrics for signalized and unsignalized intersections including delays, volume-to-capacity ratios, and 95th percentile queue length will be analyzed and reported on.

5. The development is expected to be fully built-out within seven years (i.e. by 2026). Per the MTO's TIS guidelines, the year of full build-out (2026), five-year horizon (2031) and ten-year horizon (2036) will be analyzed. Additionally, each year of major phases of the proposed development will be analyzed.

6. Background traffic growth will be calculated using the growth rates from the Ninth Line Corridor Study Transportation Assessment prepared for the City of Mississauga by MMM Group (July 2017). MMM applied a growth rate of 2% compounded annually at the off-ramp approaches at 400-series ramp terminals as instructed by the MTO. For consistency, this growth rate will be applied to the off-ramp approaches at Highway 407 ramp terminals in our analysis.

7. Trip generation will be forecasted using the ITE Trip Generation Manual, 10th Edition. Preliminary trip generation estimates indicate that the proposed development is expected to generate in the order of 450-550 total two-way trips during the critical weekday a.m. and p.m. peak hours.

8. Trip distribution will be derived from a combination of 2016 Transportation Tomorrow Survey (TTS) data and existing travel patterns.

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Cheers,
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Darren Loro

From: Emily Pelleja <Emily.Pelleja@mississauga.ca>
Sent: April-15-19 11:30 AM
To: Darren Loro
Cc: Greg Borys
Subject: RE: Ninth Line Draft Plan of Subdivision TIS Terms of Reference

Hi Darren,
Nice to email-meet you as well. To clarify, the City *will be* undertaking a Class EA for the Widening of Ninth Line from Eglinton Avenue West to Derry Road West. The study will officially commence in Q1 of 2020, with construction forecasted for 2023. I don't have any hard defined improvements beyond that it will be widened. I will keep you as a stakeholder.

If I can clarify anything, please don't hesitate to reach out.

Thanks,

Emily Pellejà, P.Eng.
Transportation Project Engineer
T 905-615-3200 ext.3699
C 437-779-7894
emily.pelleja@mississauga.ca

City of Mississauga | Transportation and Works Department
Engineering and Construction Division

Please consider the environment before printing.

From: Darren Loro [mailto:dloro@cfcrozier.ca]
Sent: Thursday, April 11, 2019 4:53 PM
To: Emily Pelleja
Cc: Greg Borys
Subject: RE: Ninth Line Draft Plan of Subdivision TIS Terms of Reference

Good afternoon Emily,

I am e-mailing you from Crozier & Associates Consulting Engineers. I don't believe we've ever spoke before, so it's nice to meet you – even if it is over e-mail!

Greg Borys has directed me to you to confirm details from the Ninth Line EA regarding the timing and scope of work for the future Ninth Line improvements. As part of our Traffic Impact Study that Greg provided comments on (see below), we need to account for the future Ninth Line improvements in our analysis. Would you be able to provide us with these details on timing and scope of work for the Ninth Line improvements?

If you have any questions or wish to discuss further, please do not hesitate to give me a call.

Thanks,
Darren

Darren Loro C.E.T. | Technologist
C.F. Crozier & Associates Consulting Engineers
40 Huron Street, Suite 301 | Collingwood, ON L9Y 4R3
cfcrozier.ca | dloro@cfcrozier.ca
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Cheers,
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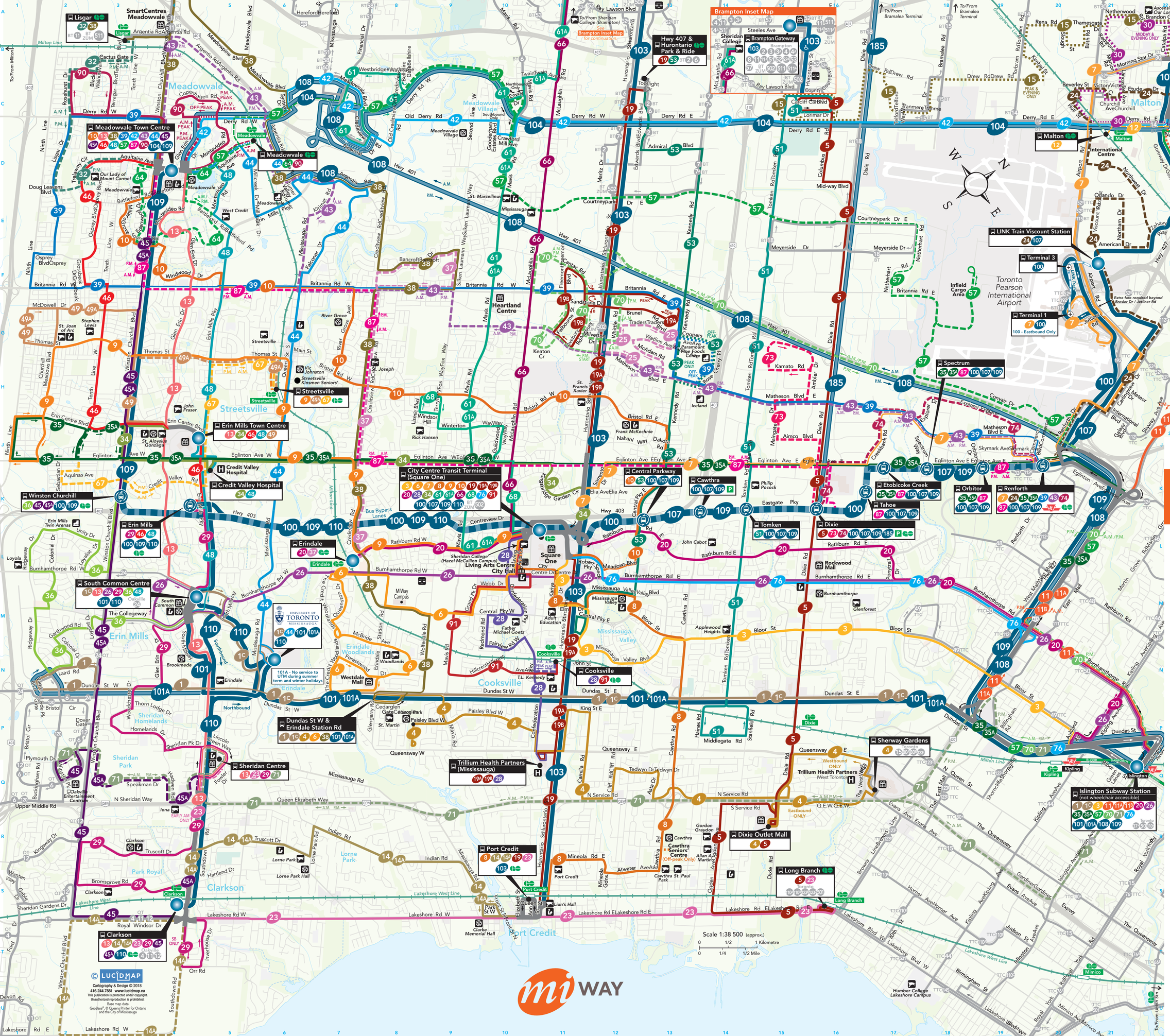
APPENDIX C

Transit Information



Weekday Service Map

Effective: October 29, 2018

MiWay Route Service Types

- Regular Route
- Rush Hour (Peak) Route
- Non-Rush Hour (Off Peak) Route
- MiExpress Route All Day Service
- MiExpress Route AM/PM Rush Hour Service
- Route Number

Connecting Transit Services

- Oakville Transit Route
- Brampton Transit Route
- TTC Bus Route
- TTC Subway & Station
- GO Train & Station

Map Symbols

- Major Transit Terminal
- Transitway Station
- Mississauga Transitway
- Key Transit Stops
- Hospital
- Shopping Centre
- High School, University or College
- Recreation or Community Centre
- Ice Rink
- Public Library
- Living Arts Centre
- Civic Centre (City Hall)
- Court House

All MiWay routes are fully accessible with low floor, wheelchair accessible buses

mi local

mi WAY

32 Lisgar GO

Monday-Friday Service

Effective: January 28, 2013

Legend

Islington — TTC Subway Station	Major Transit Terminal	Shopping Centre	Public Library
Clarkson — GO Train Station	Hospital	High School, University or College	Living Arts Centre
Transitway Station	Ice Rink	Recreation or Community Centre	Civic Centre (City Hall)

Customer Service - We're here to help

@MiWayHelps
miway.ca/feedback
905-615-INFO (4636)
miway.info@mississauga.ca
TTY: 905-615-3886

Find a schedule or trip plan

m.miway.ca
miway.ca/planatrip
citylink 905-615-4BUS(4287)
Call and enter a four-digit bus stop number.

MISSISSAUGA

MiWAY

Thursday, April 18, 2019

32 Lisgar GO
North

1267 - TRELAWNY CIR at MOCKINGBIRD LANES	**05:43 AM**	**06:07 AM**	**06:22 AM**	**06:43 AM**	**07:06 AM**	**07:30 AM**
1268 - TRELAWNY CIR at FOREST PARK DR	**05:43 AM**	**06:07 AM**	**06:22 AM**	**06:43 AM**	**07:06 AM**	**07:30 AM**
1269 - TRELAWNY CIR at MOUNT CARMEL SECONDARY SCHOOL	**05:44 AM**	**06:08 AM**	**06:23 AM**	**06:44 AM**	**07:07 AM**	**07:31 AM**
0842 - TRELAWNY CIRCLE at DOUG LEAVENS BLVD	**05:45 AM**	**06:09 AM**	**06:24 AM**	**06:45 AM**	**07:08 AM**	**07:32 AM**
4010 - DOUG LEAVENS BLVD at LISGAR DR	**05:46 AM**	**06:10 AM**	**06:25 AM**	**06:46 AM**	**07:09 AM**	**07:33 AM**
0081 - LISGAR DR at BERRYMAN TR	**05:47 AM**	**06:11 AM**	**06:26 AM**	**06:47 AM**	**07:10 AM**	**07:34 AM**
0418 - LISGAR DR at YARROW AVE	**05:48 AM**	**06:12 AM**	**06:27 AM**	**06:48 AM**	**07:11 AM**	**07:35 AM**
0419 - LISGAR DR at ALLCROFT RD	**05:49 AM**	**06:13 AM**	**06:28 AM**	**06:49 AM**	**07:12 AM**	**07:36 AM**
0049 - LISGAR DR at DERRY RD	**05:49 AM**	**06:13 AM**	**06:28 AM**	**06:49 AM**	**07:12 AM**	**07:36 AM**
4530 - ROSEHURST DR at LAURENCLAIRE DR	**05:49 AM**	**06:13 AM**	**06:28 AM**	**06:50 AM**	**07:13 AM**	**07:37 AM**
4531 - ROSEHURST DR at SANDHURST DR	**05:50 AM**	**06:14 AM**	**06:29 AM**	**06:51 AM**	**07:14 AM**	**07:38 AM**
4532 - ROSEHURST DR at WATERFALL CRES	**05:51 AM**	**06:15 AM**	**06:30 AM**	**06:52 AM**	**07:15 AM**	**07:39 AM**
4533 - TERRAGAR BLVD at BLACK WALNUT TRAIL	**05:52 AM**	**06:16 AM**	**06:31 AM**	**06:53 AM**	**07:16 AM**	**07:40 AM**
3295 - CACTUS GATE at TOBIAS MASON PARK	**05:53 AM**	**06:17 AM**	**06:32 AM**	**06:54 AM**	**07:17 AM**	**07:41 AM**
3296 - TENTH LINE at DOVERWOOD DR	**05:54 AM**	**06:18 AM**	**06:33 AM**	**06:55 AM**	**07:18 AM**	**07:42 AM**
3298 - LISGAR GO STATION PLATFORM 7	**05:57 AM**	**06:21 AM**	**06:37 AM**	**06:59 AM**	**07:22 AM**	**07:46 AM**

MiWAY

Thursday, April 18, 2019

32 Lisgar GO
South

3298 - LISGAR GO STATION PLATFORM 7	**04:37 PM**	**05:05 PM**	**05:37 PM**	**05:57 PM**	**06:07 PM**	**06:23 PM**
3297 - TENTH LINE at CRIMSON KING CIRCLE	**04:38 PM**	**05:06 PM**	**05:38 PM**	**05:58 PM**	**06:08 PM**	**06:24 PM**
3294 - CACTUS GATE at BLACK WALNUT TR	**04:39 PM**	**05:07 PM**	**05:39 PM**	**05:59 PM**	**06:09 PM**	**06:25 PM**
3293 - TERRAGAR BLVD at 16 MILE CREEK	**04:40 PM**	**05:08 PM**	**05:40 PM**	**06:00 PM**	**06:10 PM**	**06:26 PM**
3292 - ROSEHURST DR at TERRAGAR BLVD	**04:41 PM**	**05:09 PM**	**05:41 PM**	**06:01 PM**	**06:11 PM**	**06:27 PM**
3291 - ROSEHURST DR at HAZELRIDGE RD	**04:42 PM**	**05:10 PM**	**05:42 PM**	**06:02 PM**	**06:12 PM**	**06:28 PM**
3290 - ROSEHURST DR at STONEHAM WAY	**04:43 PM**	**05:11 PM**	**05:43 PM**	**06:03 PM**	**06:13 PM**	**06:29 PM**
0082 - LISGAR DR at DILLINGWOOD DR	**04:44 PM**	**05:12 PM**	**05:44 PM**	**06:04 PM**	**06:14 PM**	**06:30 PM**
0083 - LISGAR DR at YARROW AVE	**04:45 PM**	**05:13 PM**	**05:45 PM**	**06:05 PM**	**06:15 PM**	**06:31 PM**
0088 - LISGAR DR at BERRYMAN TR	**04:46 PM**	**05:14 PM**	**05:46 PM**	**06:06 PM**	**06:16 PM**	**06:32 PM**
1149 - LISGAR DR at DOUG LEAVENS BLVD	**04:47 PM**	**05:15 PM**	**05:47 PM**	**06:07 PM**	**06:17 PM**	**06:33 PM**
4011 - DOUG LEAVENS BLVD at TRELAWNY CIR	**04:48 PM**	**05:16 PM**	**05:48 PM**	**06:08 PM**	**06:18 PM**	**06:34 PM**
0398 - TRELAWNY CIRCLE at MOUNT CARMEL SECONDARY SCHOOL	**04:50 PM**	**05:18 PM**	**05:50 PM**	**06:10 PM**	**06:20 PM**	**06:36 PM**
0800 - TRELAWNY CIRCLE at FOREST PARK DR	**04:50 PM**	**05:18 PM**	**05:50 PM**	**06:10 PM**	**06:20 PM**	**06:36 PM**
2587 - TRELAWNY CIR at MOCKINGBIRD LANES	**04:51 PM**	**05:19 PM**	**05:51 PM**	**06:11 PM**	**06:21 PM**	**06:37 PM**

mi local

mi WAY

MISSISSAUGA

39 Britannia

Monday-Sunday Service

Effective: July 2, 2018

Legend

TTC Subway Station	Major Transit Terminal	Shopping Centre	Public Library
GO Train Station	Hospital	High School, University or College	Living Arts Centre
Transitway Station	Ice Rink	Recreation or Community Centre	Civic Centre (City Hall)

MiWay Customer Service		Trip Plans & Schedules		
@MiWayHelps	TTY: 905-615-3886	m.miway.ca Mobile Site	miway.ca/planatrip Online Trip Planner	citylink 905-615-4BUS(4287)
miway.ca/feedback	miwayhelps@mississauga.ca			Call and enter a four-digit bus stop number.
905-615-INFO (4636)	Customer Service Ambassadors In person at various locations			

All information subject to change without notice.

MiWAY

Thursday, April 18, 2019

39 Britannia
West

1088 - RENFORTH STATION WEST PLATFORM 1	**07:27 AM**	**07:50 AM**	**08:13 AM**	**08:36 AM**	**08:59 AM**	**09:22 AM**
2639 - COMMERCE BLVD at SKYMARK AVE	**07:28 AM**	**07:51 AM**	**08:14 AM**	**08:37 AM**	**09:00 AM**	**09:23 AM**
2145 - MATHESON BLVD at EXPLORER DR	**07:29 AM**	**07:52 AM**	**08:15 AM**	**08:38 AM**	**09:01 AM**	**09:24 AM**
0020 - MATHESON BLVD at SHUTTLE DR	**07:30 AM**	**07:53 AM**	**08:16 AM**	**08:39 AM**	**09:01 AM**	**09:25 AM**
0021 - MATHESON BLVD west of ORBITOR DR	**07:30 AM**	**07:53 AM**	**08:16 AM**	**08:39 AM**	**09:02 AM**	**09:25 AM**
2343 - MATHESON BLVD at 2365 MATHESON BLVD	**07:31 AM**	**07:54 AM**	**08:17 AM**	**08:40 AM**	**09:02 AM**	**09:26 AM**
2344 - MATHESON BLVD at SATELLITE DR	**07:31 AM**	**07:54 AM**	**08:17 AM**	**08:40 AM**	**09:02 AM**	**09:26 AM**
0014 - MATHESON BLVD at SOLAR DR	**07:32 AM**	**07:55 AM**	**08:18 AM**	**08:41 AM**	**09:03 AM**	**09:27 AM**
0037 - MATHESON BLVD at SPECTRUM WAY	**07:32 AM**	**07:55 AM**	**08:18 AM**	**08:41 AM**	**09:03 AM**	**09:27 AM**
0079 - MATHESON BLVD at EXPLORER DR	**07:33 AM**	**07:56 AM**	**08:19 AM**	**08:42 AM**	**09:04 AM**	**09:27 AM**
3254 - MATHESON BLVD west of EXPLORER DR	**07:34 AM**	**07:57 AM**	**08:20 AM**	**08:43 AM**	**09:05 AM**	**09:28 AM**
3255 - MATHESON BLVD at CREEKBANK RD	**07:35 AM**	**07:58 AM**	**08:21 AM**	**08:44 AM**	**09:05 AM**	**09:29 AM**
2631 - MATHESON BLVD west of CREEKBANK RD	**07:36 AM**	**07:59 AM**	**08:22 AM**	**08:45 AM**	**09:06 AM**	**09:29 AM**
3256 - MATHESON BLVD at MATHESON BLVD	**07:37 AM**	**08:00 AM**	**08:23 AM**	**08:46 AM**	**09:07 AM**	**09:30 AM**
2077 - MATHESON BLVD at DIXIE RD	**07:38 AM**	**08:01 AM**	**08:24 AM**	**08:47 AM**	**09:08 AM**	**09:31 AM**
2078 - MATHESON BLVD at AMBLER DR	**07:38 AM**	**08:01 AM**	**08:24 AM**	**08:47 AM**	**09:08 AM**	**09:31 AM**
0045 - MATHESON BLVD at BRADCO BLVD	**07:39 AM**	**08:02 AM**	**08:25 AM**	**08:48 AM**	**09:09 AM**	**09:32 AM**
0046 - MATHESON BLVD at MAINGATE DR	**07:39 AM**	**08:02 AM**	**08:25 AM**	**08:48 AM**	**09:09 AM**	**09:32 AM**
0050 - MATHESON BLVD at TOMKEN RD	**07:40 AM**	**08:03 AM**	**08:26 AM**	**08:49 AM**	**09:10 AM**	**09:33 AM**
0080 - MATHESON BLVD at TIMBERLEA BLVD	**07:41 AM**	**08:04 AM**	**08:27 AM**	**08:50 AM**	**09:11 AM**	**09:34 AM**

3102 - MATHESON BLVD at ROSE CHERRY PL	**07:42 AM**	**08:05 AM**	**08:28 AM**	**08:51 AM**	**09:12 AM**	**09:35 AM**
0051 - MATHESON BLVD at KENNEDY RD	**07:43 AM**	**08:06 AM**	**08:29 AM**	**08:52 AM**	**09:13 AM**	**--**
3543 - KENNEDY RD north of MATHESON BLVD	**07:43 AM**	**08:06 AM**	**08:29 AM**	**08:52 AM**	**09:13 AM**	**--**
2133 - KENNEDY RD at WATLINE AVE	**07:44 AM**	**08:07 AM**	**08:30 AM**	**08:53 AM**	**09:14 AM**	**--**
0178 - KENNEDY RD at COOPERS AVE	**07:44 AM**	**08:07 AM**	**08:30 AM**	**08:53 AM**	**09:14 AM**	**--**
5301 - ROSE CHERRY PLACE at PARAMOUNT CENTRE	**--**	**--**	**--**	**--**	**--**	**09:36 AM**
2215 - ROSE CHERRY PLACE at COOPERS AVE	**--**	**--**	**--**	**--**	**--**	**09:37 AM**
3180 - COOPERS AVE at KENNEDY RD	**--**	**--**	**--**	**--**	**--**	**09:38 AM**
3107 - KENNEDY RD at BRUNEL RD	**07:44 AM**	**08:07 AM**	**08:30 AM**	**08:53 AM**	**09:14 AM**	**09:38 AM**
0624 - BRITANNIA RD E at KENNEDY RD	**07:45 AM**	**08:08 AM**	**08:31 AM**	**08:54 AM**	**09:15 AM**	**09:39 AM**
0625 - BRITANNIA RD E at WALLACE ST	**07:46 AM**	**08:09 AM**	**08:32 AM**	**08:55 AM**	**09:16 AM**	**09:40 AM**
0626 - BRITANNIA RD E at WHITTLE RD	**07:48 AM**	**08:11 AM**	**08:34 AM**	**08:57 AM**	**09:17 AM**	**09:41 AM**
1904 - BRITANNIA RD at HURONTARIO ST	**07:49 AM**	**08:12 AM**	**08:35 AM**	**08:58 AM**	**09:18 AM**	**09:42 AM**
3061 - BRITANNIA RD at CANTAY RD	**07:50 AM**	**08:13 AM**	**08:36 AM**	**08:59 AM**	**09:19 AM**	**09:43 AM**
3062 - BRITANNIA RD at FREEMONT BLVD	**07:51 AM**	**08:14 AM**	**08:37 AM**	**09:00 AM**	**09:20 AM**	**09:44 AM**
3063 - BRITANNIA RD at MCLAUGHLIN RD	**07:52 AM**	**08:15 AM**	**08:38 AM**	**09:01 AM**	**09:21 AM**	**09:45 AM**
1158 - BRITANNIA RD at BELGRAVE RD	**07:53 AM**	**08:16 AM**	**08:39 AM**	**09:02 AM**	**09:22 AM**	**09:46 AM**
1236 - BRITANNIA RD at MAVIS RD	**07:54 AM**	**08:17 AM**	**08:40 AM**	**09:03 AM**	**09:23 AM**	**09:47 AM**
2327 - BRITANNIA RD at LATIMER DR	**07:55 AM**	**08:18 AM**	**08:41 AM**	**09:04 AM**	**09:24 AM**	**09:48 AM**
2914 - BRITANNIA RD at SILKEN LAUMANN WAY	**07:55 AM**	**08:18 AM**	**08:41 AM**	**09:04 AM**	**09:24 AM**	**09:48 AM**
2881 - BRITANNIA RD W at DOUGUY BLVD	**07:57 AM**	**08:20 AM**	**08:43 AM**	**09:06 AM**	**09:26 AM**	**09:50 AM**
2885 - BRITANNIA RD at BIDWELL TR	**07:58 AM**	**08:21 AM**	**08:44 AM**	**09:07 AM**	**09:27 AM**	**09:51 AM**
3064 - BRITANNIA RD at CREDITVIEW RD	**07:59 AM**	**08:22 AM**	**08:45 AM**	**09:08 AM**	**09:28 AM**	**09:52 AM**

0783 - BRITANNIA RD west of TILSDOWN RD	**08:00 AM**	**08:23 AM**	**08:46 AM**	**09:09 AM**	**09:29 AM**	**09:53 AM**
0067 - BRITANNIA RD at ELLESBORO DR	**08:01 AM**	**08:24 AM**	**08:47 AM**	**09:10 AM**	**09:30 AM**	**09:54 AM**
0789 - BRITANNIA RD at QUEEN ST N	**08:02 AM**	**08:25 AM**	**08:48 AM**	**09:11 AM**	**09:31 AM**	**09:55 AM**
1883 - BRITANNIA RD at BROOKSIDE DR	**08:03 AM**	**08:26 AM**	**08:49 AM**	**09:12 AM**	**09:32 AM**	**09:56 AM**
2466 - BRITANNIA RD at MILLCREEK DR	**08:04 AM**	**08:27 AM**	**08:50 AM**	**09:13 AM**	**09:33 AM**	**09:57 AM**
2467 - BRITANNIA RD at TURNEY DR	**08:05 AM**	**08:28 AM**	**08:51 AM**	**09:14 AM**	**09:34 AM**	**09:58 AM**
3277 - BRITANNIA RD AT HOGAN DR	**08:05 AM**	**08:28 AM**	**08:51 AM**	**09:14 AM**	**09:34 AM**	**09:58 AM**
2468 - BRITANNIA RD at ERIN MILLS PKY	**08:06 AM**	**08:29 AM**	**08:52 AM**	**09:15 AM**	**09:35 AM**	**09:59 AM**
2063 - BRITANNIA RD west of ERIN MILLS PKY	**08:06 AM**	**08:29 AM**	**08:52 AM**	**09:15 AM**	**09:35 AM**	**09:59 AM**
1886 - BRITANNIA RD at SUNDANCE PL	**08:07 AM**	**08:30 AM**	**08:53 AM**	**09:16 AM**	**09:36 AM**	**10:00 AM**
1887 - BRITANNIA RD at GLEN ERIN DR	**08:07 AM**	**08:30 AM**	**08:53 AM**	**09:16 AM**	**09:36 AM**	**10:00 AM**
2469 - BRITANNIA RD west of GLEN ERIN DR	**08:08 AM**	**08:31 AM**	**08:54 AM**	**09:17 AM**	**09:37 AM**	**10:01 AM**
2471 - BRITANNIA RD at PADDLE RD	**08:08 AM**	**08:31 AM**	**08:54 AM**	**09:17 AM**	**09:37 AM**	**10:01 AM**
2470 - BRITANNIA RD at WINSTON CHURCHILL BLVD	**08:09 AM**	**08:32 AM**	**08:55 AM**	**09:18 AM**	**09:38 AM**	**10:02 AM**
0790 - BRITANNIA RD at FARMSTEAD LANE	**08:10 AM**	**08:33 AM**	**08:56 AM**	**09:19 AM**	**09:39 AM**	**10:03 AM**
0887 - BRITANNIA RD at TENTH LINE	**08:11 AM**	**08:34 AM**	**08:57 AM**	**09:20 AM**	**09:40 AM**	**10:04 AM**
3065 - BRITANNIA RD at GROSSBEAK DR	**08:12 AM**	**08:35 AM**	**08:58 AM**	**09:21 AM**	**09:41 AM**	**10:05 AM**
3066 - BRITANNIA RD at MAPLE GATE CIR	**08:13 AM**	**08:36 AM**	**08:59 AM**	**09:22 AM**	**09:42 AM**	**10:06 AM**
3067 - BRITANNIA RD at NINTH LINE	**08:14 AM**	**08:37 AM**	**09:00 AM**	**09:23 AM**	**09:43 AM**	**10:07 AM**
3069 - NINTH LINE at PARKGATE DR	**08:15 AM**	**08:38 AM**	**09:01 AM**	**09:24 AM**	**09:44 AM**	**10:08 AM**
0657 - NINTH LINE at OSPREY BLVD	**08:16 AM**	**08:39 AM**	**09:02 AM**	**09:25 AM**	**09:45 AM**	**10:09 AM**
3909 - LISGAR DR at OSPREY BLVD	**08:16 AM**	**08:39 AM**	**09:02 AM**	**09:25 AM**	**09:45 AM**	**10:09 AM**
3910 - LISGAR DR at FOXWOOD AVE	**08:17 AM**	**08:40 AM**	**09:03 AM**	**09:26 AM**	**09:46 AM**	**10:10 AM**

3072 - LISGAR DR at ALDERWOOD TR	**08:18 AM**	**08:41 AM**	**09:04 AM**	**09:27 AM**	**09:47 AM**	**10:11 AM**
3073 - LISGAR DR at CEDAR HEDGE RISE	**08:18 AM**	**08:41 AM**	**09:04 AM**	**09:27 AM**	**09:47 AM**	**10:11 AM**
3074 - LISGAR DR at DOUG LEAVENS BLVD	**08:19 AM**	**08:42 AM**	**09:05 AM**	**09:28 AM**	**09:48 AM**	**10:12 AM**
0081 - LISGAR DR at BERRYMAN TR	**08:20 AM**	**08:43 AM**	**09:06 AM**	**09:29 AM**	**09:49 AM**	**10:13 AM**
0418 - LISGAR DR at YARROW AVE	**08:22 AM**	**08:45 AM**	**09:08 AM**	**09:31 AM**	**09:51 AM**	**10:14 AM**
0419 - LISGAR DR at ALLCROFT RD	**08:23 AM**	**08:46 AM**	**09:09 AM**	**09:32 AM**	**09:52 AM**	**10:15 AM**
0049 - LISGAR DR at DERRY RD	**08:23 AM**	**08:46 AM**	**09:09 AM**	**09:32 AM**	**09:52 AM**	**10:15 AM**
3025 - DERRY RD east of LISGAR DR	**08:23 AM**	**08:46 AM**	**09:09 AM**	**09:32 AM**	**09:52 AM**	**10:15 AM**
0091 - DERRY RD at FOREST PARK DR	**08:25 AM**	**08:48 AM**	**09:11 AM**	**09:34 AM**	**09:54 AM**	**10:17 AM**
0092 - DERRY RD west of TENTH LINE	**08:26 AM**	**08:49 AM**	**09:12 AM**	**09:35 AM**	**09:55 AM**	**10:18 AM**
2340 - DERRY RD at DANTON PROMENADE	**08:26 AM**	**08:49 AM**	**09:12 AM**	**09:35 AM**	**09:55 AM**	**10:18 AM**
3077 - DERRY RD at WINSTON CHURCHILL BLVD	**08:27 AM**	**08:50 AM**	**09:13 AM**	**09:36 AM**	**09:56 AM**	**10:19 AM**
0093 - WINSTON CHURCHILL BLVD at VANDERBILT RD	**08:28 AM**	**08:51 AM**	**09:14 AM**	**09:37 AM**	**09:57 AM**	**10:20 AM**
2342 - AQUITAINE AVE at FORMENTERA AVE	**08:30 AM**	**08:53 AM**	**09:16 AM**	**09:39 AM**	**09:59 AM**	**10:22 AM**
1458 - AQUITAINE AVE east of FORMENTERA AVE	**08:30 AM**	**08:53 AM**	**09:16 AM**	**09:39 AM**	**09:59 AM**	**10:22 AM**
6002 - MEADOWVALE TOWN CENTRE DROP OFF	**08:31 AM**	**08:54 AM**	**09:17 AM**	**09:40 AM**	**10:00 AM**	**10:23 AM**

b 39 Britannia via Paramount Centre
39 Britannia via Paramount Centre

MiWAY

Thursday, April 18, 2019

39 Britannia
West

1088 - RENFORTH STATION WEST PLATFORM 1	**03:46 PM**	**04:10 PM**	**04:34 PM**	**04:59 PM**	**05:24 PM**	**05:48 PM**
2639 - COMMERCE BLVD at SKYMARK AVE	**03:47 PM**	**04:11 PM**	**04:35 PM**	**05:00 PM**	**05:25 PM**	**05:49 PM**
2145 - MATHESON BLVD at EXPLORER DR	**03:48 PM**	**04:12 PM**	**04:36 PM**	**05:01 PM**	**05:26 PM**	**05:50 PM**
0020 - MATHESON BLVD at SHUTTLE DR	**03:48 PM**	**04:13 PM**	**04:37 PM**	**05:02 PM**	**05:27 PM**	**05:51 PM**
0021 - MATHESON BLVD west of ORBITOR DR	**03:49 PM**	**04:13 PM**	**04:37 PM**	**05:02 PM**	**05:27 PM**	**05:51 PM**
2343 - MATHESON BLVD at 2365 MATHESON BLVD	**03:49 PM**	**04:14 PM**	**04:38 PM**	**05:03 PM**	**05:28 PM**	**05:52 PM**
2344 - MATHESON BLVD at SATELLITE DR	**03:49 PM**	**04:14 PM**	**04:38 PM**	**05:03 PM**	**05:28 PM**	**05:52 PM**
0014 - MATHESON BLVD at SOLAR DR	**03:50 PM**	**04:15 PM**	**04:39 PM**	**05:04 PM**	**05:29 PM**	**05:53 PM**
0037 - MATHESON BLVD at SPECTRUM WAY	**03:50 PM**	**04:15 PM**	**04:39 PM**	**05:04 PM**	**05:29 PM**	**05:53 PM**
0079 - MATHESON BLVD at EXPLORER DR	**03:51 PM**	**04:16 PM**	**04:40 PM**	**05:05 PM**	**05:30 PM**	**05:54 PM**
3254 - MATHESON BLVD west of EXPLORER DR	**03:52 PM**	**04:18 PM**	**04:42 PM**	**05:07 PM**	**05:31 PM**	**05:55 PM**
3255 - MATHESON BLVD at CREEKBANK RD	**03:53 PM**	**04:19 PM**	**04:43 PM**	**05:08 PM**	**05:32 PM**	**05:56 PM**
2631 - MATHESON BLVD west of CREEKBANK RD	**03:54 PM**	**04:20 PM**	**04:44 PM**	**05:09 PM**	**05:33 PM**	**05:57 PM**
3256 - MATHESON BLVD at MATHESON BLVD	**03:56 PM**	**04:22 PM**	**04:46 PM**	**05:11 PM**	**05:35 PM**	**05:59 PM**
2077 - MATHESON BLVD at DIXIE RD	**03:57 PM**	**04:23 PM**	**04:47 PM**	**05:12 PM**	**05:36 PM**	**06:00 PM**
2078 - MATHESON BLVD at AMBLER DR	**03:58 PM**	**04:24 PM**	**04:48 PM**	**05:13 PM**	**05:37 PM**	**06:01 PM**
0045 - MATHESON BLVD at BRADCO BLVD	**03:59 PM**	**04:25 PM**	**04:49 PM**	**05:14 PM**	**05:38 PM**	**06:01 PM**
0046 - MATHESON BLVD at MAINGATE DR	**04:01 PM**	**04:27 PM**	**04:51 PM**	**05:16 PM**	**05:40 PM**	**06:03 PM**
0050 - MATHESON BLVD at TOMKEN RD	**04:03 PM**	**04:29 PM**	**04:53 PM**	**05:18 PM**	**05:42 PM**	**06:04 PM**
0080 - MATHESON BLVD at TIMBERLEA BLVD	**04:04 PM**	**04:30 PM**	**04:54 PM**	**05:19 PM**	**05:43 PM**	**06:05 PM**

3102 - MATHESON BLVD at ROSE CHERRY PL	**04:07 PM**	**04:33 PM**	**04:57 PM**	**05:22 PM**	**05:46 PM**	**06:07 PM**
0051 - MATHESON BLVD at KENNEDY RD	**04:08 PM**	**04:34 PM**	**04:58 PM**	**05:23 PM**	**05:47 PM**	**06:08 PM**
3543 - KENNEDY RD north of MATHESON BLVD	**04:09 PM**	**04:35 PM**	**04:59 PM**	**05:24 PM**	**05:48 PM**	**06:09 PM**
2133 - KENNEDY RD at WATLINE AVE	**04:10 PM**	**04:36 PM**	**05:00 PM**	**05:25 PM**	**05:49 PM**	**06:10 PM**
0178 - KENNEDY RD at COOPERS AVE	**04:11 PM**	**04:37 PM**	**05:01 PM**	**05:26 PM**	**05:50 PM**	**06:10 PM**
5301 - ROSE CHERRY PLACE at PARAMOUNT CENTRE	--	--	--	--	--	--
2215 - ROSE CHERRY PLACE at COOPERS AVE	--	--	--	--	--	--
3180 - COOPERS AVE at KENNEDY RD	--	--	--	--	--	--
3107 - KENNEDY RD at BRUNEL RD	**04:12 PM**	**04:38 PM**	**05:02 PM**	**05:27 PM**	**05:51 PM**	**06:11 PM**
0624 - BRITANNIA RD E at KENNEDY RD	**04:13 PM**	**04:39 PM**	**05:03 PM**	**05:28 PM**	**05:52 PM**	**06:12 PM**
0625 - BRITANNIA RD E at WALLACE ST	**04:14 PM**	**04:40 PM**	**05:04 PM**	**05:29 PM**	**05:53 PM**	**06:13 PM**
0626 - BRITANNIA RD E at WHITTLE RD	**04:17 PM**	**04:43 PM**	**05:07 PM**	**05:32 PM**	**05:56 PM**	**06:16 PM**
1904 - BRITANNIA RD at HURONTARIO ST	**04:18 PM**	**04:44 PM**	**05:08 PM**	**05:33 PM**	**05:57 PM**	**06:17 PM**
3061 - BRITANNIA RD at CANTAY RD	**04:19 PM**	**04:45 PM**	**05:09 PM**	**05:34 PM**	**05:58 PM**	**06:18 PM**
3062 - BRITANNIA RD at FREEMONT BLVD	**04:20 PM**	**04:46 PM**	**05:10 PM**	**05:36 PM**	**05:59 PM**	**06:19 PM**
3063 - BRITANNIA RD at MCLAUGHLIN RD	**04:22 PM**	**04:48 PM**	**05:12 PM**	**05:37 PM**	**06:01 PM**	**06:21 PM**
1158 - BRITANNIA RD at BELGRAVE RD	**04:23 PM**	**04:49 PM**	**05:13 PM**	**05:38 PM**	**06:02 PM**	**06:22 PM**
1236 - BRITANNIA RD at MAVIS RD	**04:24 PM**	**04:50 PM**	**05:14 PM**	**05:40 PM**	**06:03 PM**	**06:23 PM**
2327 - BRITANNIA RD at LATIMER DR	**04:25 PM**	**04:51 PM**	**05:15 PM**	**05:41 PM**	**06:04 PM**	**06:24 PM**
2914 - BRITANNIA RD at SILKEN LAUMANN WAY	**04:26 PM**	**04:52 PM**	**05:16 PM**	**05:42 PM**	**06:05 PM**	**06:25 PM**
2881 - BRITANNIA RD W at DOUGUY BLVD	**04:28 PM**	**04:54 PM**	**05:18 PM**	**05:44 PM**	**06:07 PM**	**06:27 PM**
2885 - BRITANNIA RD at BIDWELL TR	**04:30 PM**	**04:56 PM**	**05:20 PM**	**05:46 PM**	**06:09 PM**	**06:29 PM**
3064 - BRITANNIA RD at CREDITVIEW RD	**04:31 PM**	**04:57 PM**	**05:21 PM**	**05:47 PM**	**06:10 PM**	**06:30 PM**

0783 - BRITANNIA RD west of TILSDOWN RD	**04:32 PM**	**04:58 PM**	**05:22 PM**	**05:48 PM**	**06:11 PM**	**06:31 PM**
0067 - BRITANNIA RD at ELLESBORO DR	**04:33 PM**	**04:59 PM**	**05:23 PM**	**05:49 PM**	**06:12 PM**	**06:32 PM**
0789 - BRITANNIA RD at QUEEN ST N	**04:34 PM**	**05:00 PM**	**05:24 PM**	**05:50 PM**	**06:13 PM**	**06:33 PM**
1883 - BRITANNIA RD at BROOKSIDE DR	**04:35 PM**	**05:01 PM**	**05:25 PM**	**05:51 PM**	**06:14 PM**	**06:34 PM**
2466 - BRITANNIA RD at MILLCREEK DR	**04:36 PM**	**05:02 PM**	**05:26 PM**	**05:52 PM**	**06:15 PM**	**06:35 PM**
2467 - BRITANNIA RD at TURNEY DR	**04:37 PM**	**05:03 PM**	**05:27 PM**	**05:53 PM**	**06:16 PM**	**06:36 PM**
3277 - BRITANNIA RD AT HOGAN DR	**04:37 PM**	**05:03 PM**	**05:27 PM**	**05:53 PM**	**06:16 PM**	**06:36 PM**
2468 - BRITANNIA RD at ERIN MILLS PKY	**04:38 PM**	**05:04 PM**	**05:28 PM**	**05:54 PM**	**06:17 PM**	**06:37 PM**
2063 - BRITANNIA RD west of ERIN MILLS PKY	**04:38 PM**	**05:04 PM**	**05:28 PM**	**05:54 PM**	**06:17 PM**	**06:37 PM**
1886 - BRITANNIA RD at SUNDANCE PL	**04:39 PM**	**05:05 PM**	**05:29 PM**	**05:55 PM**	**06:18 PM**	**06:38 PM**
1887 - BRITANNIA RD at GLEN ERIN DR	**04:39 PM**	**05:05 PM**	**05:29 PM**	**05:55 PM**	**06:18 PM**	**06:38 PM**
2469 - BRITANNIA RD west of GLEN ERIN DR	**04:40 PM**	**05:06 PM**	**05:30 PM**	**05:56 PM**	**06:19 PM**	**06:39 PM**
2471 - BRITANNIA RD at PADDLE RD	**04:40 PM**	**05:06 PM**	**05:30 PM**	**05:56 PM**	**06:19 PM**	**06:39 PM**
2470 - BRITANNIA RD at WINSTON CHURCHILL BLVD	**04:41 PM**	**05:07 PM**	**05:31 PM**	**05:57 PM**	**06:20 PM**	**06:40 PM**
0790 - BRITANNIA RD at FARMSTEAD LANE	**04:42 PM**	**05:08 PM**	**05:32 PM**	**05:58 PM**	**06:21 PM**	**06:41 PM**
0887 - BRITANNIA RD at TENTH LINE	**04:43 PM**	**05:09 PM**	**05:33 PM**	**05:59 PM**	**06:22 PM**	**06:42 PM**
3065 - BRITANNIA RD at GROSSBEAK DR	**04:44 PM**	**05:10 PM**	**05:34 PM**	**06:00 PM**	**06:23 PM**	**06:43 PM**
3066 - BRITANNIA RD at MAPLE GATE CIR	**04:45 PM**	**05:11 PM**	**05:35 PM**	**06:01 PM**	**06:24 PM**	**06:44 PM**
3067 - BRITANNIA RD at NINTH LINE	**04:46 PM**	**05:12 PM**	**05:36 PM**	**06:02 PM**	**06:25 PM**	**06:45 PM**
3069 - NINTH LINE at PARKGATE DR	**04:47 PM**	**05:13 PM**	**05:37 PM**	**06:03 PM**	**06:26 PM**	**06:46 PM**
0657 - NINTH LINE at OSPREY BLVD	**04:48 PM**	**05:14 PM**	**05:38 PM**	**06:04 PM**	**06:27 PM**	**06:47 PM**
3909 - LISGAR DR at OSPREY BLVD	**04:48 PM**	**05:14 PM**	**05:38 PM**	**06:04 PM**	**06:27 PM**	**06:47 PM**
3910 - LISGAR DR at FOXWOOD AVE	**04:49 PM**	**05:15 PM**	**05:39 PM**	**06:05 PM**	**06:28 PM**	**06:48 PM**

3072 - LISGAR DR at ALDERWOOD TR	**04:50 PM**	**05:16 PM**	**05:40 PM**	**06:06 PM**	**06:29 PM**	**06:49 PM**
3073 - LISGAR DR at CEDAR HEDGE RISE	**04:50 PM**	**05:16 PM**	**05:40 PM**	**06:06 PM**	**06:29 PM**	**06:49 PM**
3074 - LISGAR DR at DOUG LEAVENS BLVD	**04:51 PM**	**05:17 PM**	**05:41 PM**	**06:07 PM**	**06:30 PM**	**06:50 PM**
0081 - LISGAR DR at BERRYMAN TR	**04:52 PM**	**05:18 PM**	**05:42 PM**	**06:08 PM**	**06:31 PM**	**06:51 PM**
0418 - LISGAR DR at YARROW AVE	**04:54 PM**	**05:20 PM**	**05:44 PM**	**06:10 PM**	**06:33 PM**	**06:53 PM**
0419 - LISGAR DR at ALLCROFT RD	**04:55 PM**	**05:21 PM**	**05:45 PM**	**06:11 PM**	**06:34 PM**	**06:54 PM**
0049 - LISGAR DR at DERRY RD	**04:55 PM**	**05:21 PM**	**05:45 PM**	**06:11 PM**	**06:34 PM**	**06:54 PM**
3025 - DERRY RD east of LISGAR DR	**04:55 PM**	**05:21 PM**	**05:45 PM**	**06:11 PM**	**06:34 PM**	**06:54 PM**
0091 - DERRY RD at FOREST PARK DR	**04:57 PM**	**05:23 PM**	**05:47 PM**	**06:13 PM**	**06:36 PM**	**06:56 PM**
0092 - DERRY RD west of TENTH LINE	**04:58 PM**	**05:24 PM**	**05:48 PM**	**06:14 PM**	**06:37 PM**	**06:57 PM**
2340 - DERRY RD at DANTON PROMENADE	**04:58 PM**	**05:24 PM**	**05:48 PM**	**06:14 PM**	**06:37 PM**	**06:57 PM**
3077 - DERRY RD at WINSTON CHURCHILL BLVD	**04:59 PM**	**05:25 PM**	**05:49 PM**	**06:15 PM**	**06:38 PM**	**06:58 PM**
0093 - WINSTON CHURCHILL BLVD at VANDERBILT RD	**05:00 PM**	**05:26 PM**	**05:50 PM**	**06:16 PM**	**06:39 PM**	**06:59 PM**
2342 - AQUITAINE AVE at FORMENTERA AVE	**05:02 PM**	**05:28 PM**	**05:52 PM**	**06:18 PM**	**06:41 PM**	**07:01 PM**
1458 - AQUITAINE AVE east of FORMENTERA AVE	**05:02 PM**	**05:28 PM**	**05:52 PM**	**06:18 PM**	**06:41 PM**	**07:01 PM**
6002 - MEADOWVALE TOWN CENTRE DROP OFF	**05:03 PM**	**05:29 PM**	**05:53 PM**	**06:19 PM**	**06:42 PM**	**07:02 PM**

b 39 Britannia via Paramount Centre
39 Britannia via Paramount Centre

mi local

mi WAY

90 Terragar-Copenhagen Loop

Monday-Saturday Service

Effective: January 28, 2013

Legend

Islington	TTC Subway Station		Major Transit Terminal		Shopping Centre		Public Library
Clarkson	GO Train Station		Hospital		High School, University or College		Living Arts Centre
	Transitway Station		Ice Rink		Recreation or Community Centre		Civic Centre (City Hall)

Customer Service - We're here to help

@MiWayHelps
miway.ca/feedback
905-615-INFO (4636)
miway.info@mississauga.ca
TTY: 905-615-3886

Find a schedule or trip plan

m.miway.ca
miway.ca/planatrip
citylink 905-615-4BUS(4287)
Call and enter a four-digit bus stop number.

MISSISSAUGA

MiWAY

Thursday, April 18, 2019

90 Terragar-Copenhagen Loop
West

2244 - MEADOWVALE TOWN CENTRE BUS TERMINAL PLATFORM B	07:27 AM d	08:03 AM d	08:23 AM d	08:43 AM d	09:24 AM d	10:04 AM
2290 - AQUITAINE AVE at FORMENTERA AVE	07:28 AM d	08:04 AM d	08:24 AM d	08:44 AM d	09:25 AM d	10:05 AM
2581 - AQUITAINE AVE at WINSTON CHURCHILL BLVD	07:29 AM d	08:05 AM d	08:25 AM d	08:44 AM d	09:25 AM d	10:05 AM
3016 - WINSTON CHURCHILL BLVD at VANDERBILT RD	07:30 AM d	08:06 AM d	08:26 AM d	08:45 AM d	09:26 AM d	10:06 AM
3017 - WINSTON CHURCHILL BLVD north of VANDERBILT RD	07:31 AM d	08:07 AM d	08:27 AM d	08:46 AM d	09:27 AM d	10:07 AM
2328 - DERRY RD at DANTON PROMENADE	07:32 AM d	08:08 AM d	08:28 AM d	08:47 AM d	09:28 AM d	10:08 AM
0943 - DERRY RD at TENTH LINE	07:33 AM d	08:09 AM d	08:29 AM d	08:48 AM d	09:29 AM d	10:09 AM
2544 - DERRY RD at TERRAGAR BLVD	07:34 AM d	08:10 AM d	08:30 AM d	08:49 AM d	09:30 AM d	10:10 AM
3024 - DERRY RD west of TERRAGAR BLVD	07:35 AM d	08:11 AM d	08:31 AM d	08:50 AM d	09:31 AM d	10:11 AM
4530 - ROSEHURST DR at LAURENCLAIRE DR	07:36 AM d	08:12 AM d	08:32 AM d	08:51 AM d	09:32 AM d	10:12 AM
4531 - ROSEHURST DR at SANDHURST DR	07:36 AM d	08:12 AM d	08:32 AM d	08:51 AM d	09:32 AM d	10:12 AM
4532 - ROSEHURST DR at WATERFALL CRES	07:37 AM d	08:13 AM d	08:33 AM d	08:52 AM d	09:33 AM d	10:13 AM
4533 - TERRAGAR BLVD at BLACK WALNUT TRAIL	07:38 AM d	08:14 AM d	08:34 AM d	08:53 AM d	09:34 AM d	10:14 AM
4543 - TERRAGAR BLVD east of BLACK WALNUT TRAIL	07:39 AM d	08:15 AM d	08:35 AM d	08:54 AM d	09:35 AM d	10:15 AM
4534 - TERRAGAR BLVD at SMOKE TREE RD	07:40 AM d	08:16 AM d	08:36 AM d	08:55 AM d	09:36 AM d	10:16 AM
4544 - TERRAGAR BLVD at SCOTCH PINE GATE	07:40 AM d	08:16 AM d	08:36 AM d	08:55 AM d	09:36 AM d	10:16 AM
4535 - TERRAGAR BLVD at WILD CHERRY LANE	07:41 AM d	08:17 AM d	08:37 AM d	08:56 AM d	09:37 AM d	10:17 AM
0092 - DERRY RD west of TENTH LINE	07:42 AM d	08:18 AM d	08:38 AM d	08:57 AM d	09:38 AM d	10:18 AM
2340 - DERRY RD at DANTON PROMENADE	07:42 AM d	08:18 AM d	08:38 AM d	08:57 AM d	09:38 AM d	10:18 AM
3077 - DERRY RD at WINSTON CHURCHILL BLVD	07:43 AM d	08:19 AM d	08:39 AM d	08:58 AM d	09:39 AM d	10:19 AM

0093 - WINSTON CHURCHILL BLVD at VANDERBILT RD	**07:44 AM** d	**08:20 AM** d	**08:40 AM** d	**08:59 AM** d	**09:40 AM** d	**10:20 AM**
2342 - AQUITAINE AVE at FORMENTERA AVE	**07:45 AM** d	**08:21 AM** d	**08:41 AM** d	**09:00 AM** d	**09:41 AM** d	**10:21 AM**
1458 - AQUITAINE AVE east of FORMENTERA AVE	**07:46 AM** d	**08:22 AM** d	**08:42 AM** d	**09:01 AM** d	**09:42 AM** d	**10:22 AM**
6002 - MEADOWVALE TOWN CENTRE DROP OFF	**07:48 AM** d	**08:24 AM** d	**08:44 AM** d	**09:02 AM** d	**09:43 AM** d	**10:23 AM**

d 90 Terragar Loop

MiWAY

Thursday, April 18, 2019

90 Terragar-Copenhagen Loop
West

2244 - MEADOWVALE TOWN CENTRE BUS TERMINAL PLATFORM B	03:26 PM d	03:49 PM d	04:08 PM d	04:32 PM d	04:50 PM d	05:16 PM
2290 - AQUITAINE AVE at FORMENTERA AVE	03:27 PM d	03:50 PM d	04:09 PM d	04:33 PM d	04:51 PM d	05:17 PM
2581 - AQUITAINE AVE at WINSTON CHURCHILL BLVD	03:28 PM d	03:51 PM d	04:10 PM d	04:34 PM d	04:52 PM d	05:18 PM
3016 - WINSTON CHURCHILL BLVD at VANDERBILT RD	03:29 PM d	03:52 PM d	04:11 PM d	04:35 PM d	04:53 PM d	05:19 PM
3017 - WINSTON CHURCHILL BLVD north of VANDERBILT RD	03:30 PM d	03:53 PM d	04:12 PM d	04:36 PM d	04:54 PM d	05:20 PM
2328 - DERRY RD at DANTON PROMENADE	03:31 PM d	03:54 PM d	04:13 PM d	04:37 PM d	04:55 PM d	05:21 PM
0943 - DERRY RD at TENTH LINE	03:31 PM d	03:54 PM d	04:13 PM d	04:37 PM d	04:55 PM d	05:21 PM
2544 - DERRY RD at TERRAGAR BLVD	03:32 PM d	03:55 PM d	04:14 PM d	04:38 PM d	04:56 PM d	05:22 PM
3024 - DERRY RD west of TERRAGAR BLVD	03:33 PM d	03:56 PM d	04:15 PM d	04:39 PM d	04:57 PM d	05:23 PM
4530 - ROSEHURST DR at LAURENCLAIRE DR	03:34 PM d	03:57 PM d	04:16 PM d	04:40 PM d	04:58 PM d	05:24 PM
4531 - ROSEHURST DR at SANDHURST DR	03:35 PM d	03:58 PM d	04:17 PM d	04:41 PM d	04:59 PM d	05:25 PM
4532 - ROSEHURST DR at WATERFALL CRES	03:36 PM d	03:59 PM d	04:18 PM d	04:42 PM d	05:00 PM d	05:26 PM
4533 - TERRAGAR BLVD at BLACK WALNUT TRAIL	03:37 PM d	04:00 PM d	04:19 PM d	04:43 PM d	05:01 PM d	05:27 PM
4543 - TERRAGAR BLVD east of BLACK WALNUT TRAIL	03:38 PM d	04:01 PM d	04:20 PM d	04:44 PM d	05:02 PM d	05:28 PM
4534 - TERRAGAR BLVD at SMOKE TREE RD	03:38 PM d	04:01 PM d	04:20 PM d	04:44 PM d	05:02 PM d	05:28 PM
4544 - TERRAGAR BLVD at SCOTCH PINE GATE	03:38 PM d	04:01 PM d	04:20 PM d	04:44 PM d	05:02 PM d	05:28 PM
4535 - TERRAGAR BLVD at WILD CHERRY LANE	03:39 PM d	04:02 PM d	04:21 PM d	04:45 PM d	05:03 PM d	05:29 PM
0092 - DERRY RD west of TENTH LINE	03:41 PM d	04:04 PM d	04:23 PM d	04:47 PM d	05:05 PM d	05:31 PM
2340 - DERRY RD at DANTON PROMENADE	03:41 PM d	04:04 PM d	04:23 PM d	04:47 PM d	05:05 PM d	05:31 PM
3077 - DERRY RD at WINSTON CHURCHILL BLVD	03:42 PM d	04:05 PM d	04:24 PM d	04:48 PM d	05:06 PM d	05:32 PM

0093 - WINSTON CHURCHILL BLVD at VANDERBILT RD	**03:43 PM** d	**04:06 PM** d	**04:25 PM** d	**04:49 PM** d	**05:07 PM** d	**05:33 PM**
2342 - AQUITAINE AVE at FORMENTERA AVE	**03:44 PM** d	**04:07 PM** d	**04:26 PM** d	**04:50 PM** d	**05:08 PM** d	**05:34 PM**
1458 - AQUITAINE AVE east of FORMENTERA AVE	**03:45 PM** d	**04:08 PM** d	**04:27 PM** d	**04:51 PM** d	**05:09 PM** d	**05:35 PM**
6002 - MEADOWVALE TOWN CENTRE DROP OFF	**03:46 PM** d	**04:09 PM** d	**04:28 PM** d	**04:52 PM** d	**05:10 PM** d	**05:36 PM**

d 90 Terragar Loop

21

Route number
Nombre d'itinéraire

Milton

CONTACT US

1-888-438-6646
416-869-3200
TTY/ATS:
1-800-387-3652

gotransit.com/schedules

@GOtransitMI
@GOtransitBus

See Something?
Say Something.
24/7 Transit Safety Dispatch:
1-877-297-0642

prestocard.ca

Sign-up for email or text alerts/ Inscrivez-vous pour recevoir des alertes par courriel ou message texte.
gotransit.com/OnTheGO

06-12-2018

Milton

GO Train and Bus Schedule/
Horaire des trains et des autobus GO

METROLINX

MI 21

- Milton GO
- Lisgar GO
- Derry at 9th Line
- Meadowvale GO
- Meadowvale Town
- Streetsville GO
- Erindale GO
- Cooksville GO
- Square One GO Terminal
- Dixie GO
- Kipling GO
- Union Station

Daily / Quotidiennement
Includes GO Bus routes 21 / Inclut les routes 21 d'autobus GO

Effective / À partir de:
5 JANUARY JANVIER **2019**

How to read our schedules

Step 1
Find the station or terminal you are departing from. Stops are listed across the top in the order they are served.

Step 2
The upper left corner tells you what day the schedule is for and the direction of travel.

Step 3
Look across the rows for available departure times.

Step 4
Not all trains or buses stop at every station. If you see → the train or bus will not stop at that station.

Schedule times shown in 24-hour clock

Midnight to noon
00 01 - 12 00

Noon to midnight
12 01 - 24 00

Legend

Train trips

Bus trips

→ Trip does not serve this location.

GO Bus service is accessible to passengers using mobility devices at this location.

GO Train & GO Bus service is accessible to passengers using mobility devices at this location.

P Parking available.

For the latest schedule information and updates, please visit gotransit.com/schedules.

Notes

M-Th Trip operates Monday to Thursday ONLY.

Fri Trip operates on Fridays ONLY. If Friday is a holiday the trip operates on the Thursday before the holiday.

Bicycles

1. Bicycles are not allowed in Union Station or on-board trains during morning rush hour (6:30-9:30) and evening rush hour (15:30-18:30), Monday to Friday.
2. Foldable bicycles are allowed on-board trains at all times.

Comment lire nos horaires

Étape 1
Trouvez votre gare ou terminus de départ. La liste des arrêts est donnée en haut dans l'ordre dans lequel ils sont desservis.

Étape 2
Le coin supérieur gauche vous indique le jour pour lequel l'horaire est donné et la direction de circulation.

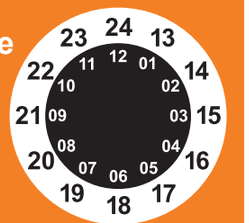
Étape 3
Regardez dans les rangées pour obtenir les heures de départ offertes.

Étape 4
Les trains ou les autobus ne s'arrêtent pas tous à chaque gare. Si vous voyez le symbole → le train ou l'autobus ne s'arrêtera pas à cette gare.

Indications selon un système horaire de 24 heures

De minuit à midi:
00 01 - 12 00

De midi à minuit:
12 01 - 24 00



Légende

Horaire des trains

Horaire des autobus

→ Trajet ne sert pas cette station.

Service d'autobus GO accessible aux personnes utilisant des aides à la mobilité à cet endroit.

Les services de trains et d'autobus GO sont accessibles aux utilisateurs d'un appareil d'aide à la mobilité à cet endroit.

P Stationnement disponible.

Pour consulter les horaires les plus récents et les mises à jour, veuillez visiter gotransit.com/schedules.

Notes

M-Th Service offert du lundi au jeudi.

Fri Service offert les vendredis SEULEMENT ou les jeudis précédant un vendredi férié.

Vélos

1. Les vélos ne sont pas autorisés dans la gare Union ou à bord des trains du lundi au vendredi, pendant l'heure de pointe (6:30-9:30) et pendant l'heure de pointe du soir (15:30-18:30).
2. Les vélos pliables sont permis à bord des trains en tout temps.

Monday to Friday (except holidays)
Du lundi au vendredi (sauf les jours fériés)

EASTBOUND / EN DIRECTION EST

Route Number / Nombre d'itinéraire	Trip Number / N° du trajet	Exception	Milton GO (Zone 24)	Lisgar GO (Mississauga 23)	Derry Rd. W. @ Ninth Line (Mississauga 22)	Aquitane Ave. @ Meadowvale Town Centre Circle (Mississauga 22)	Meadowvale GO (Mississauga 22)	Streetsville GO (Mississauga 21)	Erindale GO (Mississauga 12)	Square One (Mississauga 20)	Cooksville GO (Mississauga 11)	Dixie GO (Mississauga 11)	Kipling GO (Toronto 3)	Union Station (Toronto 2 Ar)
21T	21060								05 10	→	05 20	→	→	05 40
21B	21062		04 50	→	05 01	05 05	05 15	→	→	→	→	→	→	05 45
21E	21072			05 00	→	→	→	05 15	→	→	→	→	→	05 50
21B	21074		05 10	→	05 21	05 25	05 35	→	→	→	→	→	→	06 15
21G	21080								05 40	→	→	→	→	06 15
21E	21082			05 20	→	→	→	05 35	→	→	→	→	→	06 15
21L	21084										05 50	→	→	06 20
21J	21090									05 45	05 55	→	→	06 25
21M	21094											05 55	→	06 20
21B	21096		05 20	→	05 31	05 35	05 45	→	→	→	→	→	→	06 30
21G	21092								05 55	→	→	→	→	06 35
21B	21104		05 30	→	05 41	05 45	05 55	→	→	→	→	→	→	06 40
	2704		05 59	06 07	→	→	06 11	06 18	06 23	→	06 28	06 34	06 40	07 00
	2708		06 23	06 31	→	→	06 35	06 42	06 47	→	06 52	06 58	07 04	07 24
	2712		06 44	06 52	→	→	06 56	07 03	07 08	→	07 13	07 19	07 25	07 45
	2714		06 59	07 07	→	→	07 11	07 18	07 23	→	07 29	07 35	07 41	08 02
	2716		07 12	07 20	→	→	07 24	07 31	07 36	→	07 42	07 48	07 54	08 15
	2718		07 24	07 32	→	→	07 36	07 43	07 48	→	07 54	08 00	08 06	08 27
	2720		07 35	07 43	→	→	07 47	07 54	07 59	→	08 05	08 11	08 17	08 38
	2722		07 45	07 53	→	→	07 57	08 04	08 09	→	08 15	08 21	08 27	08 48
	2724		07 57	08 05	→	→	08 09	08 16	08 21	→	08 27	08 33	08 39	09 00
	2728		08 26	08 34	→	→	08 38	08 45	08 50	→	08 55	09 01	09 07	09 30
21K	21276									09 05	→	→	→	10 00
21K	21278									09 10	→	→	→	10 05
21L	21280										09 25	→	→	10 10
21M	21286											09 40	→	10 15
21C	21294						09 25	→	→	→	→	→	→	10 20
21K	21290									09 35	→	→	→	10 20
21B	21284		09 00	→	09 14	09 21	09 30	→	→	→	→	→	→	10 25
21E	21282			09 10	→	→	→	09 25	→	→	→	→	→	10 25
21G	21292								09 40	→	→	→	→	10 30
21L	21296										09 50	→	→	10 30
21C	21298						09 45	→	→	→	→	→	→	10 35
21J	21300									09 45	09 55	→	→	10 35
21B	21304		09 20	→	09 34	09 41	09 50	→	→	→	→	→	→	10 40

Monday to Friday (except holidays)
Du lundi au vendredi (sauf les jours fériés)

EASTBOUND / EN DIRECTION EST

Route Number / Nombre d'itinéraire	Trip Number / N° du trajet	Exception	Milton GO (Milton 24)	Lisgar GO (Mississauga 23)	Derry Rd. W. @ Ninth Line (Mississauga 22)	Aquitane Ave. @ Meadowvale Town Centre Circle (Mississauga 22)	Meadowvale GO (Mississauga 22)	Streetsville GO (Mississauga 21)	Erindale GO (Mississauga 12)	Square One (Mississauga 20)	Cooksville GO (Mississauga 11)	Dixie GO (Mississauga 11)	Kipling GO (Toronto 3)	Union Station (Toronto 2 Ar)
21M	21306											10 10	→	10 45
21E	21302			09 40	→	→	→	09 55	→	→	→	→	→	10 55
21J	21310									10 05	10 15	→	→	10 55
21C	21328						10 15	→	→	→	→	→	→	11 05
21G	21312								10 10	→	→	→	→	10 55
21B	21324		09 50	→	10 04	10 11	10 20	→	→	→	→	→	→	11 10
21J	21320									10 20	10 30	→	→	11 10
21M	21322											10 40	→	11 15
21J	21330									10 35	10 45	→	→	11 25
21E	21332			10 10	→	→	→	10 25	→	→	→	→	→	11 20
21G	21336								10 40	→	→	→	→	11 25
21C	21334						10 45	→	→	→	→	→	→	11 30
21B	21344		10 20	→	10 34	10 41	10 50	→	→	→	→	→	→	11 35
21H	21340									10 50	11 00	11 10	→	11 45
21J	21350									11 05	11 15	→	→	11 55
21D	21352			10 40	→	→	→	10 57	11 15	→	→	→	→	12 00
21B	21364		10 50	→	11 04	11 11	11 20	→	→	→	→	→	→	12 05
21H	21360									11 20	11 30	11 40	→	12 15
21J	21338									11 35	11 45	→	→	12 25
21R	21372						11 15	11 27	11 45	→	→	→	→	12 30
21B	21384		11 20	→	11 34	11 41	11 50	→	→	→	→	→	→	12 35
21H	21380									11 50	12 02	12 15	→	12 50
21D	21392			11 40	→	→	→	11 57	12 15	→	→	→	→	13 00
21B	21404		11 50	→	12 04	12 11	12 20	→	→	→	→	→	→	13 05
21H	21400									12 20	12 32	12 45	→	13 20
21R	21412						12 15	12 27	12 45	→	→	→	→	13 30
21B	21424		12 20	→	12 34	12 41	12 50	→	→	→	→	→	→	13 35
21H	21420									12 50	13 02	13 15	→	13 50
21D	21432			12 40	→	→	→	12 57	13 15	→	→	→	→	14 00
21B	21444		12 50	→	13 04	13 11	13 20	→	→	→	→	→	→	14 05
21H	21440									13 20	13 32	13 45	→	14 20
21R	21452						13 15	13 27	13 45	→	→	→	→	14 30
21B	21464		13 20	→	13 34	13 41	13 50	→	→	→	→	→	→	14 35
21H	21460									13 50	14 02	14 15	→	14 50
21D	21472			13 40	→	→	→	13 57	14 15	→	→	→	→	15 00

Monday to Friday (except holidays)
Du lundi au vendredi (sauf les jours fériés)

EASTBOUND / EN DIRECTION EST

Route Number / Nombre d'itinéraire	Trip Number / N° du trajet	Exception	Milton GO (Zone 24)	Lisgar GO (Mississauga 23)	Derry Rd. W. @ Ninth Line (Mississauga 22)	Aquitaine Ave. @ Meadowvale Town Centre Circle (Mississauga 22)	Meadowvale GO (Mississauga 22)	Streetsville GO (Mississauga 21)	Erindale GO (Mississauga 12)	Square One (Mississauga 20)	Cooksville GO (Mississauga 11)	Dixie GO (Mississauga 11)	Kipling GO (Toronto 3)	Union Station (Toronto 2 Ar)
21H	21490									14 20	14 32	14 45	→	15 20
21R	21502						14 15	14 27	14 45	→	→	→	→	15 30
21B	21514		14 20	→	14 34	14 41	14 50	→	→	→	→	→	→	15 40
21H	21520									14 50	15 02	15 15	→	15 50
21D	21532			14 40	→	→	→	14 57	15 15	→	→	→	→	16 05
21H	21550									15 20	15 32	15 45	→	16 20
21R	21562						15 15	15 27	15 45	→	→	→	→	16 35
21H	21580									15 50	16 02	16 15	→	16 55
21B	21604		15 20	→	15 34	15 41	15 50	→	→	→	→	→	→	16 45
21D	21602			15 40	→	→	→	15 57	16 15	→	→	→	→	17 10
21H	21610									16 20	16 32	16 45	→	17 30
21H	21640									16 50	17 02	17 15	→	18 05
21B	21664		16 20	→	16 34	16 41	16 50	→	→	→	→	→	→	17 55
21D	21662			16 40	→	→	→	16 59	17 20	→	→	→	→	18 20
21H	21670									17 20	17 32	17 45	→	18 35
21K	21672									17 40	→	→	→	18 45
21H	21690									17 50	18 02	18 15	→	19 05
21C	21680						17 20	→	→	→	→	→	→	18 30
21B	21702		17 20	→	17 34	17 41	17 50	→	→	→	→	→	→	18 55
21D	21692			17 40	→	→	→	18 01	18 25	→	→	→	→	19 20
21H	21700									18 20	18 32	18 45	→	19 30
21H	21720									18 50	19 02	19 15	→	20 00
21N	21742		18 20	→	18 34	18 41	18 50	19 00	19 15	→	→	→	→	20 00
21H	21740									19 25	19 35	19 45	→	20 20
21H	21760									19 55	20 05	20 15	→	20 50
21	21780		19 20	→	19 34	19 41	19 50	20 00	20 15	20 30	20 40	20 50	→	21 15
21H	21800									20 55	21 05	21 15	→	21 50
21	21820		20 25	→	20 36	20 40	20 50	21 00	21 15	21 25	21 35	21 45	→	22 15
21H	21840									21 55	22 05	22 15	→	22 45
21	21850		21 25	→	21 36	21 40	21 50	22 00	22 15	22 25	22 35	22 45	→	23 15
21H	21870									22 55	23 05	23 15	→	23 40
21	21880		22 25	→	22 36	22 40	22 50	22 58	23 11	23 20	23 30	23 40	→	24 00
21H	21900									23 55	00 05	00 15	→	00 35
21	21920		23 30	→	23 40	23 43	23 50	23 58	00 11	00 20	00 30	00 40	→	01 00
21	21940		00 30	→	00 40	00 43	00 50	00 58	01 11	01 20	01 30	01 40	→	02 00

Monday to Friday (except holidays)
Du lundi au vendredi (sauf les jours fériés)

WESTBOUND / EN DIRECTION OUEST

Route Number / Nombre d'itinéraire	Trip Number / N° du trajet	Exception	Union Station (Toronto 2 Dp)	Kipling GO (Toronto 3)	Dixie GO (Mississauga 11)	Cooksville GO (Mississauga 11)	Square One (Mississauga 20)	Erindale GO (Mississauga 12)	Streetsville GO (Mississauga 21)	Meadowvale GO (Mississauga 22)	Aquitaine Ave. @ Formentera Ave. Meadowvale Town Centre (Mississauga 22)	Derry Rd. W. @ Ninth Line (Mississauga 22)	Lisgar GO (Mississauga 23)	Milton GO (Milton 24)
21H	21071		05 50	→	06 05	06 12	06 30							
21	21091		06 20	→	06 37	06 47	07 05	07 12	07 27	07 40	07 42	07 48	→	08 10
21H	21121		06 50	→	07 07	07 17	07 40							
21H	21151		07 20	→	07 45	07 57	08 20							
21N	21153		07 20	→	→	→	→	08 05	08 20	08 35	08 37	08 43	→	09 05
21H	21181		07 50	→	08 20	08 32	09 00							
21H	21211		08 20	→	08 50	09 02	09 25							
21N	21213		08 20	→	→	→	→	09 05	09 20	09 35	09 37	09 43	→	10 05
21H	21251		09 20	→	09 40	09 52	10 15							
21N	21253		09 20	→	→	→	→	09 50	10 05	10 20	10 22	10 28	→	10 50
21H	21271		09 50	→	10 07	10 17	10 40							
21H	21291		10 20	→	10 37	10 47	11 10							
21N	21293		10 20	→	→	→	→	10 50	11 05	11 20	11 22	11 28	→	11 50
21H	21311		10 50	→	11 07	11 17	11 40							
21H	21331		11 20	→	11 37	11 47	12 10							
21D	21333		11 20	→	→	→	→	11 50	12 05	→	→	→	12 30	
21B	21345		11 30	→	→	→	→	→	→	12 10	12 12	12 18	→	12 40
21D	21353		11 50	→	→	→	→	12 20	12 35	→	→	→	13 00	
21H	21351		11 50	→	12 10	12 22	12 45							
21B	21365		12 00	→	→	→	→	→	→	12 40	12 42	12 48	→	13 10
21H	21371		12 20	→	12 45	12 57	13 20							
21D	21373		12 20	→	→	→	→	12 50	13 05	→	→	→	13 30	
21B	21385		12 30	→	→	→	→	→	→	13 10	13 12	13 18	→	13 40
21H	21391		12 50	→	13 15	13 27	13 50							
21D	21393		12 50	→	→	→	→	13 20	13 35	→	→	→	14 00	
21B	21405		13 00	→	→	→	→	→	→	13 40	13 42	13 48	→	14 10
21H	21411		13 10	→	13 35	13 47	14 10							
21D	21413		13 20	→	→	→	→	13 55	14 10	→	→	→	14 35	
21H	21421		13 30	→	13 55	14 07	14 30							
21B	21425		13 30	→	→	→	→	→	→	14 10	14 12	14 18	→	14 40
21D	21423		13 40	→	→	→	→	14 15	14 30	→	→	→	14 55	
21B	21435		13 50	→	→	→	→	→	→	14 35	14 37	14 43	→	15 05
21H	21431		13 50	→	14 15	14 27	14 50							
21D	21443		14 00	→	→	→	→	14 40	14 55	→	→	→	15 20	
21B	21445		14 10	→	→	→	→	→	→	15 00	15 02	15 08	→	15 30

Monday to Friday (except holidays)
Du lundi au vendredi (sauf les jours fériés)

WESTBOUND / EN DIRECTION OUEST

Route Number Nombre d'itinéraire	Trip Number N° du trajet	Exception	Zone→	Toronto 2 Dp	Toronto 3	Mississauga 11	Mississauga 11	Mississauga 20	Mississauga 12	Mississauga 21	Mississauga 22	Mississauga 22	Mississauga 22	Mississauga 23	Milton 24
				Union Station	Kipling GO	Dixie GO	Cooksville GO	Square One	Erindale GO	Streetsville GO	Meadowvale GO	Aquitaine Ave. @ Formentera Ave. Meadowvale Town Centre	Derry Rd. W. @ Ninth Line	Lisgar GO	Milton GO
21H	21441			14 10	→	14 40	14 52	15 15							
21D	21453			14 20	→	→	→	→	15 00	15 15	→	→	→	15 45	
21B	21465			14 30	→	→	→	→	→	→	15 25	15 27	15 33	→	16 00
21H	21461			14 30	→	15 00	15 12	15 35							
21D	21463			14 40	→	→	→	→	15 25	15 40	→	→	→	16 10	
21B	21475			14 45	→	→	→	→	→	→	15 40	15 42	15 48	→	16 15
21H	21471			14 50	→	15 20	15 32	16 00							
21D	21473			14 55	→	→	→	→	15 40	15 55	→	→	→	16 25	
21B	21485			15 00	→	→	→	→	→	→	15 55	15 57	16 03	→	16 30
	2705			15 40	15 56	16 02	16 08	→	16 14	16 19	16 25	→	→	16 29	16 39
	2709			16 10	16 26	16 32	16 38	→	16 44	16 49	16 55	→	→	16 59	17 09
	2713			16 40	16 56	17 02	17 09	→	17 16	17 21	17 28	→	→	17 32	17 42
	2715			16 55	17 11	17 17	17 24	→	17 30	17 35	17 41	→	→	17 46	17 55
	2717			17 10	17 26	17 32	17 39	→	17 45	17 50	17 56	→	→	18 01	18 10
	2719			17 25	17 41	17 47	17 54	→	18 00	18 05	18 11	→	→	18 16	18 25
	2721			17 40	17 56	18 02	18 09	→	18 15	18 20	18 26	→	→	18 31	18 40
	2723			17 55	18 11	18 17	18 23	→	18 29	18 34	18 40	→	→	18 45	18 54
	2725			18 25	18 41	18 47	18 53	→	18 59	19 04	19 10	→	→	19 15	19 24
	2729			19 10	19 26	19 32	19 38	→	19 44	19 49	19 55	→	→	19 59	20 09
21E	21713			19 25	→	→	→	→	→	20 05	→	→	→	20 30	
21B	21725			19 30	→	→	→	→	→	→	20 10	20 12	20 18	→	20 40
21M	21717			19 30	→	19 55									
21G	21727			19 30	→	→	→	→	20 10						
21J	21711			19 35	→	→	20 02	20 25							
21J	21721			19 40	→	→	20 07	20 30							
21D	21723			19 40	→	→	→	→	20 10	20 25	→	→	→	20 50	
21B	21735			19 45	→	→	→	→	→	→	20 25	20 27	20 33	→	20 55
21J	21731			19 50	→	→	20 17	20 40							
21D	21733			19 55	→	→	→	→	20 25	20 40	→	→	→	21 05	
21M	21747			20 00	→	20 25									
21B	21745			20 00	→	→	→	→	→	→	20 40	20 42	20 48	→	21 10
21J	21741			20 05	→	→	20 32	20 55							
21D	21743			20 10	→	→	→	→	20 40	20 55	→	→	→	21 20	
21B	21753			20 15	→	→	→	→	→	→	20 55	20 57	21 03	→	21 25
21J	21751			20 20	→	→	20 42	21 05							
21D	21755			20 25	→	→	→	→	20 55	21 10	→	→	→	21 35	
21B	21757			20 30	→	→	→	→	→	→	21 05	21 07	21 13	→	21 35
21H	21761			20 35	→	20 55	21 07	21 30							

Monday to Friday (except holidays)
Du lundi au vendredi (sauf les jours fériés)

WESTBOUND / EN DIRECTION OUEST

Route Number Nombre d'itinéraire	Trip Number N° du trajet	Exception	Zone→	Toronto 2 Dp	Toronto 3	Mississauga 11	Mississauga 11	Mississauga 20	Mississauga 12	Mississauga 21	Mississauga 22	Mississauga 22	Mississauga 22	Mississauga 23	Milton 24
				Union Station	Kipling GO	Dixie GO	Cooksville GO	Square One	Erindale GO	Streetsville GO	Meadowvale GO	Aquitaine Ave. @ Formentera Ave. Meadowvale Town Centre	Derry Rd. W. @ Ninth Line	Lisgar GO	Milton GO
21D	21763			20 40	→	→	→	→	21 10	21 25	→	→	→	21 50	
21B	21765			20 45	→	→	→	→	→	→	21 20	21 22	21 28	→	21 50
21D	21773			20 55	→	→	→	→	21 25	21 40	→	→	→	22 05	
21H	21771			20 50	→	21 07	21 17	21 40							
21B	21785			21 00	→	→	→	→	→	→	21 35	21 37	21 43	→	22 05
21H	21781			21 05	→	21 22	21 32	21 55							
21D	21783			21 10	→	→	→	→	21 40	21 55	→	→	→	22 15	
21H	21791			21 20	→	21 37	21 47	22 10							
21B	21795			21 20	→	→	→	→	→	→	21 55	21 57	22 03	→	22 25
21D	21803			21 25	→	→	→	→	21 55	22 10	→	→	→	22 30	
21H	21801			21 35	→	21 52	22 02	22 25							
21B	21805			21 40	→	→	→	→	→	→	22 15	22 17	22 23	→	22 45
21D	21813			21 45	→	→	→	→	22 15	22 30	→	→	→	22 50	
21H	21811			21 50	→	22 07	22 17	22 40							
21B	21821			22 00	→	→	→	→	→	→	22 35	22 37	22 43	→	23 05
21H	21823			22 05	→	22 22	22 32	22 55							
21D	21825			22 05	→	→	→	→	22 35	22 50	→	→	→	23 10	
21H	21831			22 20	→	22 37	22 47	23 05							
21D	21833			22 25	→	→	→	→	22 55	23 10	→	→	→	23 30	
21B	21835			22 30	→	→	→	→	→	→	23 05	23 07	23 13	→	23 35
21H	21841			22 50	→	23 07	23 17	23 35							
21D	21843			22 50	→	→	→	→	23 20	23 35	→	→	→	23 55	
21B	21855			23 00	→	→	→	→	→	→	23 35	23 37	23 43	→	00 05
21H	21861			23 20	→	23 37	23 47	00 05							
21D	21863			23 20	→	→	→	→	23 50	00 05	→	→	→	00 25	
21B	21865			23 30	→	→	→	→	→	→	00 05	00 07	00 11	→	00 30
21H	21871			23 50	→	00 07	00 17	00 35							
21H	21891			00 20	→	00 37	00 47	01 05							
21N	21893			00 20	→	→	→	→	00 50	01 02	01 10	01 12	01 16	→	01 35
21H	21901			00 50	→	01 05	01 12	01 30							
21N	21923			01 20	→	→	→	→	01 50	02 02	02 10	02 12	02 16	→	02 35
21H	21921			01 20	→	01 35	01 42	02 00							
21H	21931	Fri		01 50	→	02 05	02 12	02 30							
21N	21955	Fri		02 20	→	→	→	→	02 50	03 02	03 10	03 12	03 16	→	03 30
21	21951	M-Th		02 20	→	02 35	02 42	03 00	03 05	03 17	03 25	03 27	03 31	→	03 45
21H	21953	Fri		02 20	→	02 35	02 42	03 00							

Saturday
Samedi

EASTBOUND / EN DIRECTION EST

Route Number / Nombre d'itinéraire	Trip Number / N° du trajet	Milton 24 — Milton GO	Mississauga 22 — Derry Rd. W. @ Ninth Line	Mississauga 22 — Aquitane Ave. @ Meadowvale Town Centre Circle	Mississauga 22 — Meadowvale GO	Mississauga 21 — Streetsville GO	Mississauga 12 — Erindale GO	Mississauga 20 — Square One	Mississauga 11 — Cooksville GO	Toronto 2 — Union Station Bus Terminal (Ar)
21B	21104	05 30	05 41	05 45	05 55	→	→	→	→	06 30
21P	21132				05 55	06 05	06 20	06 30	06 40	07 10
21P	21160				06 25	06 35	06 50	07 00	07 10	07 40
21B	21164	06 30	06 41	06 45	06 55	→	→	→	→	07 30
21P	21192				06 55	07 05	07 20	07 30	07 40	08 10
21P	21210				07 10	07 20	07 35	07 45	07 55	08 25
21B	21194	07 00	07 11	07 15	07 25	→	→	→	→	08 00
21P	21220				07 25	07 35	07 50	08 00	08 10	08 40
21P	21230				07 40	07 50	08 05	08 15	08 25	08 55
21B	21224	07 30	07 41	07 45	07 55	→	→	→	→	08 30
21P	21240				07 55	08 05	08 20	08 30	08 40	09 10
21P	21260				08 15	08 25	08 40	08 50	09 00	09 30
21B	21244	08 00	08 11	08 15	08 25	→	→	→	→	09 00
21P	21270				08 35	08 45	09 00	09 10	09 20	09 50
21B	21264	08 30	08 41	08 45	08 55	→	→	→	→	09 35
21P	21280				08 55	09 05	09 20	09 30	09 40	10 15
21P	21300				09 15	09 25	09 40	09 50	10 00	10 40
21B	21284	08 55	09 06	09 10	09 20	→	→	→	→	10 00
21P	21310				09 35	09 45	10 00	10 10	10 20	11 00
21B	21304	09 25	09 37	09 42	09 50	→	→	→	→	10 35
21P	21320				09 55	10 05	10 20	10 35	10 45	11 25
21P	21340				10 15	10 25	10 40	10 55	11 05	11 45
21B	21324	09 55	10 08	10 13	10 25	→	→	→	→	11 10
21P	21350				10 35	10 45	11 00	11 15	11 25	12 05
21B	21344	10 25	10 38	10 43	10 55	→	→	→	→	11 40
21P	21360				10 55	11 05	11 20	11 35	11 45	12 25
21P	21380				11 15	11 25	11 40	11 55	12 05	12 50

Saturday
Samedi

EASTBOUND / EN DIRECTION EST

Route Number / Nombre d'itinéraire	Trip Number / N° du trajet	Milton 24 — Milton GO	Mississauga 22 — Derry Rd. W. @ Ninth Line	Mississauga 22 — Aquitane Ave. @ Meadowvale Town Centre Circle	Mississauga 22 — Meadowvale GO	Mississauga 21 — Streetsville GO	Mississauga 12 — Erindale GO	Mississauga 20 — Square One	Mississauga 11 — Cooksville GO	Toronto 2 — Union Station Bus Terminal (Ar)
21B	21364	10 55	11 08	11 13	11 25	→	→	→	→	12 15
21P	21390				11 35	11 45	12 00	12 15	12 25	13 10
21B	21384	11 25	11 38	11 43	11 55	→	→	→	→	12 45
21P	21400				11 55	12 05	12 20	12 35	12 45	13 30
21P	21420				12 15	12 25	12 40	12 55	13 05	13 50
21B	21404	11 55	12 08	12 13	12 25	→	→	→	→	13 15
21P	21430				12 35	12 45	13 00	13 15	13 25	14 10
21B	21424	12 25	12 38	12 43	12 55	→	→	→	→	13 45
21P	21440				12 55	13 05	13 20	13 35	13 45	14 30
21P	21460				13 15	13 25	13 40	13 55	14 05	14 50
21B	21444	12 55	13 08	13 13	13 25	→	→	→	→	14 15
21P	21470				13 35	13 45	14 00	14 15	14 25	15 15
21B	21464	13 25	13 38	13 43	13 55	→	→	→	→	14 45
21P	21490				13 55	14 05	14 20	14 35	14 45	15 35
21P	21510				14 15	14 25	14 40	14 55	15 05	15 55
21B	21484	13 55	14 08	14 13	14 25	→	→	→	→	15 15
21P	21530				14 35	14 45	15 00	15 15	15 25	16 15
21B	21514	14 25	14 38	14 43	14 55	→	→	→	→	15 45
21P	21550				14 55	15 05	15 20	15 35	15 45	16 35
21P	21570				15 10	15 20	15 35	15 50	16 00	16 50
21B	21544	14 55	15 08	15 13	15 25	→	→	→	→	16 15
21P	21580				15 25	15 35	15 50	16 05	16 15	17 05
21B	21574	15 25	15 38	15 43	15 55	→	→	→	→	16 45
21P	21590				15 40	15 50	16 05	16 20	16 30	17 20
21P	21610				15 55	16 05	16 20	16 35	16 45	17 35
21P	21630				16 10	16 20	16 35	16 50	17 00	17 50

Saturday
Samedi

EASTBOUND / EN DIRECTION EST

Route Number / Nombre d'itinéraire	Trip Number / N° du trajet	Milton 24 — Milton GO	Mississauga 22 — Derry Rd. W. @ Ninth Line	Mississauga 22 — Aquitane Ave. @ Meadowvale Town Centre Circle	Mississauga 22 — Meadowvale GO	Mississauga 21 — Streetsville GO	Mississauga 12 — Erindale GO	Mississauga 20 — Square One	Mississauga 11 — Cooksville GO	Toronto 2 — Union Station Bus Terminal Ar
21B	21604	15 55	16 08	16 13	16 25	→	→	→	→	17 15
21P	21640				16 25	16 35	16 50	17 05	17 15	18 05
21P	21650				16 40	16 50	17 05	17 20	17 30	18 20
21B	21634	16 25	16 38	16 43	16 55	→	→	→	→	17 45
21P	21660				16 55	17 05	17 20	17 35	17 45	18 35
21P	21670				17 10	17 20	17 35	17 50	18 00	18 50
21P	21680				17 25	17 35	17 50	18 05	18 15	19 05
21P	21690				17 40	17 50	18 05	18 20	18 30	19 20
21B	21684	17 25	17 38	17 43	17 55	→	→	→	→	18 45
21P	21700				17 55	18 05	18 20	18 35	18 45	19 35
21P	21722				18 15	18 25	18 40	18 55	19 05	19 55
21P	21730				18 35	18 45	19 00	19 15	19 25	20 10
21B	21724	18 25	18 38	18 43	18 55	→	→	→	→	19 40
21P	21740				18 55	19 05	19 20	19 35	19 45	20 25
21P	21760				19 25	19 35	19 50	20 05	20 15	20 50
21B	21764	19 25	19 38	19 43	19 55	→	→	→	→	20 35
21P	21780				19 55	20 05	20 20	20 35	20 45	21 20
21P	21800				20 25	20 35	20 50	21 05	21 15	21 50
21B	21804	20 30	20 41	20 45	20 55	→	→	→	→	21 35
21P	21820				20 55	21 05	21 20	21 35	21 45	22 15
21P	21830				21 25	21 35	21 50	22 05	22 15	22 45
21A	21850	21 30	21 41	21 45	21 55	22 05	22 20	22 30	22 40	23 10
21P	21860				22 25	22 35	22 50	23 00	23 10	23 40
21A	21880	22 35	22 46	22 50	23 00	23 08	23 21	23 30	23 40	00 10
21A	21910	23 35	23 45	23 48	23 55	00 03	00 16	00 25	00 35	01 00
21A	21930	00 35	00 45	00 48	00 55	01 03	01 16	01 25	01 35	02 00

Saturday
Samedi

WESTBOUND / EN DIRECTION OUEST

Route Number / Nombre d'itinéraire	Trip Number / N° du trajet	Toronto 2 — Union Station Bus Terminal Dp	Mississauga 11 — Cooksville GO	Mississauga 20 — Square One	Mississauga 12 — Erindale GO	Mississauga 21 — Streetsville GO	Mississauga 22 — Meadowvale GO	Mississauga 22 — Aquitane Ave. @ Formentera Ave. Meadowvale Town Centre	Mississauga 22 — Derry Rd. W. @ Ninth Line	Milton 24 — Milton GO
21P	21153	07 20	07 42	07 55	08 02	08 15	08 30			
21B	21195	08 00	→	→	→	→	08 35	08 37	08 43	09 00
21P	21181	07 50	08 12	08 25	08 32	08 45	09 00			
21B	21225	08 30	→	→	→	→	09 05	09 07	09 13	09 30
21P	21211	08 20	08 42	08 55	09 02	09 15	09 30			
21B	21245	09 00	→	→	→	→	09 35	09 37	09 43	10 00
21P	21221	08 40	09 02	09 15	09 22	09 35	09 50			
21B	21265	09 30	→	→	→	→	10 05	10 07	10 13	10 30
21P	21241	09 00	09 22	09 40	09 47	10 00	10 15			
21P	21251	09 20	09 42	10 00	10 07	10 20	10 35			
21B	21285	10 00	→	→	→	→	10 35	10 37	10 43	11 05
21P	21261	09 40	10 02	10 20	10 27	10 40	10 55			
21B	21305	10 30	→	→	→	→	11 10	11 12	11 18	11 40
21P	21281	10 00	10 22	10 40	10 47	11 00	11 15			
21P	21291	10 20	10 42	11 05	11 12	11 25	11 40			
21B	21325	11 00	→	→	→	→	11 40	11 42	11 48	12 10
21P	21301	10 40	11 02	11 25	11 32	11 45	12 00			
21B	21345	11 30	→	→	→	→	12 15	12 17	12 23	12 45
21P	21321	11 00	11 22	11 45	11 52	12 05	12 20			
21P	21331	11 20	11 47	12 10	12 17	12 30	12 45			
21B	21365	12 00	→	→	→	→	12 45	12 47	12 53	13 15
21P	21341	11 40	12 07	12 30	12 37	12 50	13 05			
21B	21385	12 30	→	→	→	→	13 15	13 17	13 23	13 45
21P	21361	12 00	12 27	12 50	12 57	13 10	13 25			
21B	21405	13 00	→	→	→	→	13 45	13 47	13 53	14 15
21P	21371	12 20	12 47	13 10	13 17	13 30	13 45			
21P	21381	12 40	13 07	13 35	13 42	13 55	14 10			
21B	21425	13 30	→	→	→	→	14 15	14 17	14 23	14 45
21P	21401	13 00	13 27	13 55	14 02	14 15	14 30			

Saturday
Samedi

WESTBOUND / EN DIRECTION OUEST

Route Number / Nombre d'itinéraire	Trip Number / N° du trajet	Zone → Toronto 2 Dp Union Station Bus Terminal	Mississauga 11 Cooksville GO	Mississauga 20 Square One	Mississauga 12 Erindale GO	Mississauga 21 Streetsville GO	Mississauga 22 Meadowvale GO	Mississauga 22 Aquitane Ave. @ Formentera Ave. Meadowvale Town Centre	Mississauga 22 Derry Rd. W. @ Ninth Line	Milton 24 Milton GO
21B	21445	14 00	→	→	→	→	14 45	14 47	14 53	15 15
21P	21411	13 20	13 47	14 15	14 22	14 35	14 50			
21P	21421	13 40	14 07	14 35	14 42	14 55	15 10			
21B	21465	14 30	→	→	→	→	15 15	15 17	15 23	15 45
21P	21441	14 00	14 27	14 55	15 02	15 15	15 30			
21B	21485	15 00	→	→	→	→	15 45	15 47	15 53	16 15
21P	21451	14 20	14 47	15 15	15 22	15 35	15 50			
21P	21461	14 40	15 07	15 35	15 42	15 55	16 10			
21B	21515	15 30	→	→	→	→	16 15	16 17	16 23	16 45
21P	21481	15 00	15 27	15 55	16 02	16 15	16 30			
21B	21545	16 00	→	→	→	→	16 50	16 52	16 58	17 20
21P	21501	15 20	15 47	16 15	16 22	16 35	16 50			
21P	21531	15 40	16 07	16 35	16 42	16 55	17 10			
21B	21575	16 30	→	→	→	→	17 20	17 22	17 28	17 50
21P	21541	16 00	16 27	16 55	17 02	17 15	17 30			
21P	21561	16 20	16 47	17 15	17 22	17 35	17 50			
21B	21605	17 00	→	→	→	→	17 50	17 52	17 58	18 20
21P	21571	16 35	17 02	17 30	17 37	17 50	18 05			
21B	21635	17 30	→	→	→	→	18 20	18 22	18 28	18 50
21P	21591	16 50	17 17	17 45	17 52	18 05	18 20			
21P	21603	17 05	17 32	18 00	18 07	18 20	18 35			
21B	21665	18 00	→	→	→	→	18 50	18 52	18 58	19 20
21P	21621	17 20	17 47	18 15	18 22	18 35	18 50			
21P	21631	17 35	18 02	18 30	18 37	18 50	19 05			
21B	21685	18 30	→	→	→	→	19 20	19 22	19 28	19 50
21P	21651	17 50	18 17	18 45	18 52	19 05	19 20			
21P	21661	18 05	18 32	19 00	19 07	19 20	19 35			
21B	21705	19 00	→	→	→	→	19 45	19 47	19 53	20 15
21P	21671	18 20	18 47	19 15	19 22	19 35	19 50			

Saturday
Samedi

WESTBOUND / EN DIRECTION OUEST

Route Number / Nombre d'itinéraire	Trip Number / N° du trajet	Zone → Toronto 2 Dp Union Station Bus Terminal	Mississauga 11 Cooksville GO	Mississauga 20 Square One	Mississauga 12 Erindale GO	Mississauga 21 Streetsville GO	Mississauga 22 Meadowvale GO	Mississauga 22 Aquitane Ave. @ Formentera Ave. Meadowvale Town Centre	Mississauga 22 Derry Rd. W. @ Ninth Line	Milton 24 Milton GO
21P	21681	18 35	19 02	19 25	19 32	19 45	20 00			
21P	21693	18 50	19 17	19 40	19 47	20 00	20 15			
21P	21703	19 05	19 32	19 55	20 02	20 15	20 30			
21P	21711	19 20	19 47	20 10	20 17	20 30	20 45			
21B	21745	20 00	→	→	→	→	20 40	20 42	20 48	21 10
21P	21721	19 40	20 07	20 30	20 37	20 50	21 05			
21P	21741	20 00	20 22	20 45	20 52	21 05	21 20			
21P	21751	20 20	20 42	21 05	21 12	21 25	21 40			
21P	21761	20 40	21 02	21 20	21 27	21 40	21 55			
21B	21785	21 00	→	→	→	→	21 40	21 42	21 48	22 10
21P	21781	21 00	21 22	21 40	21 47	22 00	22 15			
21P	21791	21 20	21 42	22 00	22 07	22 20	22 35			
21P	21811	21 40	22 02	22 20	22 27	22 40	22 55			
21B	21825	22 00	→	→	→	→	22 35	22 37	22 43	23 05
21P	21821	22 00	22 22	22 40	22 47	23 00	23 10			
21P	21831	22 20	22 42	23 00	23 07	23 20	23 30			
21P	21841	22 40	23 02	23 20	23 27	23 40	23 50			
21B	21855	23 00	→	→	→	→	23 35	23 37	23 41	24 00
21P	21851	23 00	23 22	23 40	23 47	24 00	24 10			
21P	21861	23 20	23 42	24 00	00 07	00 20	00 30			
21B	21885	24 00	→	→	→	→	00 35	00 37	00 41	01 00
21P	21871	23 50	00 12	00 30	00 37	00 50	01 00			
21P	21891	00 20	00 42	01 00	01 07	01 20	01 30			
21B	21915	01 00	→	→	→	→	01 30	01 32	01 36	01 55
21P	21901	00 50	01 10	01 25	01 32	01 45	01 55			
21P	21923	01 20	01 40	01 55	02 02	02 15	02 25			
21B	21931	02 00	→	→	→	→	02 30	02 32	02 36	02 55
21P	21925	01 50	02 10	02 25	02 32	02 45	02 55			
21A	21951	02 20	02 40	02 50	02 57	03 10	03 20	03 22	03 26	03 45

Sunday
Dimanche

EASTBOUND / EN DIRECTION EST

Route Number / Nombre d'itinéraire	Trip Number / N° du trajet	Milton GO (Zone 24)	Derry Rd. W. @ Ninth Line (Mississauga 22)	Aquitane Ave. @ Meadowvale Town Centre Circle (Mississauga 22)	Meadowvale GO (Mississauga 22)	Streetsville GO (Mississauga 21)	Erindale GO (Mississauga 12)	Square One (Mississauga 20)	Cooksville GO (Mississauga 11)	Union Station Bus Terminal (Toronto 2 Ar)
21A	21130	05 30	05 42	05 47	05 55	06 05	06 20	06 30	06 40	07 05
21P	21160				06 25	06 35	06 50	07 00	07 10	07 35
21A	21190	06 30	06 42	06 47	06 55	07 05	07 20	07 30	07 40	08 05
21P	21220				07 25	07 35	07 50	08 00	08 10	08 35
21B	21224	07 30	07 42	07 47	07 55	→	→	→	→	08 30
21P	21240				07 55	08 05	08 20	08 30	08 40	09 05
21P	21262				08 25	08 35	08 50	09 00	09 10	09 35
21B	21264	08 30	08 42	08 47	08 55	→	→	→	→	09 30
21P	21280				08 55	09 05	09 20	09 30	09 40	10 10
21P	21302				09 25	09 35	09 50	10 00	10 10	10 45
21B	21304	09 25	09 37	09 42	09 50	→	→	→	→	10 30
21P	21320				09 55	10 05	10 20	10 35	10 45	11 20
21P	21340				10 15	10 25	10 40	10 55	11 05	11 40
21P	21350				10 35	10 45	11 00	11 15	11 25	12 00
21B	21344	10 25	10 38	10 45	10 55	→	→	→	→	11 35
21P	21360				10 55	11 05	11 20	11 35	11 45	12 20
21P	21380				11 15	11 25	11 40	11 55	12 05	12 45
21B	21364	10 55	11 08	11 15	11 25	→	→	→	→	12 10
21P	21390				11 35	11 45	12 00	12 15	12 25	13 05
21B	21384	11 25	11 38	11 45	11 55	→	→	→	→	12 40
21P	21400				11 55	12 05	12 20	12 35	12 45	13 25
21P	21420				12 15	12 25	12 40	12 55	13 05	13 45
21B	21404	11 55	12 08	12 15	12 25	→	→	→	→	13 10
21P	21430				12 35	12 45	13 00	13 15	13 25	14 05
21B	21424	12 25	12 38	12 45	12 55	→	→	→	→	13 40
21P	21440				12 55	13 05	13 20	13 35	13 45	14 25
21B	21444	12 55	13 08	13 15	13 25	→	→	→	→	14 10
21P	21462				13 25	13 35	13 50	14 05	14 15	14 55
21B	21464	13 25	13 38	13 45	13 55	→	→	→	→	14 40

Sunday
Dimanche

EASTBOUND / EN DIRECTION EST

Route Number / Nombre d'itinéraire	Trip Number / N° du trajet	Milton GO (Zone 24)	Derry Rd. W. @ Ninth Line (Mississauga 22)	Aquitane Ave. @ Meadowvale Town Centre Circle (Mississauga 22)	Meadowvale GO (Mississauga 22)	Streetsville GO (Mississauga 21)	Erindale GO (Mississauga 12)	Square One (Mississauga 20)	Cooksville GO (Mississauga 11)	Union Station Bus Terminal (Toronto 2 Ar)
21P	21490				13 55	14 05	14 20	14 35	14 45	15 25
21B	21484	13 55	14 08	14 15	14 25	→	→	→	→	15 10
21P	21520				14 25	14 35	14 50	15 05	15 15	15 55
21B	21514	14 25	14 38	14 45	14 55	→	→	→	→	15 40
21P	21550				14 55	15 05	15 20	15 35	15 45	16 25
21B	21544	14 55	15 08	15 15	15 25	→	→	→	→	16 10
21P	21580				15 25	15 35	15 50	16 05	16 15	16 55
21B	21574	15 25	15 38	15 45	15 55	→	→	→	→	16 40
21P	21610				15 55	16 05	16 20	16 35	16 45	17 25
21B	21604	15 55	16 08	16 15	16 25	→	→	→	→	17 10
21P	21640				16 25	16 35	16 50	17 05	17 15	17 55
21B	21634	16 25	16 38	16 45	16 55	→	→	→	→	17 40
21P	21660				16 55	17 05	17 20	17 35	17 45	18 30
21B	21664	16 55	17 08	17 15	17 25	→	→	→	→	18 10
21P	21680				17 25	17 35	17 50	18 05	18 15	19 00
21B	21684	17 25	17 38	17 45	17 55	→	→	→	→	18 40
21P	21700				17 55	18 05	18 20	18 35	18 45	19 30
21P	21720				18 25	18 35	18 50	19 05	19 15	19 55
21B	21724	18 25	18 38	18 45	18 55	→	→	→	→	19 40
21P	21740				18 55	19 05	19 20	19 35	19 45	20 25
21B	21764	19 25	19 38	19 45	19 55	→	→	→	→	20 35
21P	21780				19 55	20 05	20 20	20 35	20 40	21 20
21B	21804	20 30	20 42	20 49	20 55	→	→	→	→	21 35
21P	21820				20 55	21 05	21 20	21 35	21 45	22 10
21A	21850	21 30	21 42	21 49	21 55	22 05	22 20	22 30	22 40	23 05
21A	21880	22 35	22 47	22 54	23 00	23 08	23 21	23 30	23 40	00 05
21A	21910	23 35	23 47	23 54	24 00	00 08	00 21	00 30	00 40	01 05
21A	21930	00 35	00 47	00 54	01 00	01 08	01 21	01 30	01 40	02 05

Sunday
Dimanche

WESTBOUND / EN DIRECTION OUEST

Route Number Nombre d'itinéraire	Trip Number N° du trajet	Union Station Bus Terminal (Toronto, Zone 2, Dp)	Cooksville GO (Mississauga, Zone 11)	Square One (Mississauga, Zone 20)	Erindale GO (Mississauga, Zone 12)	Streetsville GO (Mississauga, Zone 21)	Meadowvale GO (Mississauga, Zone 22)	Aquitane Ave. @ Formentera Ave. Meadowvale Town Centre (Mississauga, Zone 22)	Derry Rd. W. @ Ninth Line (Mississauga, Zone 22)	Milton GO (Milton, Zone 24)
21A	21151	07 20	07 42	07 55	08 02	08 15	08 30	08 32	08 38	08 55
21P	21181	07 50	08 12	08 25	08 32	08 45	09 00			
21P	21211	08 20	08 42	08 55	09 02	09 15	09 30			
21B	21245	09 00	→	→	→	→	09 35	09 37	09 43	10 00
21P	21231	08 50	09 12	09 30	09 37	09 50	10 05			
21P	21251	09 20	09 42	10 00	10 07	10 20	10 35			
21B	21285	10 00	→	→	→	→	10 35	10 37	10 43	11 05
21P	21271	09 50	10 12	10 30	10 37	10 50	11 05			
21P	21291	10 20	10 42	11 05	11 12	11 25	11 40			
21B	21325	11 00	→	→	→	→	11 40	11 42	11 48	12 10
21P	21311	10 50	11 12	11 35	11 42	11 55	12 10			
21P	21331	11 20	11 47	12 10	12 17	12 30	12 45			
21B	21365	12 00	→	→	→	→	12 45	12 47	12 53	13 15
21B	21385	12 30	→	→	→	→	13 15	13 17	13 23	13 45
21P	21351	11 50	12 17	12 40	12 47	13 00	13 15			
21B	21405	13 00	→	→	→	→	13 45	13 47	13 53	14 15
21P	21371	12 20	12 47	13 10	13 17	13 30	13 45			
21B	21425	13 30	→	→	→	→	14 15	14 17	14 23	14 45
21P	21391	12 50	13 17	13 45	13 52	14 05	14 20			
21B	21445	14 00	→	→	→	→	14 45	14 47	14 53	15 15
21P	21411	13 20	13 47	14 15	14 22	14 35	14 50			
21B	21465	14 30	→	→	→	→	15 15	15 17	15 23	15 45
21P	21431	13 50	14 17	14 45	14 52	15 05	15 20			
21B	21485	15 00	→	→	→	→	15 45	15 47	15 53	16 15
21P	21451	14 20	14 47	15 15	15 22	15 35	15 50			
21B	21515	15 30	→	→	→	→	16 15	16 17	16 23	16 45
21P	21471	14 50	15 17	15 45	15 52	16 05	16 20			
21B	21545	16 00	→	→	→	→	16 50	16 52	16 58	17 20
21P	21501	15 20	15 47	16 15	16 22	16 35	16 50			
21P	21531	15 40	16 07	16 35	16 42	16 55	17 10			
21B	21575	16 30	→	→	→	→	17 20	17 22	17 28	17 50

Sunday
Dimanche

WESTBOUND / EN DIRECTION OUEST

Route Number Nombre d'itinéraire	Trip Number N° du trajet	Union Station Bus Terminal (Toronto, Zone 2, Dp)	Cooksville GO (Mississauga, Zone 11)	Square One (Mississauga, Zone 20)	Erindale GO (Mississauga, Zone 12)	Streetsville GO (Mississauga, Zone 21)	Meadowvale GO (Mississauga, Zone 22)	Aquitane Ave. @ Formentera Ave. Meadowvale Town Centre (Mississauga, Zone 22)	Derry Rd. W. @ Ninth Line (Mississauga, Zone 22)	Milton GO (Milton, Zone 24)
21P	21541	16 00	16 27	16 55	17 02	17 15	17 30			
21B	21605	17 00	→	→	→	→	17 50	17 52	17 58	18 20
21P	21561	16 20	16 47	17 15	17 22	17 35	17 50			
21P	21581	16 40	17 07	17 35	17 42	17 55	18 10			
21B	21635	17 30	→	→	→	→	18 20	18 22	18 28	18 50
21P	21601	17 00	17 27	17 55	18 02	18 15	18 30			
21B	21665	18 00	→	→	→	→	18 50	18 52	18 58	19 20
21P	21621	17 20	17 47	18 15	18 22	18 35	18 50			
21P	21641	17 40	18 07	18 35	18 42	18 55	19 10			
21B	21685	18 30	→	→	→	→	19 20	19 22	19 28	19 50
21P	21653	18 00	18 27	18 55	19 02	19 15	19 30			
21B	21705	19 00	→	→	→	→	19 45	19 47	19 53	20 15
21P	21671	18 20	18 47	19 15	19 22	19 35	19 50			
21P	21691	18 40	19 07	19 30	19 37	19 50	20 05			
21P	21701	19 00	19 27	19 50	19 57	20 10	20 25			
21P	21711	19 20	19 47	20 10	20 17	20 30	20 45			
21B	21745	20 00	→	→	→	→	20 40	20 42	20 48	21 10
21P	21731	19 50	20 12	20 35	20 42	20 55	21 10			
21P	21751	20 20	20 42	21 05	21 12	21 25	21 40			
21P	21771	20 50	21 12	21 30	21 37	21 50	22 05			
21B	21785	21 00	→	→	→	→	21 40	21 42	21 48	22 10
21P	21791	21 20	21 42	22 00	22 07	22 20	22 35			
21P	21813	21 50	22 12	22 30	22 37	22 50	23 05			
21B	21825	22 00	→	→	→	→	22 35	22 37	22 43	23 05
21P	21831	22 20	22 42	23 00	23 07	23 20	23 30			
21B	21855	23 00	→	→	→	→	23 35	23 37	23 41	24 00
21P	21861	23 20	23 42	24 00	00 07	00 20	00 30			
21B	21885	24 00	→	→	→	→	00 35	00 37	00 41	01 00
21P	21891	00 20	00 42	01 00	01 07	01 20	01 30			
21B	21915	01 00	→	→	→	→	01 30	01 32	01 36	01 55
21A	21921	01 20	01 40	01 55	02 02	02 15	02 25	02 27	02 31	02 50
21A	21951	02 20	02 40	02 50	02 57	03 10	03 20	03 22	03 26	03 45

Triplinx

https://www.triplinx.ca/ Printing date: 4/16/2019

27 Milton Hwy 401 Service

Towards 27 - Finch Terminal / 27A - Finch Terminal / 27B - York Mills Term / 27C - Finch Terminal / 27F - Finch Terminal / Finch Bus Terminal / York Mills Bus Terminal

Date: **Tuesday, 4/16/2019**

Schedule

Stop	Trips									
Transport modes	27F	27F	27F	27F	27F	27A	27F	27A	27F	27F
City : MILTON										
Milton GO Bus	↓	↓	↓	↓	↓	4:30 pm	↓	5:30 pm	↓	↓
Drew Centre @ Thompson Rd. S.	↓	↓	↓	↓	↓	4:30 pm	↓	5:30 pm	↓	↓
Thompson Rd. S. @ Childs Dr.	↓	↓	↓	↓	↓	4:31 pm	↓	5:31 pm	↓	→
Thompson Rd. S. @ McCuaig Dr.	↓	↓	↓	↓	↓	4:31 pm	↓	5:31 pm	↓	↓
Thompson Rd. S. @ Laurier Ave.	↓	↓	↓	↓	↓	4:32 pm	↓	5:32 pm	↓	↓
Derry Rd. @ Thompson Rd. S.	↓	↓	↓	↓	↓	4:33 pm	↓	5:33 pm	↓	↓
Derry Rd. @ Thompson Rd. S.	↓	↓	↓	↓	↓	4:33 pm	↓	5:33 pm	↓	↓
Derry Rd. @ Armstrong Blvd.	↓	↓	↓	↓	↓	4:34 pm	↓	5:34 pm	↓	↓
Derry Rd. @ Fourth Line	↓	↓	↓	↓	↓	4:35 pm	↓	5:35 pm	↓	↓
Derry Rd. @ Trudeau Dr.	↓	↓	↓	↓	↓	4:35 pm	↓	5:35 pm	↓	↓
Derry Rd. @ James Snow Pkwy.	↓	↓	↓	↓	↓	4:35 pm	↓	5:35 pm	↓	↓
Derry Rd. @ Trafalgar Rd.	↓	↓	↓	↓	↓	4:39 pm	↓	5:39 pm	↓	↓
City : MISSISSAUGA										
Derry Rd. W. @ Ninth Line	↓	↓	↓	↓	↓	4:43 pm	↓	5:43 pm	↓	↓
Derry Rd. W. @ Lisgar Dr.	↓	↓	↓	↓	↓	4:44 pm	↓	5:44 pm	↓	↓
Derry Rd. W. @ Forest Park Dr.	↓	↓	↓	↓	↓	4:45 pm	↓	5:45 pm	↓	↓
Derry Rd. W. @ Tenth Line W.	↓	↓	↓	↓	↓	4:46 pm	↓	5:46 pm	↓	↓

Stop	Trips									
Derry Rd. W. @ Danton Promenade	↓	↓	↓	↓	↓	4:47 pm	↓	5:47 pm	↓	↓
Derry Rd. W. @ Winston Churchill Blvd.	↓	↓	↓	↓	↓	4:47 pm	↓	5:47 pm	↓	↓
Winston Churchill Blvd. @ Vanderbilt Rd.	↓	↓	↓	↓	↓	4:48 pm	↓	5:48 pm	↓	↓
Aquitaine Ave. @ Meadowvale Town Centre Circle	↓	↓	↓	↓	↓	4:50 pm	↓	5:50 pm	↓	↓
Aquitaine Ave. @ Glen Erin Dr.	↓	↓	↓	↓	↓	4:52 pm	↓	5:52 pm	↓	↓
Aquitaine Ave. @ Montevideo Rd.	↓	↓	↓	↓	↓	4:54 pm	↓	5:54 pm	↓	↓
Aquitaine Ave. @ Millcreek Dr.	↓	↓	↓	↓	↓	4:57 pm	↓	5:57 pm	↓	↓
Meadowvale GO Bus	↑ 2:30 pm	↑ 3:00 pm	↑ 3:30 pm	↑ 4:00 pm	↑ 4:30 pm	5:00 pm	↑ 5:30 pm	6:00 pm	↑ 7:00 pm	↑ 8:00 pm
6700 Millcreek Dr. @ Aquitaine Ave.	2:31 pm	3:01 pm	3:31 pm	4:01 pm	4:31 pm	5:01 pm	5:31 pm	6:01 pm	7:01 pm	8:01 pm
Millcreek Dr. @ Millrace Crt.	2:31 pm	3:01 pm	3:32 pm	4:02 pm	4:32 pm	5:02 pm	5:32 pm	6:02 pm	7:01 pm	8:01 pm
Erin Mills Pkwy. @ Millcreek Dr.	2:32 pm	3:02 pm	3:33 pm	4:03 pm	4:33 pm	5:03 pm	5:33 pm	6:03 pm	7:02 pm	8:02 pm
Mississauga Rd. @ Mississauga Rd.	2:33 pm	3:03 pm	3:34 pm	4:04 pm	4:34 pm	5:04 pm	5:34 pm	6:04 pm	7:03 pm	8:03 pm
City : TORONTO										
York Mills Bus Terminal	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
City : MISSISSAUGA										
Mississauga Rd. @ Argentia Rd.	2:34 pm	3:04 pm	3:36 pm	4:06 pm	4:36 pm	5:06 pm	5:36 pm	6:06 pm	7:04 pm	8:04 pm
Mississauga Rd. @ Royal Bank Dr.	2:37 pm	3:07 pm	3:41 pm	4:11 pm	4:41 pm	5:11 pm	5:41 pm	6:11 pm	7:07 pm	8:07 pm
Syntex Crt. @ Financial Dr.	2:38 pm	3:08 pm	3:42 pm	4:12 pm	4:42 pm	5:12 pm	5:42 pm	6:12 pm	7:08 pm	8:08 pm
City : TORONTO										
Keele St. @ Hwy. 401	↓ 3:10 pm	↓ 3:40 pm	↓ 4:15 pm	↓ 4:50 pm	↓ 5:20 pm	↓ 5:50 pm	↓ 6:20 pm	↓ 6:45 pm	↓ 7:35 pm	↓ 8:30 pm
Yorkdale Bus Terminal	3:15 pm	3:45 pm	4:20 pm	4:55 pm	5:25 pm	5:55 pm	6:25 pm	6:50 pm	7:40 pm	8:35 pm
Yonge St. @ Glendora Ave.	3:24 pm	3:56 pm	4:31 pm	5:06 pm	5:36 pm	6:06 pm	6:36 pm	6:59 pm	7:49 pm	8:41 pm
Yonge St. @ Sheppard Ave.	3:25 pm	3:57 pm	4:32 pm	5:07 pm	5:37 pm	6:07 pm	6:37 pm	7:00 pm	7:50 pm	8:41 pm
Yonge St. @ Greenfield Ave.	3:25 pm	3:57 pm	4:32 pm	5:07 pm	5:37 pm	6:07 pm	6:37 pm	7:00 pm	7:50 pm	8:41 pm
Yonge St. @ Elmwood Ave.	3:26 pm	3:58 pm	4:33 pm	5:08 pm	5:38 pm	6:08 pm	6:38 pm	7:01 pm	7:51 pm	8:42 pm
Yonge St. @ Empress Ave.	3:26 pm	3:58 pm	4:33 pm	5:08 pm	5:38 pm	6:08 pm	6:38 pm	7:01 pm	7:51 pm	8:42 pm
Yonge St. @ Norton Ave.	3:27 pm	3:59 pm	4:34 pm	5:09 pm	5:39 pm	6:09 pm	6:39 pm	7:02 pm	7:52 pm	8:43 pm
Yonge St. @ Northtown Way	3:27 pm	3:59 pm	4:34 pm	5:09 pm	5:39 pm	6:09 pm	6:39 pm	7:02 pm	7:52 pm	8:43 pm

Stop	Trips									
Yonge St. @ Finch Ave.	3:28 pm	4:00 pm	4:35 pm	5:10 pm	5:40 pm	6:10 pm	6:40 pm	7:03 pm	7:53 pm	8:44 pm
Finch Bus Terminal	3:35 pm	4:10 pm	4:45 pm	5:20 pm	5:50 pm	6:20 pm	6:50 pm	7:10 pm	8:00 pm	8:50 pm

Schedules are given as a guideline, and depend on traffic conditions.

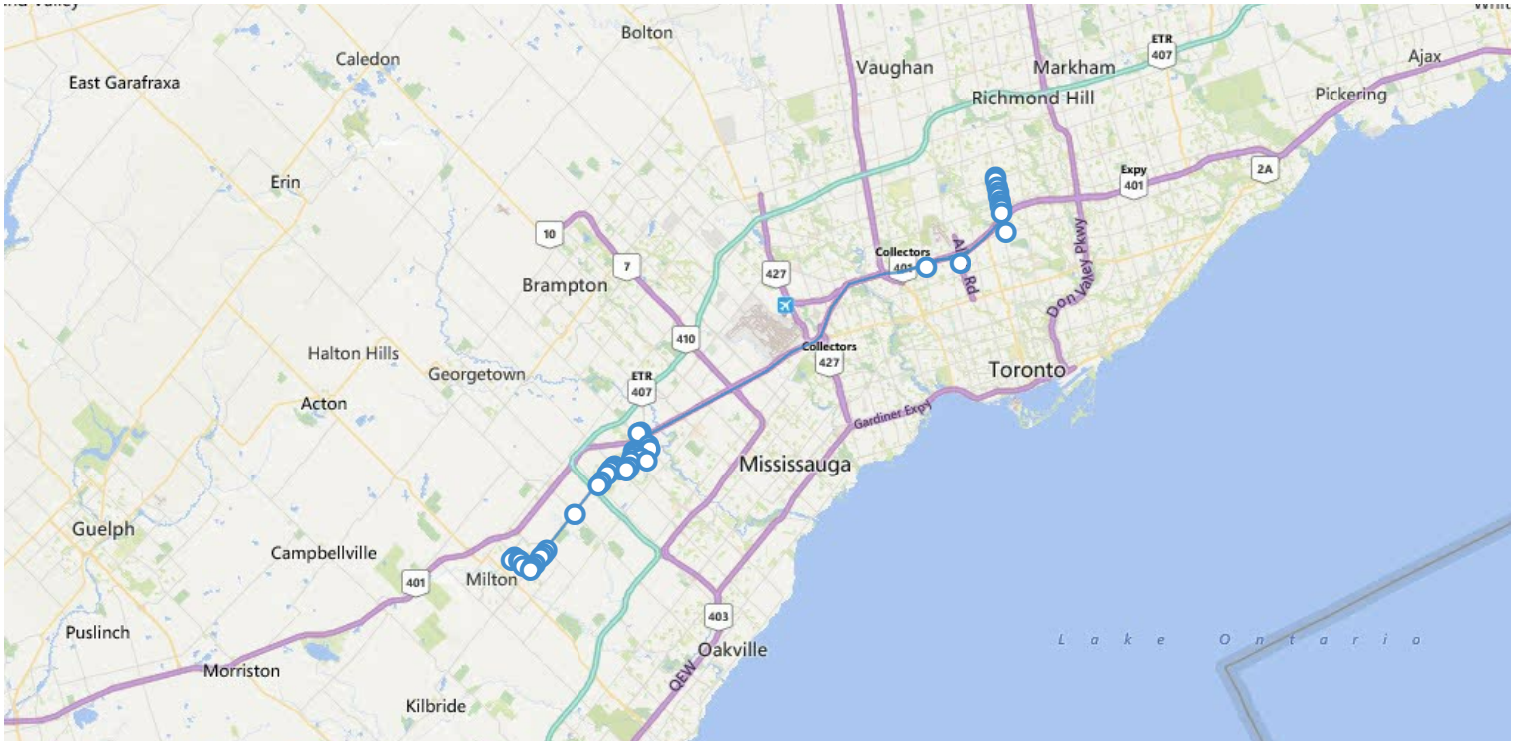
Bus Drop off only Boarding only

Accessibility

This route is accessible.

Accessible stops are shown on the schedules sheet.

Route map



Legend

Real time

Bus Stop

Bus

Triplinx

https://www.triplinx.ca/ Printing date: 4/16/2019

48 Guelph Hwy 407 Service

Towards 48 - Hwy. 407 Bus Term / 48 - Hwy. 407 Bus Terminal / 48 - York U / 48A - Hwy. 407 Bus Term / 48A - Hwy. 407 Bus Terminal / 48A - York U / 48B - Hwy. 407 Bus Term / 48B - Hwy. 407 Bus Terminal / 48B - York U / 48F - Hwy. 407 Bus Term / 48F - Hwy. 407 Bus Terminal / 48F - York U / Hwy 407 Bus Terminal

Date: **Tuesday, 4/16/2019**

Schedule

Stop	Trips									
Transport modes	48B	48	48B	48	48B	48	48B	48	48B	48
City : GUELPH										
University of Guelph	↓	2:40 pm	↓	3:35 pm	↓	4:35 pm	↓	5:40 pm	↓	6:50 pm
Gordon St. @ Stone Rd.	↓	2:40 pm	↓	3:35 pm	↓	4:35 pm	↓	5:40 pm	↓	6:50 pm
Gordon St. @ Kortright Rd.	↓	2:41 pm	↓	3:36 pm	↓	4:36 pm	↓	5:41 pm	↓	6:51 pm
Gordon St. @ Kortright Rd. W.	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
Gordon St. @ Edinburgh Rd. S.	↓	2:43 pm	↓	3:38 pm	↓	4:38 pm	↓	5:43 pm	↓	6:53 pm
Gordon St. @ Arkell Rd.	↓	2:43 pm	↓	3:38 pm	↓	4:38 pm	↓	5:43 pm	↓	6:53 pm
Gordon St. @ Clairfields Dr. W.	↓	2:45 pm	↓	3:40 pm	↓	4:40 pm	↓	5:45 pm	↓	6:55 pm
Gordon St. @ Clair Rd.	↓	2:45 pm	↓	3:40 pm	↓	4:40 pm	↓	5:45 pm	↓	6:55 pm
City : PUSLINCH										
Brock Rd. S. @ Maple Leaf Ln.	↓	2:51 pm	↓	3:46 pm	↓	4:46 pm	↓	5:51 pm	↓	7:01 pm
Brock Rd. S. @ Gilmour Rd.	↓	2:53 pm	↓	3:48 pm	↓	4:48 pm	↓	5:53 pm	↓	7:03 pm
Brock Rd. @ McLean Rd. (Aberfoyle) Park & Ride	↓	2:55 pm	↓	3:50 pm	↓	4:50 pm	↓	5:55 pm	↓	7:05 pm
City : MISSISSAUGA										
Derry Rd. W. @ Ninth Line	↓	3:18 pm	↓	4:13 pm	↓	5:15 pm	↓	6:20 pm	↓	7:28 pm
Derry Rd. W. @ Lisgar Dr.	↓	3:19 pm	↓	4:14 pm	↓	5:16 pm	↓	6:21 pm	↓	7:29 pm
Derry Rd. W. @ Forest Park Dr.	↓	3:20 pm	↓	4:15 pm	↓	5:17 pm	↓	6:22 pm	↓	7:30 pm
Derry Rd. W. @ Tenth Line W.	↓	3:21 pm	↓	4:16 pm	↓	5:18 pm	↓	6:23 pm	↓	7:31 pm

Stop	Trips									
Derry Rd. W. @ Danton Promenade	↓	3:21 pm	↓	4:16 pm	↓	5:18 pm	↓	6:23 pm	↓	7:31 pm
Derry Rd. W. @ Winston Churchill Blvd.	↓	3:22 pm	↓	4:17 pm	↓	5:19 pm	↓	6:24 pm	↓	7:32 pm
Winston Churchill Blvd. @ Vanderbilt Rd.	↓	3:23 pm	↓	4:18 pm	↓	5:20 pm	↓	6:25 pm	↓	7:33 pm
Aquitaine Ave. @ Meadowvale Town Centre Circle	↓	3:24 pm	↓	4:19 pm	↓	5:21 pm	↓	6:26 pm	↓	7:34 pm
Aquitaine Ave. @ Glen Erin Dr.	↓	3:25 pm	↓	4:20 pm	↓	5:22 pm	↓	6:27 pm	↓	7:35 pm
Aquitaine Ave. @ Montevideo Rd.	↓	3:25 pm	↓	4:20 pm	↓	5:22 pm	↓	6:27 pm	↓	7:35 pm
Aquitaine Ave. @ Millcreek Dr.	↓	3:26 pm	↓	4:21 pm	↓	5:23 pm	↓	6:28 pm	↓	7:36 pm
Meadowvale GO Bus	↑ 3:10 pm	3:35 pm	↑ 4:05 pm	4:30 pm	↑ 5:00 pm	5:35 pm	↑ 6:05 pm	6:40 pm	↑ 7:15 pm	7:45 pm
6700 Millcreek Dr. @ Aquitaine Ave.	3:11 pm	3:36 pm	4:06 pm	4:31 pm	5:01 pm	5:36 pm	6:06 pm	6:41 pm	7:16 pm	7:46 pm
Millcreek Dr. @ Millrace Crt.	3:12 pm	3:37 pm	4:07 pm	4:32 pm	5:02 pm	5:37 pm	6:07 pm	6:42 pm	7:17 pm	7:47 pm
Erin Mills Pkwy. @ Millcreek Dr.	3:13 pm	3:38 pm	4:08 pm	4:34 pm	5:04 pm	5:38 pm	6:08 pm	6:43 pm	7:18 pm	7:48 pm
Mississauga Rd. @ Mississauga Rd.	3:14 pm	3:40 pm	4:10 pm	4:36 pm	5:06 pm	5:40 pm	6:10 pm	6:45 pm	7:19 pm	7:49 pm
Mississauga Rd. @ Argentia Rd.	3:15 pm	3:41 pm	4:11 pm	4:38 pm	5:08 pm	5:41 pm	6:11 pm	6:46 pm	7:20 pm	7:50 pm
Mississauga Rd. @ Royal Bank Dr.	3:17 pm	3:44 pm	4:14 pm	4:41 pm	5:11 pm	5:44 pm	6:14 pm	6:49 pm	7:22 pm	7:52 pm
City : BRAMPTON										
Hurontario St. @ Hwy. 407 Park & Ride	3:24 pm	3:54 pm	4:24 pm	4:54 pm	5:24 pm	5:54 pm	6:24 pm	6:59 pm	7:29 pm	7:59 pm
Bramalea GO	⊓ 3:35 pm	⊓ 4:05 pm	⊓ 4:35 pm	⊓ 5:05 pm	⊓ 5:35 pm	⊓ 6:05 pm	⊓ 6:35 pm	⊓ 7:07 pm	⊓ 7:37 pm	⊓ 8:07 pm
City : VAUGHAN										
Hwy 407 Bus Terminal	⊓ 3:55 pm	⊓ 4:25 pm	⊓ 4:55 pm	⊓ 5:25 pm	⊓ 5:55 pm	⊓ 6:25 pm	⊓ 6:55 pm	⊓ 7:25 pm	⊓ 7:55 pm	⊓ 8:25 pm

Schedules are given as a guideline, and depend on traffic conditions.

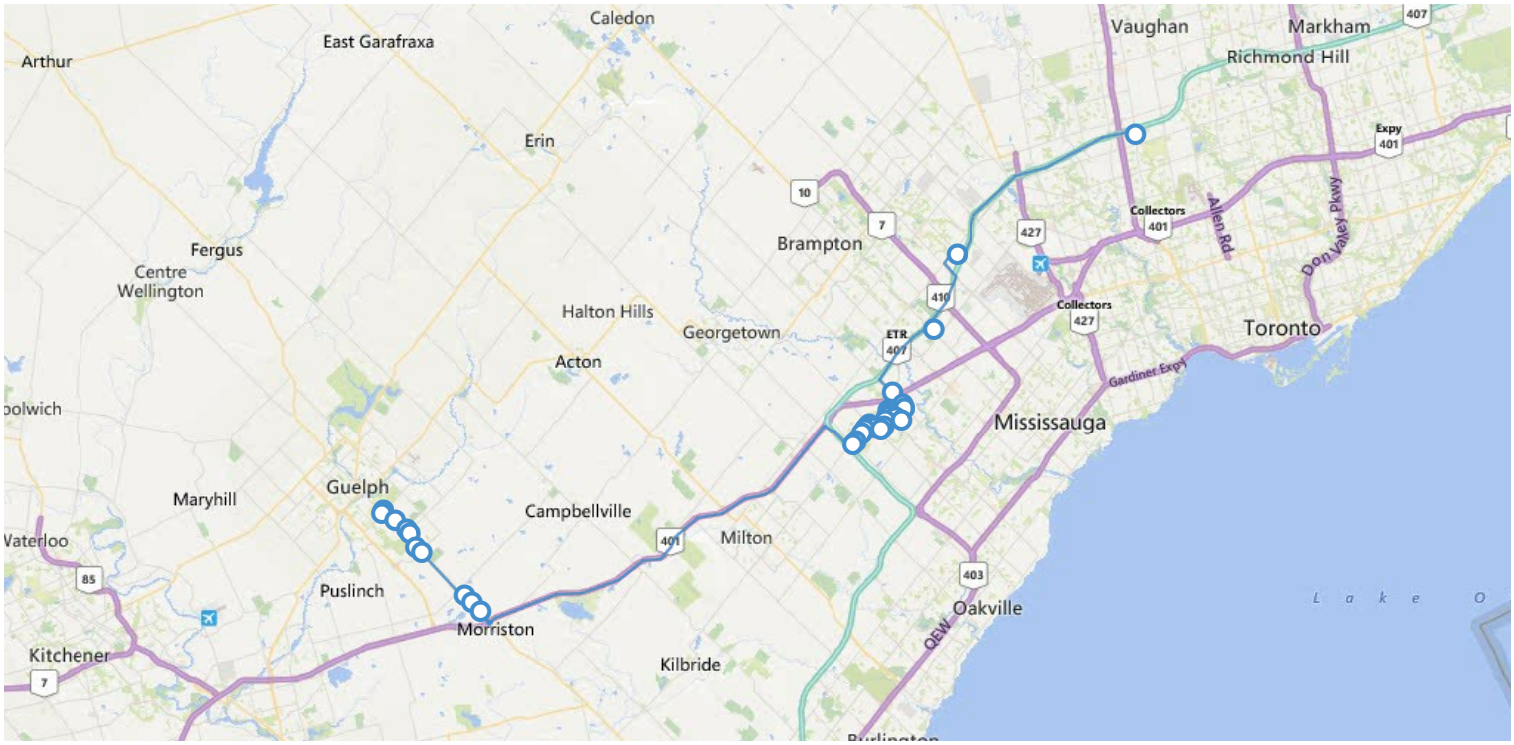
Bus ⊓ Drop off only ↑ Boarding only

Accessibility

This route is accessible.

Accessible stops are shown on the schedules sheet.

Route map



Legend

Real time

Bus Stop

Bus

APPENDIX D

Traffic Data

Turning Movement Count (2 . DERRY RD W & HWY 407 EAST RAMP TERMINAL)

Start Time	N Approach HWY 407 EAST RAMP TERMINAL					E Approach DERRY RD W					W Approach DERRY RD W					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	U-Turn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
06:00:00	3	5	0	0	8	0	67	0	0	67	166	0	0	0	166	241	
06:15:00	7	2	0	0	9	0	83	0	0	83	222	0	0	0	222	314	
06:30:00	14	3	0	0	17	0	92	0	0	92	344	0	0	0	344	453	
06:45:00	11	0	0	0	11	0	75	0	0	75	386	0	0	0	386	472	1480
07:00:00	18	1	0	0	19	0	81	0	0	81	417	0	0	0	417	517	1756
07:15:00	6	9	0	0	15	0	137	0	0	137	438	0	0	0	438	590	2032
07:30:00	18	7	0	0	25	0	141	0	0	141	459	0	0	0	459	625	2204
07:45:00	7	8	0	0	15	0	139	0	0	139	447	0	0	0	447	601	2333
08:00:00	15	7	0	0	22	0	167	0	0	167	408	0	0	0	408	597	2413
08:15:00	16	7	0	0	23	0	133	0	0	133	411	0	0	0	411	567	2390
08:30:00	11	9	0	0	20	0	171	0	0	171	430	0	0	0	430	621	2386
08:45:00	16	9	0	0	25	0	126	0	0	126	394	0	0	0	394	545	2330
09:00:00	15	5	0	0	20	0	116	0	0	116	361	0	0	0	361	497	2230
09:15:00	8	11	0	0	19	0	113	0	0	113	301	0	0	0	301	433	2096
09:30:00	9	13	0	0	22	0	96	0	0	96	226	0	0	0	226	344	1819
09:45:00	11	14	0	0	25	0	88	0	0	88	188	0	0	0	188	301	1575
BREAK																	
15:00:00	33	20	0	0	53	0	221	1	0	222	155	0	0	0	155	430	
15:15:00	31	21	0	0	52	0	297	0	0	297	165	0	0	0	165	514	
15:30:00	44	15	0	0	59	0	268	0	0	268	125	0	0	0	125	452	
15:45:00	52	19	0	0	71	0	288	0	0	288	129	0	0	0	129	488	1884
16:00:00	57	18	0	0	75	0	306	0	0	306	160	0	0	0	160	541	1995
16:15:00	80	35	0	0	115	0	355	0	0	355	153	0	0	0	153	623	2104
16:30:00	73	32	0	0	105	0	391	0	0	391	164	0	0	0	164	660	2312

16:45:00	91	44	0	0	135	0	406	1	0	407	194	0	0	0	194	736	2560
17:00:00	85	44	0	0	129	0	414	0	0	414	181	0	0	0	181	724	2743
17:15:00	98	60	0	0	158	0	367	0	0	367	211	0	0	0	211	736	2856
17:30:00	86	42	0	0	128	0	317	0	0	317	182	0	0	0	182	627	2823
17:45:00	87	34	0	0	121	0	287	0	0	287	167	0	0	0	167	575	2662
18:00:00	45	35	0	0	80	0	314	0	0	314	167	0	0	0	167	561	2499
18:15:00	38	29	0	0	67	0	254	0	0	254	141	0	0	0	141	462	2225
18:30:00	29	22	0	0	51	0	248	0	0	248	142	0	0	0	142	441	2039
18:45:00	21	12	0	0	33	0	223	0	0	223	129	0	0	0	129	385	1849
Grand Total	1135	592	0	0	1727	0	6781	2	0	6783	8163	0	0	0	8163	**16673**	-
Approach%	65.7%	34.3%	0%		-	0%	100%	0%		-	100%	0%	0%		-	**-**	-
Totals %	6.8%	3.6%	0%		10.4%	0%	40.7%	0%		40.7%	49%	0%	0%		49%	**-**	-
Heavy	49	22	0		-	0	178	0		-	190	0	0		-	**-**	-
Heavy %	4.3%	3.7%	0%		-	0%	2.6%	0%		-	2.3%	0%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

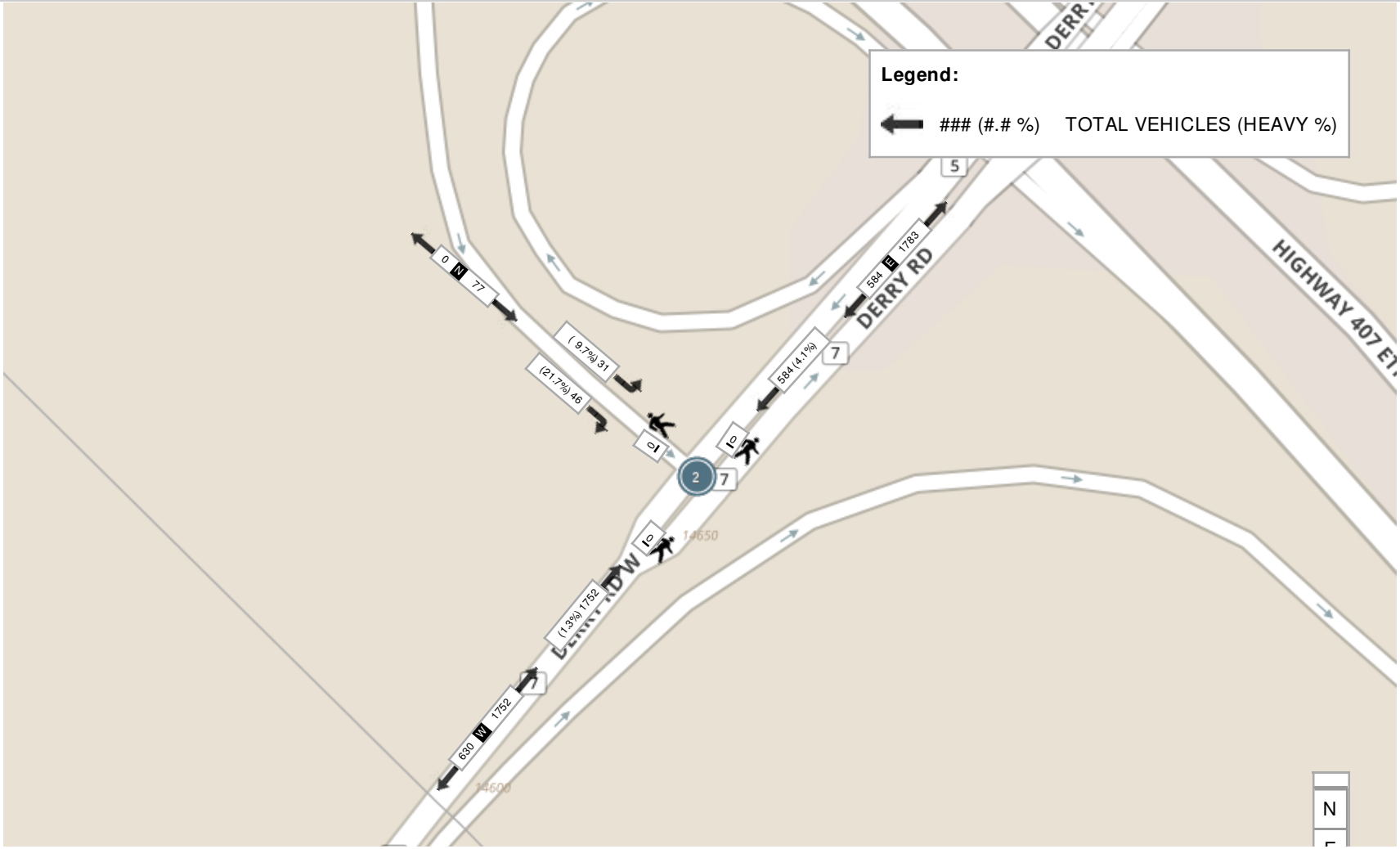
Peak Hour: 07:15 AM - 08:15 AM Weather: Mist (3.37 °C)

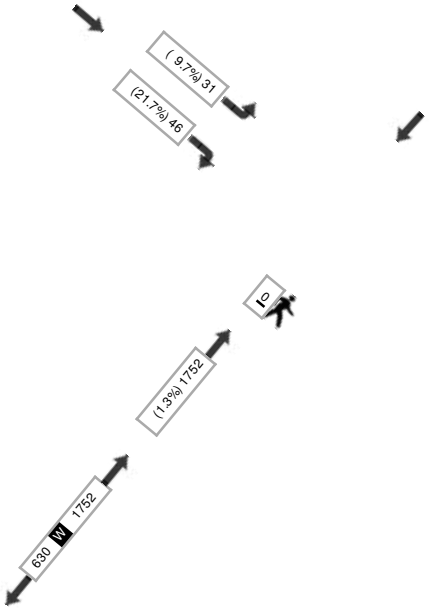
Start Time	N Approach HWY 407 EAST RAMP TERMINAL					E Approach DERRY RD W					W Approach DERRY RD W					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
07:15:00	6	9	0	0	15	0	137	0	0	137	438	0	0	0	438	590
07:30:00	18	7	0	0	25	0	141	0	0	141	459	0	0	0	459	625
07:45:00	7	8	0	0	15	0	139	0	0	139	447	0	0	0	447	601
08:00:00	15	7	0	0	22	0	167	0	0	167	408	0	0	0	408	597
Grand Total	46	31	0	0	77	0	584	0	0	584	1752	0	0	0	1752	**2413**
Approach%	59.7%	40.3%	0%		-	0%	100%	0%		-	100%	0%	0%		-	-
Totals %	1.9%	1.3%	0%		3.2%	0%	24.2%	0%		24.2%	72.6%	0%	0%		72.6%	-
PHF	0.64	0.86	0		0.77	0	0.87	0		0.87	0.95	0	0		0.95	-
Heavy	10	3	0		13	0	24	0		24	23	0	0		23	-
Heavy %	21.7%	9.7%	0%		16.9%	0%	4.1%	0%		4.1%	1.3%	0%	0%		1.3%	-
Lights	36	28	0		64	0	559	0		559	1728	0	0		1728	-
Lights %	78.3%	90.3%	0%		83.1%	0%	95.7%	0%		95.7%	98.6%	0%	0%		98.6%	-
Single-Unit Trucks	8	1	0		9	0	15	0		15	14	0	0		14	-
Single-Unit Trucks %	17.4%	3.2%	0%		11.7%	0%	2.6%	0%		2.6%	0.8%	0%	0%		0.8%	-
Buses	0	2	0		2	0	5	0		5	3	0	0		3	-
Buses %	0%	6.5%	0%		2.6%	0%	0.9%	0%		0.9%	0.2%	0%	0%		0.2%	-
Articulated Trucks	2	0	0		2	0	4	0		4	6	0	0		6	-
Articulated Trucks %	4.3%	0%	0%		2.6%	0%	0.7%	0%		0.7%	0.3%	0%	0%		0.3%	-
Bicycles on Road	0	0	0		0	0	1	0		1	1	0	0		1	-
Bicycles on Road %	0%	0%	0%		0%	0%	0.2%	0%		0.2%	0.1%	0%	0%		0.1%	-

Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (8.8 °C)

Start Time	N Approach HWY 407 EAST RAMP TERMINAL					E Approach DERRY RD W					W Approach DERRY RD W					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
16:30:00	73	32	0	0	105	0	391	0	0	391	164	0	0	0	164	660
16:45:00	91	44	0	0	135	0	406	1	0	407	194	0	0	0	194	736
17:00:00	85	44	0	0	129	0	414	0	0	414	181	0	0	0	181	724
17:15:00	98	60	0	0	158	0	367	0	0	367	211	0	0	0	211	736
Grand Total	347	180	0	0	527	0	1578	1	0	1579	750	0	0	0	750	**2856**
Approach%	65.8%	34.2%	0%		-	0%	99.9%	0.1%		-	100%	0%	0%		-	-
Totals %	12.1%	6.3%	0%		18.5%	0%	55.3%	0%		55.3%	26.3%	0%	0%		26.3%	-
PHF	0.89	0.75	0		0.83	0	0.95	0.25		0.95	0.89	0	0		0.89	-
Heavy	0	1	0		1	0	19	0		19	30	0	0		30	-
Heavy %	0%	0.6%	0%		0.2%	0%	1.2%	0%		1.2%	4%	0%	0%		4%	-
Lights	347	179	0		526	0	1559	1		1560	720	0	0		720	-
Lights %	100%	99.4%	0%		99.8%	0%	98.8%	100%		98.8%	96%	0%	0%		96%	-
Single-Unit Trucks	0	0	0		0	0	8	0		8	19	0	0		19	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	0.5%	0%		0.5%	2.5%	0%	0%		2.5%	-
Buses	0	1	0		1	0	5	0		5	4	0	0		4	-
Buses %	0%	0.6%	0%		0.2%	0%	0.3%	0%		0.3%	0.5%	0%	0%		0.5%	-
Articulated Trucks	0	0	0		0	0	6	0		6	7	0	0		7	-
Articulated Trucks %	0%	0%	0%		0%	0%	0.4%	0%		0.4%	0.9%	0%	0%		0.9%	-
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-

Peak Hour: 07:15 AM - 08:15 AM Weather: Mist (3.37 °C)




630
W
1752
(13%) 1752
0
(21.7%) 46
(9.7%) 31

Turning Movement Count (1 . DERRY RD W & HWY 407 WEST RAMP TERMINAL)

Start Time	E Approach DERRY RD W					S Approach HWY 407 WEST RAMP TERMINAL					W Approach DERRY RD W					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	U-Turn W:W	Peds W:	Approach Total		
06:00:00	77	0	0	0	77	8	0	0	0	8	0	149	0	0	149	234	
06:15:00	93	0	0	0	93	10	0	0	0	10	0	207	0	0	207	310	
06:30:00	105	0	0	0	105	11	3	0	0	14	0	266	0	0	266	385	
06:45:00	81	0	0	0	81	16	2	0	0	18	0	308	0	0	308	407	1336
07:00:00	105	0	0	0	105	11	0	0	0	11	1	341	0	0	342	458	1560
07:15:00	168	0	0	0	168	17	1	0	0	18	0	380	0	0	380	566	1816
07:30:00	166	0	0	0	166	26	2	0	0	28	0	343	0	0	343	537	1968
07:45:00	186	0	0	0	186	32	4	0	0	36	0	360	0	0	360	582	2143
08:00:00	208	0	0	0	208	41	2	0	0	43	0	309	0	0	309	560	2245
08:15:00	181	0	0	0	181	34	1	0	0	35	0	327	0	0	327	543	2222
08:30:00	215	0	0	0	215	32	4	0	0	36	0	320	0	0	320	571	2256
08:45:00	146	0	0	0	146	36	8	0	0	44	0	374	0	0	374	564	2238
09:00:00	124	0	0	0	124	26	1	0	0	27	0	287	0	0	287	438	2116
09:15:00	138	0	0	0	138	26	5	0	0	31	0	250	0	0	250	419	1992
09:30:00	114	0	0	0	114	24	5	0	0	29	0	212	0	0	212	355	1776
09:45:00	94	0	0	0	94	15	3	0	0	18	0	170	0	0	170	282	1494
BREAK																	
15:00:00	230	0	0	0	230	26	6	0	0	32	0	160	0	0	160	422	
15:15:00	296	0	0	0	296	21	15	0	0	36	0	167	1	0	168	500	
15:30:00	292	0	0	0	292	20	9	0	0	29	0	136	0	0	136	457	
15:45:00	289	0	0	0	289	22	12	0	0	34	0	138	0	0	138	461	1840
16:00:00	327	0	0	0	327	20	12	0	0	32	0	155	0	0	155	514	1932
16:15:00	393	0	0	0	393	25	15	0	0	40	0	171	0	0	171	604	2036
16:30:00	378	0	0	0	378	27	8	0	0	35	0	173	0	0	173	586	2165

16:45:00	473	0	0	0	473	47	10	0	0	57	0	214	0	0	214	744	2448
17:00:00	416	0	0	0	416	34	14	0	0	48	0	217	0	0	217	681	2615
17:15:00	388	0	0	0	388	37	23	0	0	60	0	246	0	0	246	694	2705
17:30:00	334	0	0	0	334	36	20	0	0	56	0	204	0	0	204	594	2713
17:45:00	307	0	0	0	307	29	7	0	0	36	0	197	0	0	197	540	2509
18:00:00	326	0	0	0	326	30	15	0	0	45	0	179	0	0	179	550	2378
18:15:00	275	0	0	0	275	31	6	0	0	37	0	160	0	0	160	472	2156
18:30:00	259	0	0	0	259	23	6	0	0	29	0	154	0	0	154	442	2004
18:45:00	229	0	0	0	229	20	9	0	0	29	0	141	0	0	141	399	1863
Grand Total	7413	0	0	0	7413	813	228	0	0	1041	1	7415	1	0	7417	**15871**	-
Approach%	100%	0%	0%		-	78.1%	21.9%	0%		-	0%	100%	0%		-	**-**	-
Totals %	46.7%	0%	0%		46.7%	5.1%	1.4%	0%		6.6%	0%	46.7%	0%		46.7%	**-**	-
Heavy	177	0	0		-	26	17	0		-	0	161	0		-	**-**	-
Heavy %	2.4%	0%	0%		-	3.2%	7.5%	0%		-	0%	2.2%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

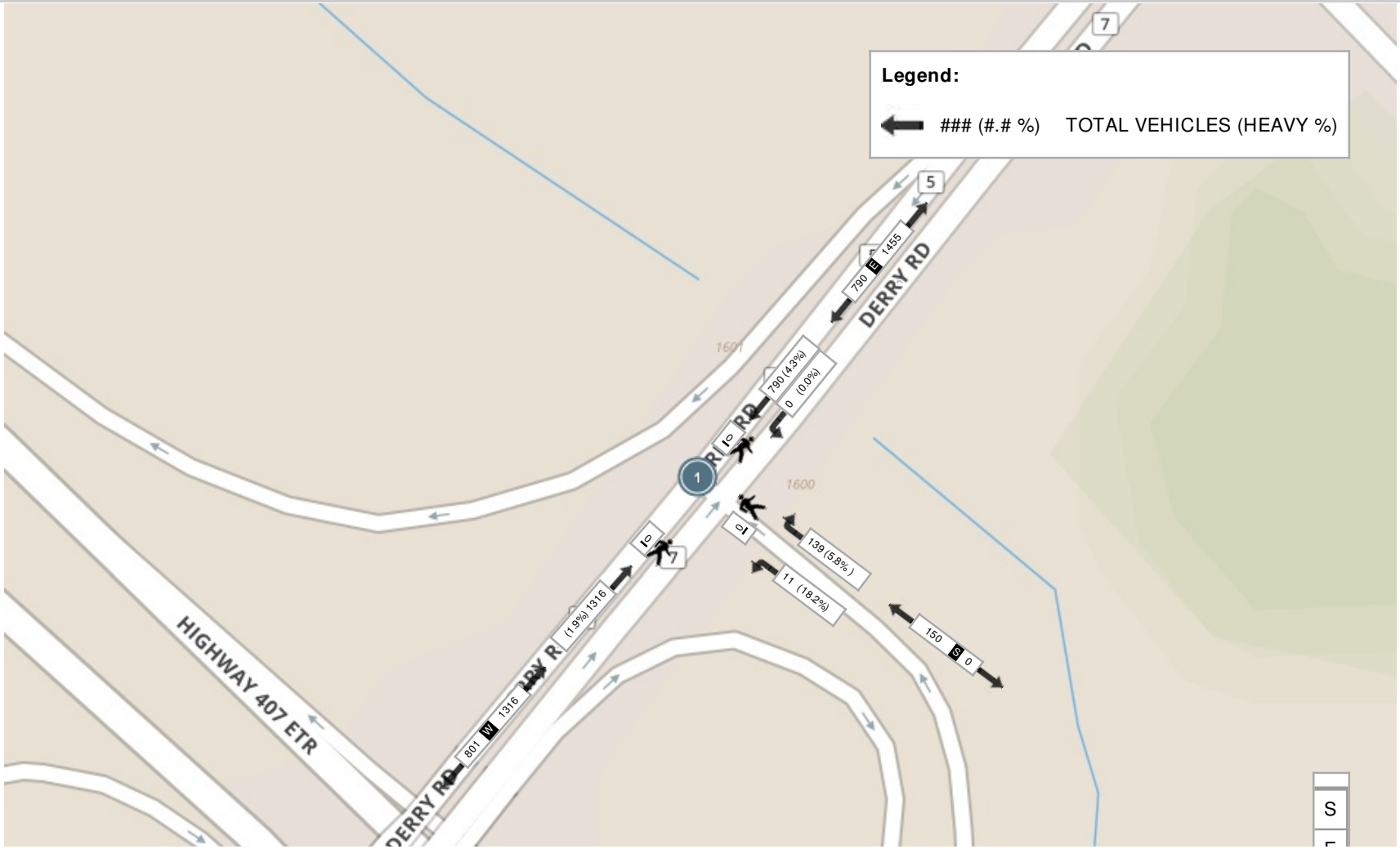
Peak Hour: 07:45 AM - 08:45 AM Weather: Mist (3.37 °C)

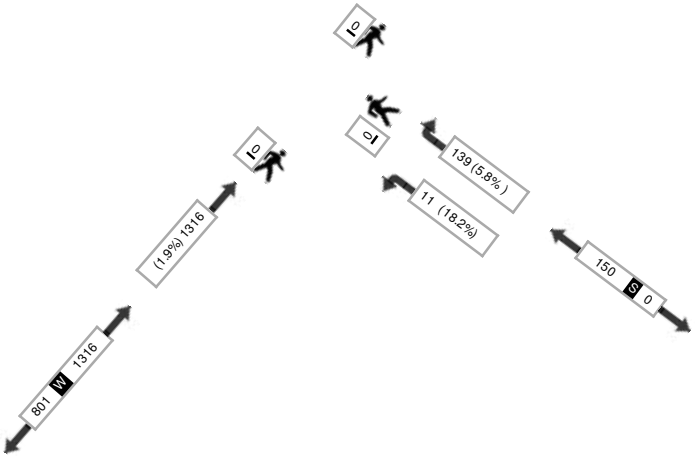
Start Time	E Approach DERRY RD W					S Approach HWY 407 WEST RAMP TERMINAL					W Approach DERRY RD W					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
07:45:00	186	0	0	0	186	32	4	0	0	36	0	360	0	0	360	582
08:00:00	208	0	0	0	208	41	2	0	0	43	0	309	0	0	309	560
08:15:00	181	0	0	0	181	34	1	0	0	35	0	327	0	0	327	543
08:30:00	215	0	0	0	215	32	4	0	0	36	0	320	0	0	320	571
Grand Total	790	0	0	0	790	139	11	0	0	150	0	1316	0	0	1316	**2256**
Approach%	100%	0%	0%		-	92.7%	7.3%	0%		-	0%	100%	0%		-	-
Totals %	35%	0%	0%		35%	6.2%	0.5%	0%		6.6%	0%	58.3%	0%		58.3%	-
PHF	0.92	0	0		0.92	0.85	0.69	0		0.87	0	0.91	0		0.91	-
Heavy	34	0	0		34	8	2	0		10	0	25	0		25	-
Heavy %	4.3%	0%	0%		4.3%	5.8%	18.2%	0%		6.7%	0%	1.9%	0%		1.9%	-
Lights	755	0	0		755	131	9	0		140	0	1291	0		1291	-
Lights %	95.6%	0%	0%		95.6%	94.2%	81.8%	0%		93.3%	0%	98.1%	0%		98.1%	-
Single-Unit Trucks	22	0	0		22	6	1	0		7	0	17	0		17	-
Single-Unit Trucks %	2.8%	0%	0%		2.8%	4.3%	9.1%	0%		4.7%	0%	1.3%	0%		1.3%	-
Buses	6	0	0		6	0	0	0		0	0	2	0		2	-
Buses %	0.8%	0%	0%		0.8%	0%	0%	0%		0%	0%	0.2%	0%		0.2%	-
Articulated Trucks	6	0	0		6	2	1	0		3	0	6	0		6	-
Articulated Trucks %	0.8%	0%	0%		0.8%	1.4%	9.1%	0%		2%	0%	0.5%	0%		0.5%	-
Bicycles on Road	1	0	0		1	0	0	0		0	0	0	0		0	-
Bicycles on Road %	0.1%	0%	0%		0.1%	0%	0%	0%		0%	0%	0%	0%		0%	-

Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (8.8 °C)

Start Time	E Approach DERRY RD W					S Approach HWY 407 WEST RAMP TERMINAL					W Approach DERRY RD W					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
16:45:00	473	0	0	0	473	47	10	0	0	57	0	214	0	0	214	744
17:00:00	416	0	0	0	416	34	14	0	0	48	0	217	0	0	217	681
17:15:00	388	0	0	0	388	37	23	0	0	60	0	246	0	0	246	694
17:30:00	334	0	0	0	334	36	20	0	0	56	0	204	0	0	204	594
Grand Total	1611	0	0	0	1611	154	67	0	0	221	0	881	0	0	881	**2713**
Approach%	100%	0%	0%		-	69.7%	30.3%	0%		-	0%	100%	0%		-	-
Totals %	59.4%	0%	0%		59.4%	5.7%	2.5%	0%		8.1%	0%	32.5%	0%		32.5%	-
PHF	0.85	0	0		0.85	0.82	0.73	0		0.92	0	0.9	0		0.9	-
Heavy	19	0	0		19	0	2	0		2	0	21	0		21	-
Heavy %	1.2%	0%	0%		1.2%	0%	3%	0%		0.9%	0%	2.4%	0%		2.4%	-
Lights	1591	0	0		1591	154	65	0		219	0	859	0		859	-
Lights %	98.8%	0%	0%		98.8%	100%	97%	0%		99.1%	0%	97.5%	0%		97.5%	-
Single-Unit Trucks	8	0	0		8	0	2	0		2	0	8	0		8	-
Single-Unit Trucks %	0.5%	0%	0%		0.5%	0%	3%	0%		0.9%	0%	0.9%	0%		0.9%	-
Buses	5	0	0		5	0	0	0		0	0	7	0		7	-
Buses %	0.3%	0%	0%		0.3%	0%	0%	0%		0%	0%	0.8%	0%		0.8%	-
Articulated Trucks	6	0	0		6	0	0	0		0	0	6	0		6	-
Articulated Trucks %	0.4%	0%	0%		0.4%	0%	0%	0%		0%	0%	0.7%	0%		0.7%	-
Bicycles on Road	1	0	0		1	0	0	0		0	0	1	0		1	-
Bicycles on Road %	0.1%	0%	0%		0.1%	0%	0%	0%		0%	0%	0.1%	0%		0.1%	-

Peak Hour: 07:45 AM - 08:45 AM Weather: Mist (3.37 °C)




0
0
0
139 (5.8%)
11 (18.2%)
(1.9%) 1316
150
S
0
801
W
1316

Turning Movement Count (3 . DERRY RD W & NINTH LINE) CustID: 00522012 MioID: 648539

Start Time	N Approach NINTH LINE						E Approach DERRY RD W						S Approach NINTH LINE						W Approach DERRY RD W						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		
06:00:00	16	23	0	0	0	39	2	60	11	0	0	73	16	9	12	0	0	37	2	134	18	0	0	154	303	
06:15:00	35	52	4	0	0	91	3	59	12	0	0	74	16	27	19	0	0	62	9	176	17	0	0	202	429	
06:30:00	39	69	4	0	0	112	7	65	15	0	0	87	11	37	28	0	0	76	7	233	22	0	0	262	537	
06:45:00	16	66	10	0	0	92	8	68	22	0	0	98	26	43	16	0	0	85	11	288	32	0	0	331	606	1875
07:00:00	42	82	3	0	0	127	3	77	22	0	0	102	29	55	19	0	0	103	18	254	38	1	0	311	643	2215
07:15:00	55	104	2	0	0	161	6	109	27	0	0	142	25	71	39	0	0	135	17	346	37	0	0	400	838	2624
07:30:00	54	122	7	0	0	183	8	131	33	0	0	172	34	90	43	0	1	167	18	300	57	0	0	375	897	2984
07:45:00	61	104	7	0	0	172	13	123	26	0	0	162	47	95	56	0	0	198	31	281	50	0	0	362	894	3272
08:00:00	73	103	5	0	0	181	11	152	33	1	0	197	40	81	50	0	0	171	27	301	55	0	0	383	932	3561
08:15:00	61	107	4	0	0	172	12	135	22	0	0	169	51	114	50	0	0	215	13	277	47	0	0	337	893	3616
08:30:00	70	85	8	0	0	163	6	145	31	0	0	182	37	90	41	0	0	168	12	293	55	0	0	360	873	3592
08:45:00	50	73	9	0	0	132	7	107	19	1	0	134	38	75	39	0	0	152	21	356	58	0	0	435	853	3551
09:00:00	25	72	8	0	0	105	13	94	32	0	0	139	33	65	19	0	0	117	16	237	47	1	0	301	662	3281
09:15:00	55	58	2	0	0	115	7	83	22	0	0	112	32	39	13	0	0	84	16	216	31	0	0	263	574	2962
09:30:00	32	49	5	0	0	86	4	71	20	0	0	95	24	45	18	0	0	87	16	181	44	0	0	241	509	2598
09:45:00	29	53	6	0	0	88	10	72	14	0	0	96	24	41	24	0	0	89	9	144	34	0	0	187	460	2205
BREAK																										
15:00:00	43	61	6	0	0	110	7	183	33	0	0	223	28	71	23	0	0	122	26	117	44	0	0	187	642	
15:15:00	45	64	11	0	0	120	9	219	28	0	0	256	30	92	33	0	0	155	24	100	48	0	0	172	703	
15:30:00	52	53	9	0	0	114	13	224	30	0	0	267	31	80	21	0	0	132	26	102	38	0	0	166	679	
15:45:00	38	75	7	0	2	120	7	234	26	0	0	267	26	122	30	0	0	178	22	94	44	0	2	160	725	2749
16:00:00	49	83	14	0	0	146	9	261	36	0	0	306	28	103	24	0	0	155	22	95	43	0	0	160	767	2874
16:15:00	47	81	10	0	0	138	16	341	39	0	0	396	20	106	25	0	0	151	30	129	37	0	0	196	881	3052
16:30:00	46	102	5	0	0	153	12	319	37	0	0	368	25	123	16	0	0	164	26	130	42	0	0	198	883	3256
16:45:00	58	66	8	0	0	132	10	412	33	0	2	455	36	123	24	0	0	183	36	164	39	0	0	239	1009	3540
17:00:00	59	101	16	0	0	176	17	349	45	0	0	411	33	121	22	0	0	176	48	172	42	0	0	262	1025	3798
17:15:00	63	118	15	0	0	196	3	300	50	0	0	353	31	140	23	0	0	194	50	163	39	0	0	252	995	3912
17:30:00	54	98	17	0	0	169	15	296	37	0	0	348	40	104	16	0	0	160	51	167	53	0	0	271	948	3977
17:45:00	44	107	19	0	0	170	11	238	36	0	0	285	27	116	17	0	0	160	37	136	53	0	0	226	841	3809
18:00:00	40	92	6	0	0	138	8	267	40	0	0	315	38	91	16	0	0	145	24	130	61	0	0	215	813	3597
18:15:00	38	68	7	0	0	113	11	228	33	0	0	272	39	93	26	0	0	158	30	111	45	0	0	186	729	3331

18:30:00	38	75	6	0	0	119	10	195	42	0	0	247	44	107	28	0	0	179	25	99	49	0	0	173	718	3101
18:45:00	25	71	12	0	0	108	7	196	33	0	0	236	26	72	18	0	0	116	28	106	37	0	0	171	631	2891
Grand Total	1452	2537	252	0	2	4241	285	5813	939	2	2	7039	985	2641	848	0	1	4474	748	6032	1356	2	2	8138	**23892**	-
Approach%	34.2%	59.8%	5.9%	0%		-	4%	82.6%	13.3%	0%		-	22%	59%	19%	0%		-	9.2%	74.1%	16.7%	0%		-	-	-
Totals %	6.1%	10.6%	1.1%	0%		17.8%	1.2%	24.3%	3.9%	0%		29.5%	4.1%	11.1%	3.5%	0%		18.7%	3.1%	25.2%	5.7%	0%		34.1%	-	-
Heavy	28	36	6	0		-	8	141	16	0		-	23	51	22	0		-	6	146	33	1		-	-	-
Heavy %	1.9%	1.4%	2.4%	0%		-	2.8%	2.4%	1.7%	0%		-	2.3%	1.9%	2.6%	0%		-	0.8%	2.4%	2.4%	50%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

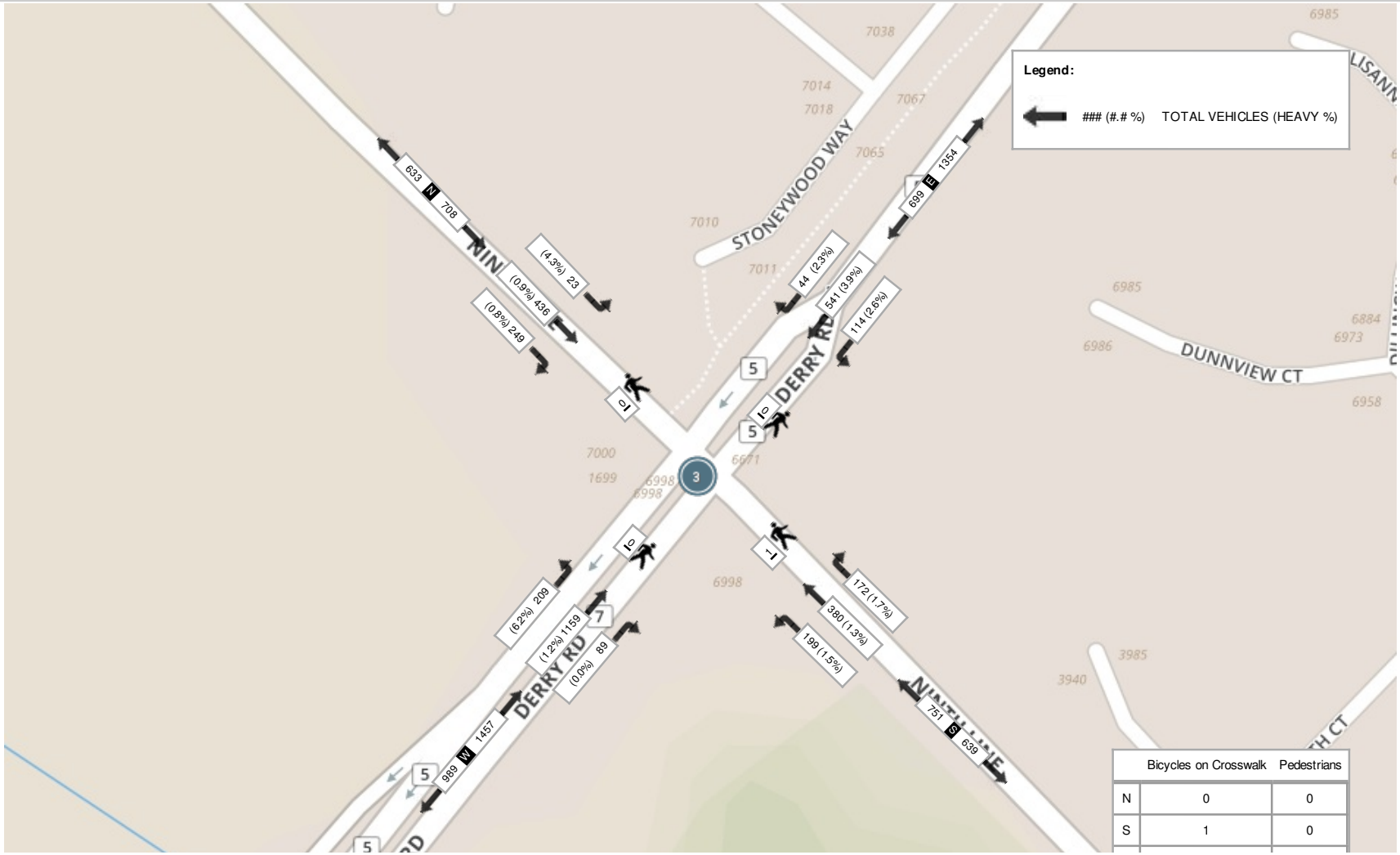
Peak Hour: 07:30 AM - 08:30 AM Weather: Mist (3.37 °C)

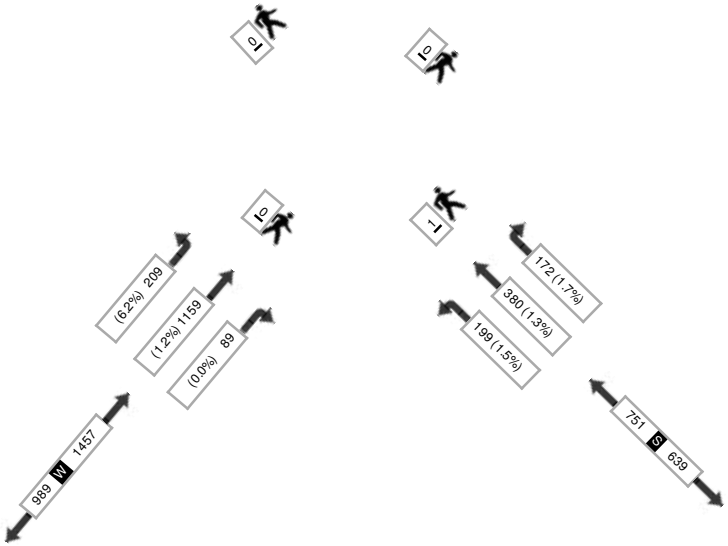
Start Time	N Approach NINTH LINE						E Approach DERRY RD W						S Approach NINTH LINE						W Approach DERRY RD W						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:30:00	54	122	7	0	0	183	8	131	33	0	0	172	34	90	43	0	1	167	18	300	57	0	0	375	897
07:45:00	61	104	7	0	0	172	13	123	26	0	0	162	47	95	56	0	0	198	31	281	50	0	0	362	894
08:00:00	73	103	5	0	0	181	11	152	33	1	0	197	40	81	50	0	0	171	27	301	55	0	0	383	932
08:15:00	61	107	4	0	0	172	12	135	22	0	0	169	51	114	50	0	0	215	13	277	47	0	0	337	893
Grand Total	249	436	23	0	0	708	44	541	114	1	0	700	172	380	199	0	1	751	89	1159	209	0	0	1457	**3616**
Approach%	35.2%	61.6%	3.2%	0%		-	6.3%	77.3%	16.3%	0.1%		-	22.9%	50.6%	26.5%	0%		-	6.1%	79.5%	14.3%	0%		-	-
Totals %	6.9%	12.1%	0.6%	0%		19.6%	1.2%	15%	3.2%	0%		19.4%	4.8%	10.5%	5.5%	0%		20.8%	2.5%	32.1%	5.8%	0%		40.3%	-
PHF	0.85	0.89	0.82	0		0.97	0.85	0.89	0.86	0.25		0.89	0.84	0.83	0.89	0		0.87	0.72	0.96	0.92	0		0.95	-
Heavy	2	4	1	0		7	1	21	3	0		25	3	5	3	0		11	0	14	13	0		27	-
Heavy %	0.8%	0.9%	4.3%	0%		1%	2.3%	3.9%	2.6%	0%		3.6%	1.7%	1.3%	1.5%	0%		1.5%	0%	1.2%	6.2%	0%		1.9%	-
Lights	247	432	22	0		701	43	520	111	1		675	169	375	196	0		740	89	1145	196	0		1430	-
Lights %	99.2%	99.1%	95.7%	0%		99%	97.7%	96.1%	97.4%	100%		96.4%	98.3%	98.7%	98.5%	0%		98.5%	100%	98.8%	93.8%	0%		98.1%	-
Single-Unit Trucks	2	3	1	0		6	1	9	1	0		11	2	2	2	0		6	0	7	12	0		19	-
Single-Unit Trucks %	0.8%	0.7%	4.3%	0%		0.8%	2.3%	1.7%	0.9%	0%		1.6%	1.2%	0.5%	1%	0%		0.8%	0%	0.6%	5.7%	0%		1.3%	-
Buses	0	1	0	0		1	0	7	2	0		9	0	2	1	0		3	0	3	0	0		3	-
Buses %	0%	0.2%	0%	0%		0.1%	0%	1.3%	1.8%	0%		1.3%	0%	0.5%	0.5%	0%		0.4%	0%	0.3%	0%	0%		0.2%	-
Articulated Trucks	0	0	0	0		0	0	5	0	0		5	1	1	0	0		2	0	4	1	0		5	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.9%	0%	0%		0.7%	0.6%	0.3%	0%	0%		0.3%	0%	0.3%	0.5%	0%		0.3%	-
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%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	100%		-	-	-	-	0%		-

Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (8.8 °C)

Start Time	N Approach NINTH LINE						E Approach DERRY RD W						S Approach NINTH LINE						W Approach DERRY RD W						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	
16:45:00	58	66	8	0	0	132	10	412	33	0	2	455	36	123	24	0	0	183	36	164	39	0	0	239	1009
17:00:00	59	101	16	0	0	176	17	349	45	0	0	411	33	121	22	0	0	176	48	172	42	0	0	262	1025
17:15:00	63	118	15	0	0	196	3	300	50	0	0	353	31	140	23	0	0	194	50	163	39	0	0	252	995
17:30:00	54	98	17	0	0	169	15	296	37	0	0	348	40	104	16	0	0	160	51	167	53	0	0	271	948
Grand Total	234	383	56	0	0	673	45	1357	165	0	2	1567	140	488	85	0	0	713	185	666	173	0	0	1024	**3977**
Approach%	34.8%	56.9%	8.3%	0%		-	2.9%	86.6%	10.5%	0%		-	19.6%	68.4%	11.9%	0%		-	18.1%	65%	16.9%	0%		-	-
Totals %	5.9%	9.6%	1.4%	0%		16.9%	1.1%	34.1%	4.1%	0%		39.4%	3.5%	12.3%	2.1%	0%		17.9%	4.7%	16.7%	4.4%	0%		25.7%	-
PHF	0.93	0.81	0.82	0		0.86	0.66	0.82	0.83	0		0.86	0.88	0.87	0.89	0		0.92	0.91	0.97	0.82	0		0.94	-
Heavy	3	5	0	0		8	1	18	1	0		20	1	3	1	0		5	0	19	1	0		20	-
Heavy %	1.3%	1.3%	0%	0%		1.2%	2.2%	1.3%	0.6%	0%		1.3%	0.7%	0.6%	1.2%	0%		0.7%	0%	2.9%	0.6%	0%		2%	-
Lights	231	378	56	0		665	44	1338	164	0		1546	139	485	84	0		708	185	646	172	0		1003	-
Lights %	98.7%	98.7%	100%	0%		98.8%	97.8%	98.6%	99.4%	0%		98.7%	99.3%	99.4%	98.8%	0%		99.3%	100%	97%	99.4%	0%		97.9%	-
Single-Unit Trucks	3	4	0	0		7	0	5	0	0		5	0	3	1	0		4	0	8	0	0		8	-
Single-Unit Trucks %	1.3%	1%	0%	0%		1%	0%	0.4%	0%	0%		0.3%	0%	0.6%	1.2%	0%		0.6%	0%	1.2%	0%	0%		0.8%	-
Buses	0	1	0	0		1	0	6	0	0		6	0	0	0	0		0	0	7	0	0		7	-
Buses %	0%	0.3%	0%	0%		0.1%	0%	0.4%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	1.1%	0%	0%		0.7%	-
Articulated Trucks	0	0	0	0		0	1	7	1	0		9	1	0	0	0		1	0	4	1	0		5	-
Articulated Trucks %	0%	0%	0%	0%		0%	2.2%	0.5%	0.6%	0%		0.6%	0.7%	0%	0%	0%		0.1%	0%	0.6%	0.6%	0%		0.5%	-
Bicycles on Road	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	1	0	0		1	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0.1%	0%	0%		0.1%	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.1%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	100%		-	-	-	-	0%		-	-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

Peak Hour: 07:30 AM - 08:30 AM Weather: Mist (3.37 °C)




989
W
1457
(6.2%) 209
(1.2%) 159
(0.0%) 89
0
0
0
0
751
S
639
199 (1.5%)
380 (1.3%)
172 (1.7%)

Turning Movement Count (4 . NINTH LINE & DOUG LEAVENS BLVD)

Start Time	N Approach NINTH LINE					E Approach DOUG LEAVENS BLVD					S Approach NINTH LINE					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	U-Turn S:S	Peds S:	Approach Total		
06:00:00	42	3	0	0	45	18	7	0	0	25	1	24	0	0	25	95	
06:15:00	71	2	0	0	73	10	7	0	0	17	3	51	0	0	54	144	
06:30:00	84	3	0	0	87	11	17	0	0	28	2	52	0	0	54	169	
06:45:00	119	1	0	0	120	18	22	0	0	40	7	75	0	0	82	242	650
07:00:00	99	3	0	0	102	17	23	0	0	40	8	72	0	0	80	222	777
07:15:00	159	5	0	0	164	25	23	0	0	48	11	121	0	0	132	344	977
07:30:00	171	10	0	0	181	30	28	0	0	58	16	133	0	0	149	388	1196
07:45:00	133	20	0	0	153	30	36	0	0	66	27	175	0	0	202	421	1375
08:00:00	160	22	0	0	182	35	31	0	0	66	35	173	0	0	208	456	1609
08:15:00	126	11	0	0	137	40	32	0	1	72	18	179	0	0	197	406	1671
08:30:00	148	9	0	0	157	29	21	0	0	50	17	151	0	0	168	375	1658
08:45:00	107	11	0	0	118	29	26	0	0	55	18	132	0	0	150	323	1560
09:00:00	110	7	0	0	117	9	19	0	1	28	18	102	0	0	120	265	1369
09:15:00	102	6	0	0	108	19	10	0	0	29	13	80	0	0	93	230	1193
09:30:00	97	6	0	0	103	6	21	0	0	27	17	84	0	0	101	231	1049
09:45:00	71	4	0	0	75	10	15	0	0	25	7	77	0	0	84	184	910
BREAK																	
15:00:00	117	15	0	0	132	11	17	0	0	28	21	112	0	0	133	293	
15:15:00	105	12	0	0	117	17	22	0	0	39	33	145	0	0	178	334	
15:30:00	97	15	0	0	112	23	15	0	0	38	23	147	0	0	170	320	
15:45:00	109	18	0	0	127	17	28	0	0	45	23	136	0	0	159	331	1278
16:00:00	130	23	0	0	153	6	18	0	0	24	16	177	0	0	193	370	1355
16:15:00	140	10	0	0	150	15	13	0	0	28	21	156	0	0	177	355	1376
16:30:00	139	23	0	0	162	16	15	0	0	31	24	152	0	0	176	369	1425

16:45:00	125	17	0	0	142	15	27	0	0	42	28	186	0	0	214	398	1492
17:00:00	168	24	0	0	192	15	31	0	0	46	30	169	0	0	199	437	1559
17:15:00	177	31	0	0	208	8	25	0	0	33	33	174	0	0	207	448	1652
17:30:00	172	27	0	0	199	16	23	0	0	39	31	173	0	0	204	442	1725
17:45:00	168	16	0	0	184	15	21	0	2	36	29	149	0	0	178	398	1725
18:00:00	126	21	0	0	147	12	13	0	0	25	27	151	0	0	178	350	1638
18:15:00	117	25	0	0	142	15	31	0	0	46	30	171	0	0	201	389	1579
18:30:00	119	12	0	0	131	21	26	0	0	47	27	159	0	0	186	364	1501
18:45:00	131	16	0	0	147	11	19	0	0	30	31	109	0	0	140	317	1420
Grand Total	3939	428	0	0	4367	569	682	0	4	1251	645	4147	0	0	4792	**10410**	-
Approach%	90.2%	9.8%	0%		-	45.5%	54.5%	0%		-	13.5%	86.5%	0%		-	**-**	-
Totals %	37.8%	4.1%	0%		42%	5.5%	6.6%	0%		12%	6.2%	39.8%	0%		46%	**-**	-
Heavy	60	3	0		-	16	10	0		-	16	96	0		-	**-**	-
Heavy %	1.5%	0.7%	0%		-	2.8%	1.5%	0%		-	2.5%	2.3%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

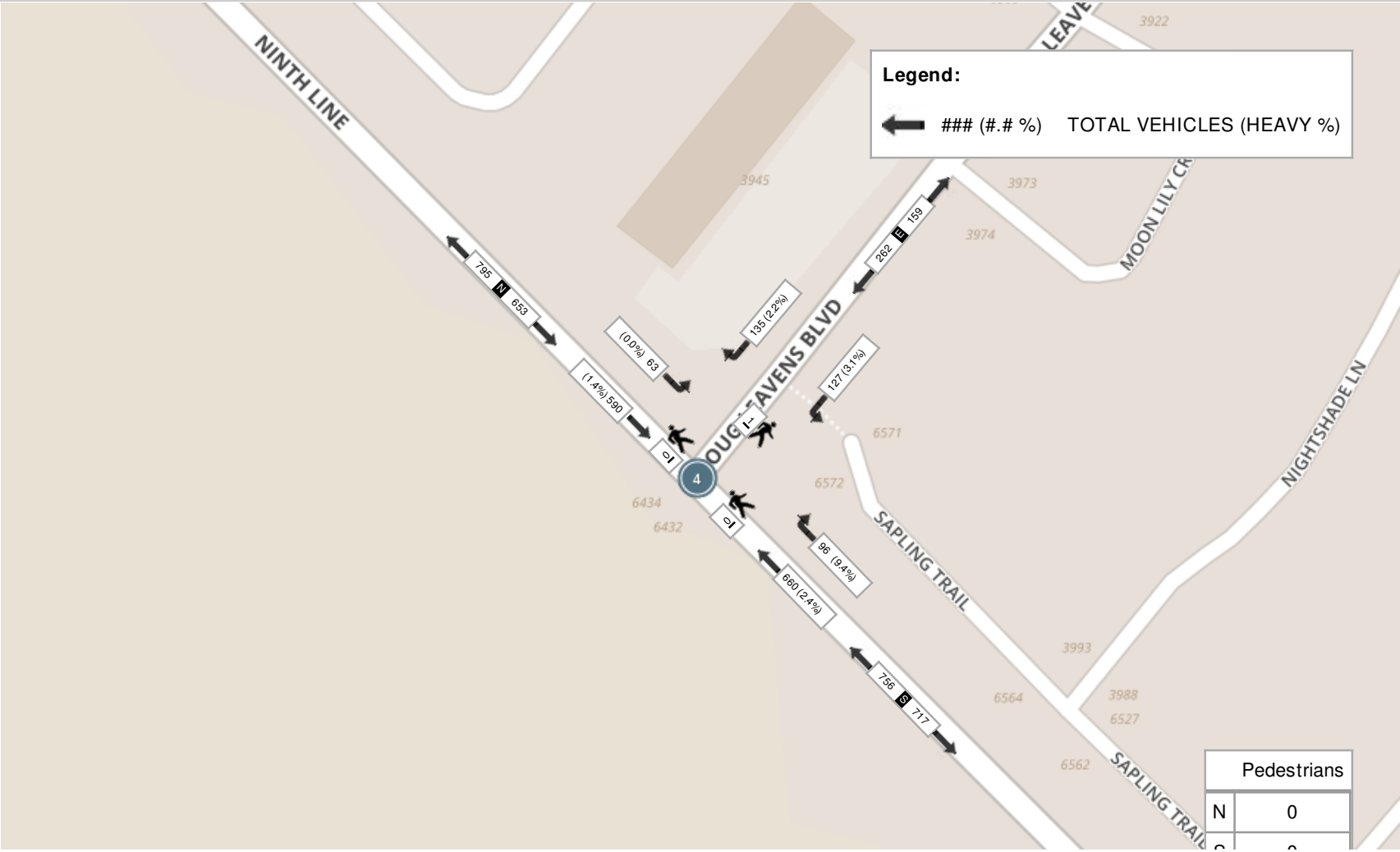
Peak Hour: 07:30 AM - 08:30 AM Weather: Mist (3.37 °C)

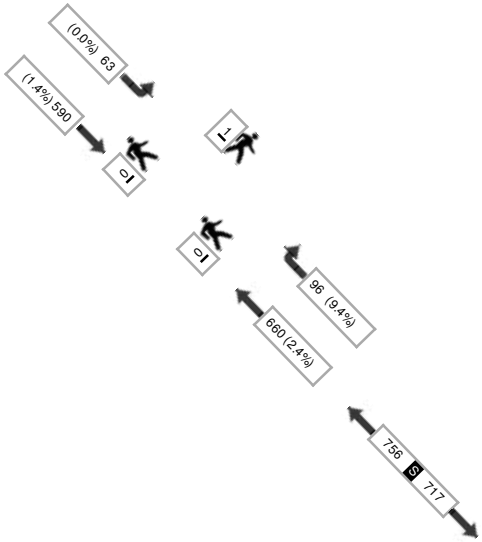
Start Time	N Approach NINTH LINE					E Approach DOUG LEAVENS BLVD					S Approach NINTH LINE					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
07:30:00	171	10	0	0	181	30	28	0	0	58	16	133	0	0	149	388
07:45:00	133	20	0	0	153	30	36	0	0	66	27	175	0	0	202	421
08:00:00	160	22	0	0	182	35	31	0	0	66	35	173	0	0	208	456
08:15:00	126	11	0	0	137	40	32	0	1	72	18	179	0	0	197	406
Grand Total	590	63	0	0	653	135	127	0	1	262	96	660	0	0	756	**1671**
Approach%	90.4%	9.6%	0%		-	51.5%	48.5%	0%		-	12.7%	87.3%	0%		-	-
Totals %	35.3%	3.8%	0%		39.1%	8.1%	7.6%	0%		15.7%	5.7%	39.5%	0%		45.2%	-
PHF	0.86	0.72	0		0.9	0.84	0.88	0		0.91	0.69	0.92	0		0.91	-
Heavy	8	0	0		8	3	4	0		7	9	16	0		25	-
Heavy %	1.4%	0%	0%		1.2%	2.2%	3.1%	0%		2.7%	9.4%	2.4%	0%		3.3%	-
Lights	582	63	0		645	132	123	0		255	87	644	0		731	-
Lights %	98.6%	100%	0%		98.8%	97.8%	96.9%	0%		97.3%	90.6%	97.6%	0%		96.7%	-
Single-Unit Trucks	4	0	0		4	1	0	0		1	0	5	0		5	-
Single-Unit Trucks %	0.7%	0%	0%		0.6%	0.7%	0%	0%		0.4%	0%	0.8%	0%		0.7%	-
Buses	4	0	0		4	2	4	0		6	9	9	0		18	-
Buses %	0.7%	0%	0%		0.6%	1.5%	3.1%	0%		2.3%	9.4%	1.4%	0%		2.4%	-
Articulated Trucks	0	0	0		0	0	0	0		0	0	2	0		2	-
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.3%	0%		0.3%	-
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		-

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (8.8 °C)

Start Time	N Approach NINTH LINE					E Approach DOUG LEAVENS BLVD					S Approach NINTH LINE					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
17:00:00	168	24	0	0	192	15	31	0	0	46	30	169	0	0	199	437
17:15:00	177	31	0	0	208	8	25	0	0	33	33	174	0	0	207	448
17:30:00	172	27	0	0	199	16	23	0	0	39	31	173	0	0	204	442
17:45:00	168	16	0	0	184	15	21	0	2	36	29	149	0	0	178	398
Grand Total	685	98	0	0	783	54	100	0	2	154	123	665	0	0	788	**1725**
Approach%	87.5%	12.5%	0%		-	35.1%	64.9%	0%		-	15.6%	84.4%	0%		-	-
Totals %	39.7%	5.7%	0%		45.4%	3.1%	5.8%	0%		8.9%	7.1%	38.6%	0%		45.7%	-
PHF	0.97	0.79	0		0.94	0.84	0.81	0		0.84	0.93	0.96	0		0.95	-
Heavy	4	0	0		4	0	0	0		0	0	6	0		6	-
Heavy %	0.6%	0%	0%		0.5%	0%	0%	0%		0%	0%	0.9%	0%		0.8%	-
Lights	681	98	0		779	54	100	0		154	123	659	0		782	-
Lights %	99.4%	100%	0%		99.5%	100%	100%	0%		100%	100%	99.1%	0%		99.2%	-
Single-Unit Trucks	3	0	0		3	0	0	0		0	0	5	0		5	-
Single-Unit Trucks %	0.4%	0%	0%		0.4%	0%	0%	0%		0%	0%	0.8%	0%		0.6%	-
Buses	1	0	0		1	0	0	0		0	0	0	0		0	-
Buses %	0.1%	0%	0%		0.1%	0%	0%	0%		0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0		0	0	0	0		0	0	1	0		1	-
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.2%	0%		0.1%	-
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		-

Peak Hour: 07:30 AM - 08:30 AM Weather: Mist (3.37 °C)




(0.0%) 63
(1.4%) 590
96 (9.4%)
660 (2.4%)
756
717

Turning Movement Count (5 . NINTH LINE & FOXWOOD AVE)

Start Time	N Approach NINTH LINE					E Approach FOXWOOD AVE					S Approach NINTH LINE					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	U-Turn S:S	Peds S:	Approach Total		
06:00:00	47	1	0	0	48	6	5	0	0	11	0	20	0	0	20	79	
06:15:00	71	1	0	0	72	10	10	0	0	20	2	43	0	0	45	137	
06:30:00	108	1	0	0	109	7	15	0	0	22	0	56	0	0	56	187	
06:45:00	128	3	0	0	131	15	9	0	0	24	0	69	0	0	69	224	627
07:00:00	127	2	0	0	129	8	10	0	0	18	3	80	0	0	83	230	778
07:15:00	169	3	0	0	172	15	13	0	0	28	2	112	0	0	114	314	955
07:30:00	199	8	0	0	207	6	14	0	0	20	8	162	0	0	170	397	1165
07:45:00	168	7	0	0	175	19	8	0	0	27	5	167	0	0	172	374	1315
08:00:00	167	9	0	0	176	20	11	0	0	31	6	199	0	0	205	412	1497
08:15:00	166	6	0	0	172	22	13	0	0	35	16	172	0	0	188	395	1578
08:30:00	172	2	0	0	174	18	12	0	0	30	13	150	0	0	163	367	1548
08:45:00	122	4	0	0	126	8	10	0	0	18	5	137	0	0	142	286	1460
09:00:00	124	4	0	0	128	11	11	0	0	22	8	110	0	0	118	268	1316
09:15:00	102	5	0	0	107	11	11	0	0	22	3	74	0	0	77	206	1127
09:30:00	109	8	0	0	117	3	4	0	0	7	7	97	0	0	104	228	988
09:45:00	96	0	0	0	96	6	6	1	0	13	2	78	0	0	80	189	891
BREAK																	
15:00:00	136	5	0	0	141	7	9	0	0	16	10	124	0	0	134	291	
15:15:00	117	6	0	0	123	14	12	0	0	26	8	168	0	0	176	325	
15:30:00	102	4	0	0	106	2	13	0	0	15	15	157	0	0	172	293	
15:45:00	139	6	0	0	145	4	4	0	0	8	8	162	0	0	170	323	1232
16:00:00	146	4	0	0	150	6	4	0	0	10	8	160	0	0	168	328	1269
16:15:00	136	10	0	0	146	4	3	0	0	7	19	178	0	0	197	350	1294
16:30:00	151	8	0	0	159	4	8	0	0	12	11	177	0	0	188	359	1360

16:45:00	152	7	0	0	159	1	8	0	0	9	12	197	0	0	209	377	1414
17:00:00	184	10	0	0	194	6	5	0	0	11	13	193	0	0	206	411	1497
17:15:00	193	11	0	0	204	2	5	0	0	7	15	207	0	0	222	433	1580
17:30:00	188	7	0	0	195	4	8	0	0	12	16	198	0	0	214	421	1642
17:45:00	180	14	0	0	194	5	4	0	0	9	16	175	0	0	191	394	1659
18:00:00	133	8	0	0	141	8	9	0	0	17	16	174	0	0	190	348	1596
18:15:00	139	6	0	0	145	7	8	0	0	15	10	192	0	0	202	362	1525
18:30:00	140	12	0	0	152	5	11	0	0	16	13	175	0	0	188	356	1460
18:45:00	135	17	0	0	152	6	7	0	0	13	11	134	0	0	145	310	1376
Grand Total	4446	199	0	0	4645	270	280	1	0	551	281	4497	0	0	4778	**9974**	-
Approach%	95.7%	4.3%	0%		-	49%	50.8%	0.2%		-	5.9%	94.1%	0%		-	**-**	-
Totals %	44.6%	2%	0%		46.6%	2.7%	2.8%	0%		5.5%	2.8%	45.1%	0%		47.9%	**-**	-
Heavy	71	3	0		-	1	5	1		-	13	109	0		-	**-**	-
Heavy %	1.6%	1.5%	0%		-	0.4%	1.8%	100%		-	4.6%	2.4%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

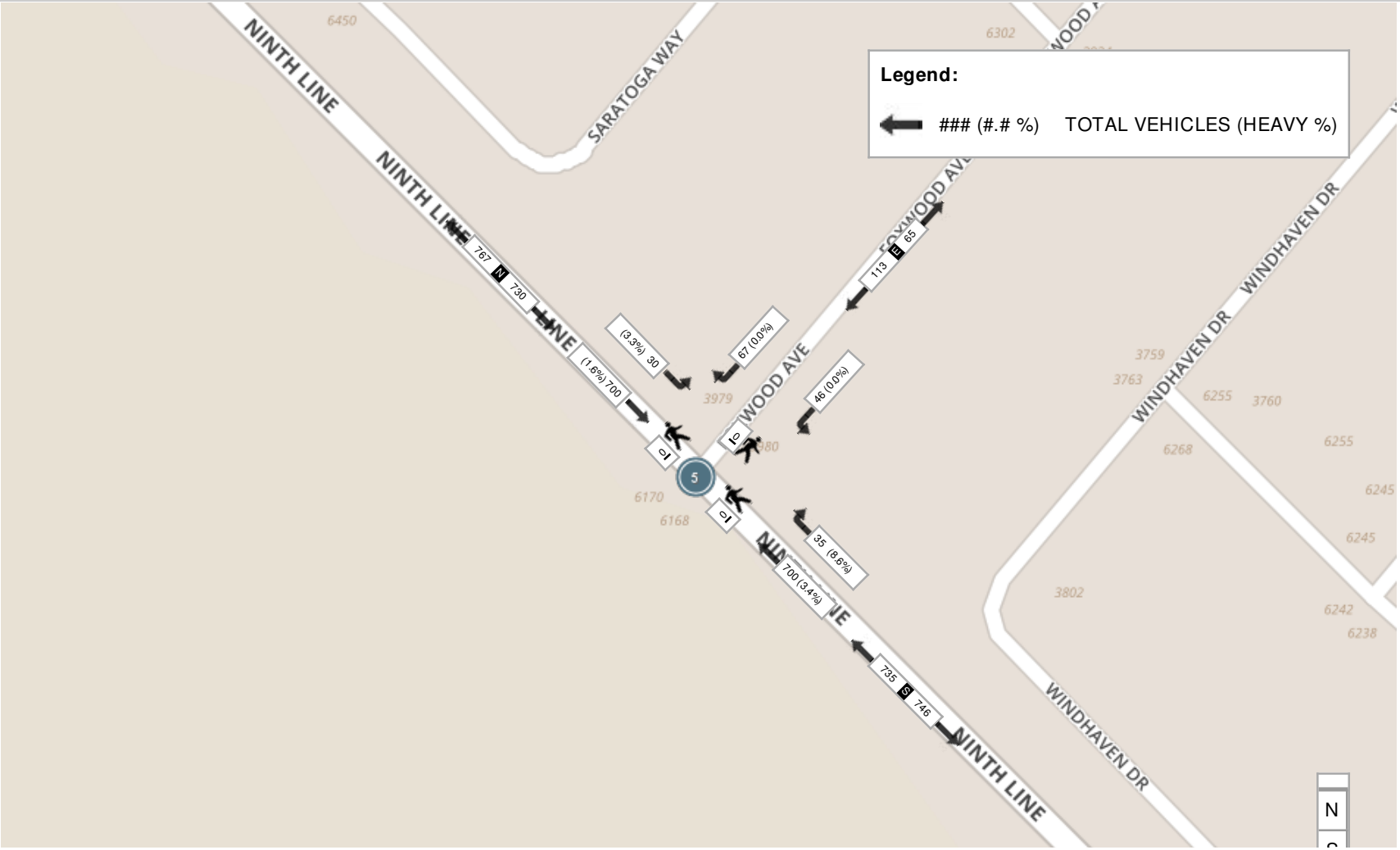
Peak Hour: 07:30 AM - 08:30 AM Weather: Mist (3.37 °C)

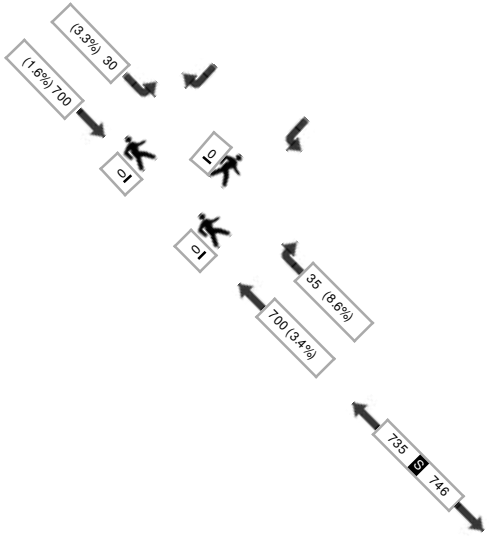
Start Time	N Approach NINTH LINE					E Approach FOXWOOD AVE					S Approach NINTH LINE					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
07:30:00	199	8	0	0	207	6	14	0	0	20	8	162	0	0	170	397
07:45:00	168	7	0	0	175	19	8	0	0	27	5	167	0	0	172	374
08:00:00	167	9	0	0	176	20	11	0	0	31	6	199	0	0	205	412
08:15:00	166	6	0	0	172	22	13	0	0	35	16	172	0	0	188	395
Grand Total	700	30	0	0	730	67	46	0	0	113	35	700	0	0	735	**1578**
Approach%	95.9%	4.1%	0%		-	59.3%	40.7%	0%		-	4.8%	95.2%	0%		-	-
Totals %	44.4%	1.9%	0%		46.3%	4.2%	2.9%	0%		7.2%	2.2%	44.4%	0%		46.6%	-
PHF	0.88	0.83	0		0.88	0.76	0.82	0		0.81	0.55	0.88	0		0.9	-
Heavy	11	1	0		12	0	0	0		0	3	24	0		27	-
Heavy %	1.6%	3.3%	0%		1.6%	0%	0%	0%		0%	8.6%	3.4%	0%		3.7%	-
Lights	689	29	0		718	67	46	0		113	32	676	0		708	-
Lights %	98.4%	96.7%	0%		98.4%	100%	100%	0%		100%	91.4%	96.6%	0%		96.3%	-
Single-Unit Trucks	4	0	0		4	0	0	0		0	1	4	0		5	-
Single-Unit Trucks %	0.6%	0%	0%		0.5%	0%	0%	0%		0%	2.9%	0.6%	0%		0.7%	-
Buses	7	1	0		8	0	0	0		0	2	18	0		20	-
Buses %	1%	3.3%	0%		1.1%	0%	0%	0%		0%	5.7%	2.6%	0%		2.7%	-
Articulated Trucks	0	0	0		0	0	0	0		0	0	2	0		2	-
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.3%	0%		0.3%	-
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (8.8 °C)

Start Time	N Approach NINTH LINE					E Approach FOXWOOD AVE					S Approach NINTH LINE					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
17:00:00	184	10	0	0	194	6	5	0	0	11	13	193	0	0	206	411
17:15:00	193	11	0	0	204	2	5	0	0	7	15	207	0	0	222	433
17:30:00	188	7	0	0	195	4	8	0	0	12	16	198	0	0	214	421
17:45:00	180	14	0	0	194	5	4	0	0	9	16	175	0	0	191	394
Grand Total	745	42	0	0	787	17	22	0	0	39	60	773	0	0	833	**1659**
Approach%	94.7%	5.3%	0%		-	43.6%	56.4%	0%		-	7.2%	92.8%	0%		-	-
Totals %	44.9%	2.5%	0%		47.4%	1%	1.3%	0%		2.4%	3.6%	46.6%	0%		50.2%	-
PHF	0.97	0.75	0		0.96	0.71	0.69	0		0.81	0.94	0.93	0		0.94	-
Heavy	3	1	0		4	0	0	0		0	0	8	0		8	-
Heavy %	0.4%	2.4%	0%		0.5%	0%	0%	0%		0%	0%	1%	0%		1%	-
Lights	742	41	0		783	17	22	0		39	60	765	0		825	-
Lights %	99.6%	97.6%	0%		99.5%	100%	100%	0%		100%	100%	99%	0%		99%	-
Single-Unit Trucks	2	1	0		3	0	0	0		0	0	7	0		7	-
Single-Unit Trucks %	0.3%	2.4%	0%		0.4%	0%	0%	0%		0%	0%	0.9%	0%		0.8%	-
Buses	1	0	0		1	0	0	0		0	0	0	0		0	-
Buses %	0.1%	0%	0%		0.1%	0%	0%	0%		0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0		0	0	0	0		0	0	1	0		1	-
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.1%	0%		0.1%	-
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-

Peak Hour: 07:30 AM - 08:30 AM Weather: Mist (3.37 °C)




(1.6%) 700
(3.3%) 30
0
1
0
1
700 (3.4%)
35 (8.6%)
735
S
746

Turning Movement Count (6 . NINTH LINE & OSPREY BLVD)

Start Time	N Approach NINTH LINE					E Approach OSPREY BLVD					S Approach NINTH LINE					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	U-Turn S:S	Peds S:	Approach Total		
06:00:00	49	2	0	0	51	3	5	0	0	8	1	18	0	0	19	78	
06:15:00	80	1	0	0	81	2	8	0	0	10	3	44	0	0	47	138	
06:30:00	115	0	0	0	115	3	22	0	0	25	3	49	0	0	52	192	
06:45:00	140	2	0	0	142	8	14	0	0	22	3	61	0	0	64	228	636
07:00:00	135	3	0	0	138	10	17	0	0	27	5	74	0	0	79	244	802
07:15:00	172	4	0	0	176	9	23	0	0	32	5	104	0	0	109	317	981
07:30:00	207	4	0	0	211	9	33	0	0	42	13	160	0	0	173	426	1215
07:45:00	177	5	1	0	183	12	30	0	0	42	16	160	0	0	176	401	1388
08:00:00	170	5	0	0	175	21	25	0	0	46	27	188	0	0	215	436	1580
08:15:00	171	6	0	0	177	16	34	0	0	50	33	167	0	0	200	427	1690
08:30:00	168	6	0	0	174	12	34	0	0	46	13	151	0	0	164	384	1648
08:45:00	145	4	0	0	149	6	27	0	0	33	7	137	0	0	144	326	1573
09:00:00	134	2	0	0	136	7	5	0	0	12	16	113	0	0	129	277	1414
09:15:00	101	2	0	0	103	4	18	0	0	22	7	73	0	0	80	205	1192
09:30:00	119	5	0	0	124	6	13	0	0	19	4	98	0	0	102	245	1053
09:45:00	100	3	0	0	103	3	7	0	0	10	6	78	0	0	84	197	924
BREAK																	
15:00:00	130	10	0	0	140	3	23	0	1	26	14	135	0	0	149	315	
15:15:00	125	9	0	0	134	7	23	0	0	30	25	173	0	0	198	362	
15:30:00	109	1	0	2	110	1	11	0	3	12	20	179	0	0	199	321	
15:45:00	140	6	0	0	146	10	20	0	0	30	15	166	0	0	181	357	1355
16:00:00	140	9	0	0	149	3	4	0	1	7	23	158	0	0	181	337	1377
16:15:00	131	7	0	0	138	0	14	0	0	14	30	205	0	0	235	387	1402
16:30:00	156	7	0	0	163	1	16	0	0	17	27	176	0	0	203	383	1464

16:45:00	153	10	0	0	163	3	21	0	0	24	17	205	0	0	222	409	1516
17:00:00	177	7	0	0	184	5	20	0	0	25	23	214	0	0	237	446	1625
17:15:00	185	12	0	0	197	7	16	0	0	23	22	211	0	0	233	453	1691
17:30:00	187	11	0	0	198	4	11	0	0	15	31	220	0	0	251	464	1772
17:45:00	174	13	0	0	187	13	21	0	1	34	24	179	0	0	203	424	1787
18:00:00	128	11	0	0	139	9	10	0	0	19	14	176	0	0	190	348	1689
18:15:00	138	10	0	0	148	6	18	0	1	24	21	199	0	0	220	392	1628
18:30:00	143	6	0	0	149	6	18	0	1	24	24	181	0	0	205	378	1542
18:45:00	134	8	0	0	142	8	12	0	0	20	21	135	0	0	156	318	1436
Grand Total	4533	191	1	2	4725	217	573	0	8	790	513	4588	0	0	5100	**10615**	-
Approach%	95.9%	4%	0%		-	27.5%	72.5%	0%		-	10.1%	90%	0%		-	**-**	-
Totals %	42.7%	1.8%	0%		44.5%	2%	5.4%	0%		7.4%	4.8%	43.2%	0%		48%	**-**	-
Heavy	74	2	0		-	6	37	0		-	36	120	0		-	**-**	-
Heavy %	1.6%	1%	0%		-	2.8%	6.5%	0%		-	7%	2.6%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

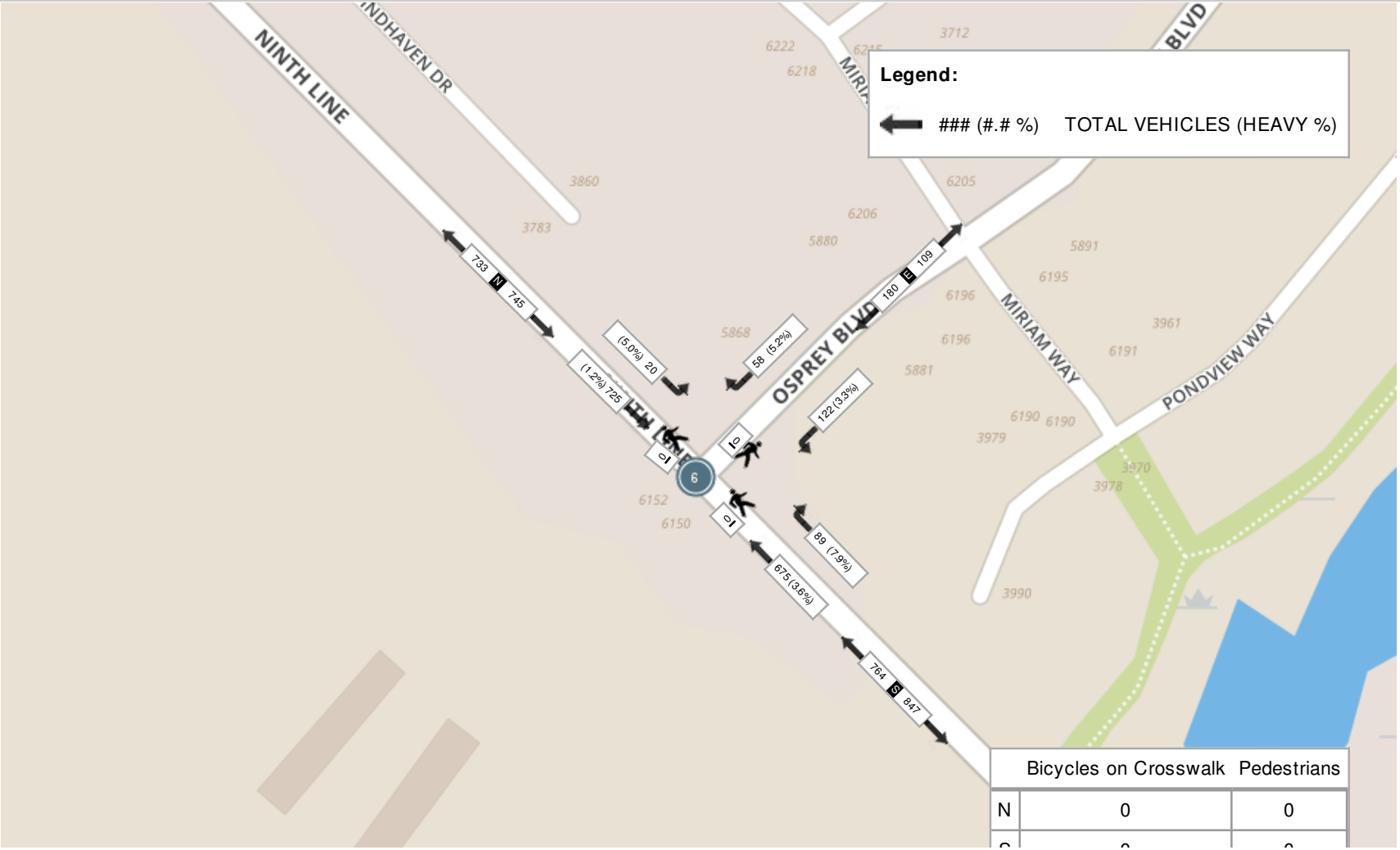
Peak Hour: 07:30 AM - 08:30 AM Weather: Mist (3.37 °C)

Start Time	N Approach NINTH LINE					E Approach OSPREY BLVD					S Approach NINTH LINE					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
07:30:00	207	4	0	0	211	9	33	0	0	42	13	160	0	0	173	426
07:45:00	177	5	1	0	183	12	30	0	0	42	16	160	0	0	176	401
08:00:00	170	5	0	0	175	21	25	0	0	46	27	188	0	0	215	436
08:15:00	171	6	0	0	177	16	34	0	0	50	33	167	0	0	200	427
Grand Total	725	20	1	0	746	58	122	0	0	180	89	675	0	0	764	**1690**
Approach%	97.2%	2.7%	0.1%		-	32.2%	67.8%	0%		-	11.6%	88.4%	0%		-	-
Totals %	42.9%	1.2%	0.1%		44.1%	3.4%	7.2%	0%		10.7%	5.3%	39.9%	0%		45.2%	-
PHF	0.88	0.83	0.25		0.88	0.69	0.9	0		0.9	0.67	0.9	0		0.89	-
Heavy	9	1	0		10	3	4	0		7	7	24	0		31	-
Heavy %	1.2%	5%	0%		1.3%	5.2%	3.3%	0%		3.9%	7.9%	3.6%	0%		4.1%	-
Lights	716	19	1		736	55	118	0		173	82	651	0		733	-
Lights %	98.8%	95%	100%		98.7%	94.8%	96.7%	0%		96.1%	92.1%	96.4%	0%		95.9%	-
Single-Unit Trucks	3	0	0		3	1	0	0		1	0	4	0		4	-
Single-Unit Trucks %	0.4%	0%	0%		0.4%	1.7%	0%	0%		0.6%	0%	0.6%	0%		0.5%	-
Buses	6	1	0		7	2	4	0		6	7	18	0		25	-
Buses %	0.8%	5%	0%		0.9%	3.4%	3.3%	0%		3.3%	7.9%	2.7%	0%		3.3%	-
Articulated Trucks	0	0	0		0	0	0	0		0	0	2	0		2	-
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.3%	0%		0.3%	-
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

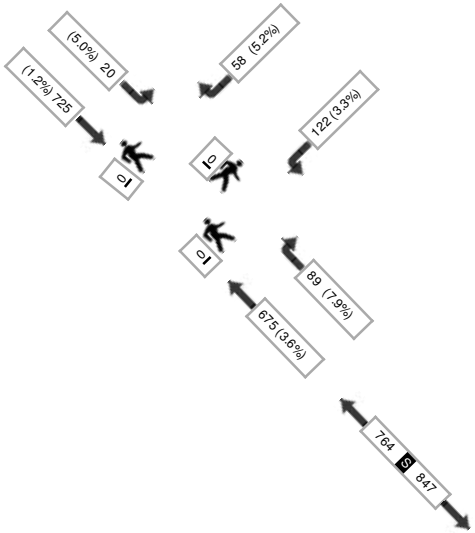
Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (8.8 °C)

Start Time	N Approach NINTH LINE					E Approach OSPREY BLVD					S Approach NINTH LINE					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
17:00:00	177	7	0	0	184	5	20	0	0	25	23	214	0	0	237	446
17:15:00	185	12	0	0	197	7	16	0	0	23	22	211	0	0	233	453
17:30:00	187	11	0	0	198	4	11	0	0	15	31	220	0	0	251	464
17:45:00	174	13	0	0	187	13	21	0	1	34	24	179	0	0	203	424
Grand Total	723	43	0	0	766	29	68	0	1	97	100	824	0	0	924	**1787**
Approach%	94.4%	5.6%	0%		-	29.9%	70.1%	0%		-	10.8%	89.2%	0%		-	-
Totals %	40.5%	2.4%	0%		42.9%	1.6%	3.8%	0%		5.4%	5.6%	46.1%	0%		51.7%	-
PHF	0.97	0.83	0		0.97	0.56	0.81	0		0.71	0.81	0.94	0		0.92	-
Heavy	3	0	0		3	1	5	0		6	2	7	0		9	-
Heavy %	0.4%	0%	0%		0.4%	3.4%	7.4%	0%		6.2%	2%	0.8%	0%		1%	-
Lights	720	43	0		763	28	63	0		91	98	817	0		915	-
Lights %	99.6%	100%	0%		99.6%	96.6%	92.6%	0%		93.8%	98%	99.2%	0%		99%	-
Single-Unit Trucks	2	0	0		2	1	2	0		3	0	6	0		6	-
Single-Unit Trucks %	0.3%	0%	0%		0.3%	3.4%	2.9%	0%		3.1%	0%	0.7%	0%		0.6%	-
Buses	1	0	0		1	0	3	0		3	2	0	0		2	-
Buses %	0.1%	0%	0%		0.1%	0%	4.4%	0%		3.1%	2%	0%	0%		0.2%	-
Articulated Trucks	0	0	0		0	0	0	0		0	0	1	0		1	-
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.1%	0%		0.1%	-
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	100%		-	-	-	0%		-

Peak Hour: 07:30 AM - 08:30 AM Weather: Mist (3.37 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0


(5.0%) 20
58 (5.2%)
(1.2%) 725
122 (3.3%)
89 (7.9%)
675 (3.6%)
764
847

Turning Movement Count (7 . NINTH LINE & BRITANNIA RD W) CustID: 00310242 MioID: 648560

Start Time	N Approach NINTH LINE						E Approach BRITANNIA RD W						S Approach NINTH LINE						W Approach BRITANNIA RD W						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		
06:00:00	4	52	6	0	0	62	7	16	6	0	0	29	7	9	13	0	0	29	9	40	2	0	0	51	171	
06:15:00	6	79	2	0	0	87	7	34	1	0	0	42	4	38	18	0	0	60	15	75	2	0	0	92	281	
06:30:00	13	110	15	0	0	138	4	56	6	0	0	66	7	39	29	0	0	75	19	99	6	0	0	124	403	
06:45:00	11	131	13	0	0	155	7	50	12	0	0	69	10	42	24	0	0	76	21	126	5	0	0	152	452	1307
07:00:00	19	109	12	0	0	140	6	65	11	0	0	82	11	59	30	0	0	100	19	170	11	0	0	200	522	1658
07:15:00	15	169	12	0	0	196	8	67	18	0	0	93	21	87	33	0	0	141	29	179	19	0	0	227	657	2034
07:30:00	21	168	12	0	0	201	20	119	33	0	1	172	20	115	45	0	0	180	39	209	18	0	0	266	819	2450
07:45:00	17	186	14	0	0	217	16	133	20	0	0	169	28	116	40	0	0	184	50	212	27	0	0	289	859	2857
08:00:00	26	175	11	0	0	212	30	110	21	0	1	161	32	134	51	0	0	217	49	237	31	0	0	317	907	3242
08:15:00	19	167	17	0	0	203	25	137	21	0	0	183	34	134	56	0	0	224	35	223	19	0	0	277	887	3472
08:30:00	23	169	11	0	0	203	12	118	15	0	1	145	32	115	52	0	0	199	35	221	18	0	0	274	821	3474
08:45:00	24	138	18	0	0	180	11	86	18	0	0	115	29	124	37	0	0	190	35	236	17	0	0	288	773	3388
09:00:00	9	94	6	0	0	109	10	74	14	0	1	98	28	88	47	0	0	163	25	162	14	0	0	201	571	3052
09:15:00	8	117	20	0	0	145	17	57	17	0	0	91	15	57	23	0	0	95	22	107	6	0	0	135	466	2631
09:30:00	9	105	15	0	0	129	17	51	17	0	0	85	16	78	27	0	0	121	15	90	11	0	0	116	451	2261
09:45:00	12	94	9	0	0	115	6	56	18	0	0	80	9	69	29	0	0	107	19	92	10	0	0	121	423	1911
BREAK																										
15:00:00	14	104	21	0	0	139	22	130	17	0	0	169	20	119	34	0	0	173	26	67	9	0	0	102	583	
15:15:00	17	99	20	0	0	136	26	155	13	0	0	194	17	146	39	0	0	202	27	70	14	0	0	111	643	
15:30:00	21	99	10	0	0	130	28	152	21	0	3	201	23	145	46	0	0	214	29	72	18	0	0	119	664	
15:45:00	14	109	18	0	0	141	30	195	28	0	0	253	24	137	41	0	0	202	46	80	12	0	0	138	734	2624
16:00:00	14	132	9	0	0	155	16	172	23	0	0	211	27	163	52	0	0	242	27	78	13	0	0	118	726	2767
16:15:00	21	109	14	0	0	144	26	214	19	0	2	259	18	175	53	0	0	246	33	96	21	0	0	150	799	2923
16:30:00	13	130	12	0	0	155	20	173	25	0	0	218	22	174	62	0	0	258	32	91	22	0	0	145	776	3035
16:45:00	21	132	14	0	0	167	24	231	38	0	0	293	19	172	43	0	0	234	58	123	22	0	0	203	897	3198
17:00:00	18	163	19	0	0	200	27	198	20	0	0	245	31	193	48	0	0	272	40	141	29	0	0	210	927	3399
17:15:00	19	144	16	0	0	179	22	224	20	0	2	266	19	165	45	0	0	229	70	133	36	0	0	239	913	3513
17:30:00	14	165	22	0	0	201	25	171	26	0	1	222	29	187	40	0	0	256	35	112	31	0	0	178	857	3594
17:45:00	21	138	17	0	0	176	23	174	31	0	0	228	29	139	29	0	0	197	70	148	27	0	0	245	846	3543
18:00:00	12	120	7	0	0	139	19	139	34	0	1	192	27	157	44	0	0	228	47	86	25	0	0	158	717	3333
18:15:00	15	119	15	0	0	149	24	119	31	0	1	174	21	172	31	0	0	224	43	108	17	0	0	168	715	3135

18:30:00	15	133	12	0	0	160	24	117	19	0	0	160	22	153	36	0	0	211	46	71	15	0	0	132	663	2941
18:45:00	7	101	19	0	0	127	17	130	18	0	0	165	24	130	30	0	0	184	31	87	13	0	0	131	607	2702
Grand Total	492	4060	438	0	0	4990	576	3923	631	0	14	5130	675	3831	1227	0	0	5733	1096	4041	540	0	0	5677	**21530**	-
Approach%	9.9%	81.4%	8.8%	0%		-	11.2%	76.5%	12.3%	0%		-	11.8%	66.8%	21.4%	0%		-	19.3%	71.2%	9.5%	0%		-	-	-
Totals %	2.3%	18.9%	2%	0%		23.2%	2.7%	18.2%	2.9%	0%		23.8%	3.1%	17.8%	5.7%	0%		26.6%	5.1%	18.8%	2.5%	0%		26.4%	-	-
Heavy	10	63	30	0		-	44	44	8	0		-	6	90	21	0		-	28	42	8	0		-	-	-
Heavy %	2%	1.6%	6.8%	0%		-	7.6%	1.1%	1.3%	0%		-	0.9%	2.3%	1.7%	0%		-	2.6%	1%	1.5%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

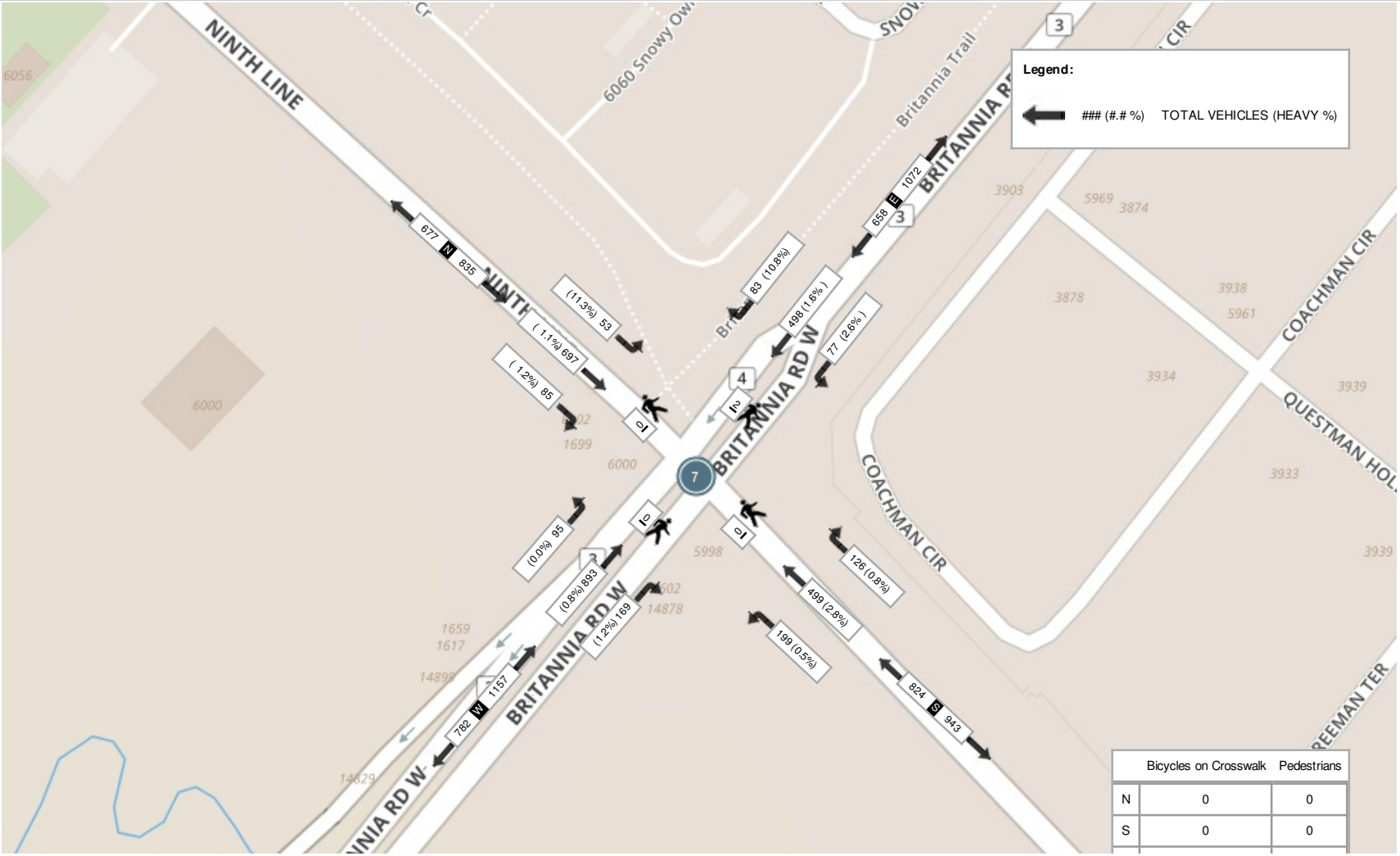
Peak Hour: 07:45 AM - 08:45 AM Weather: Mist (3.37 °C)

Start Time	N Approach NINTH LINE						E Approach BRITANNIA RD W						S Approach NINTH LINE						W Approach BRITANNIA RD W						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	17	186	14	0	0	217	16	133	20	0	0	169	28	116	40	0	0	184	50	212	27	0	0	289	859
08:00:00	26	175	11	0	0	212	30	110	21	0	1	161	32	134	51	0	0	217	49	237	31	0	0	317	907
08:15:00	19	167	17	0	0	203	25	137	21	0	0	183	34	134	56	0	0	224	35	223	19	0	0	277	887
08:30:00	23	169	11	0	0	203	12	118	15	0	1	145	32	115	52	0	0	199	35	221	18	0	0	274	821
Grand Total	85	697	53	0	0	835	83	498	77	0	2	658	126	499	199	0	0	824	169	893	95	0	0	1157	**3474**
Approach%	10.2%	83.5%	6.3%	0%		-	12.6%	75.7%	11.7%	0%		-	15.3%	60.6%	24.2%	0%		-	14.6%	77.2%	8.2%	0%		-	-
Totals %	2.4%	20.1%	1.5%	0%		24%	2.4%	14.3%	2.2%	0%		18.9%	3.6%	14.4%	5.7%	0%		23.7%	4.9%	25.7%	2.7%	0%		33.3%	-
PHF	0.82	0.94	0.78	0		0.96	0.69	0.91	0.92	0		0.9	0.93	0.93	0.89	0		0.92	0.85	0.94	0.77	0		0.91	-
Heavy	1	8	6	0		15	9	8	2	0		19	1	14	1	0		16	2	7	0	0		9	-
Heavy %	1.2%	1.1%	11.3%	0%		1.8%	10.8%	1.6%	2.6%	0%		2.9%	0.8%	2.8%	0.5%	0%		1.9%	1.2%	0.8%	0%	0%		0.8%	-
Lights	84	689	47	0		820	74	490	75	0		639	125	485	198	0		808	167	886	95	0		1148	-
Lights %	98.8%	98.9%	88.7%	0%		98.2%	89.2%	98.4%	97.4%	0%		97.1%	99.2%	97.2%	99.5%	0%		98.1%	98.8%	99.2%	100%	0%		99.2%	-
Single-Unit Trucks	1	3	2	0		6	0	6	0	0		6	1	3	1	0		5	2	6	0	0		8	-
Single-Unit Trucks %	1.2%	0.4%	3.8%	0%		0.7%	0%	1.2%	0%	0%		0.9%	0.8%	0.6%	0.5%	0%		0.6%	1.2%	0.7%	0%	0%		0.7%	-
Buses	0	5	4	0		9	9	0	2	0		11	0	9	0	0		9	0	0	0	0		0	-
Buses %	0%	0.7%	7.5%	0%		1.1%	10.8%	0%	2.6%	0%		1.7%	0%	1.8%	0%	0%		1.1%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0	0		0	0	2	0	0		2	0	2	0	0		2	0	1	0	0		1	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.3%	0%	0.4%	0%	0%		0.2%	0%	0.1%	0%	0%		0.1%	-
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%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	100%		-	-	-	-	0%		-	-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

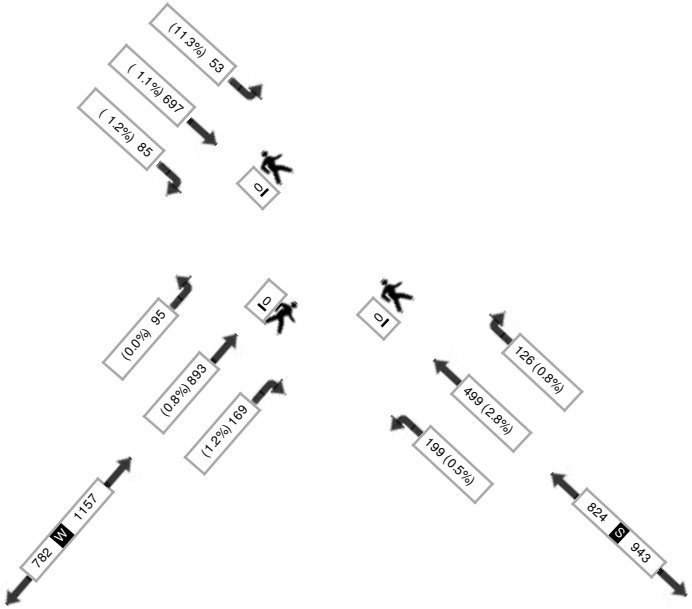
Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (8.8 °C)

Start Time	N Approach NINTH LINE						E Approach BRITANNIA RD W						S Approach NINTH LINE						W Approach BRITANNIA RD W						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	
16:45:00	21	132	14	0	0	167	24	231	38	0	0	293	19	172	43	0	0	234	58	123	22	0	0	203	897
17:00:00	18	163	19	0	0	200	27	198	20	0	0	245	31	193	48	0	0	272	40	141	29	0	0	210	927
17:15:00	19	144	16	0	0	179	22	224	20	0	2	266	19	165	45	0	0	229	70	133	36	0	0	239	913
17:30:00	14	165	22	0	0	201	25	171	26	0	1	222	29	187	40	0	0	256	35	112	31	0	0	178	857
Grand Total	72	604	71	0	0	747	98	824	104	0	3	1026	98	717	176	0	0	991	203	509	118	0	0	830	**3594**
Approach%	9.6%	80.9%	9.5%	0%		-	9.6%	80.3%	10.1%	0%		-	9.9%	72.4%	17.8%	0%		-	24.5%	61.3%	14.2%	0%		-	-
Totals %	2%	16.8%	2%	0%		20.8%	2.7%	22.9%	2.9%	0%		28.5%	2.7%	19.9%	4.9%	0%		27.6%	5.6%	14.2%	3.3%	0%		23.1%	-
PHF	0.86	0.92	0.81	0		0.93	0.91	0.89	0.68	0		0.88	0.79	0.93	0.92	0		0.91	0.73	0.9	0.82	0		0.87	-
Heavy	3	4	3	0		10	3	5	0	0		8	0	6	2	0		8	1	4	0	0		5	-
Heavy %	4.2%	0.7%	4.2%	0%		1.3%	3.1%	0.6%	0%	0%		0.8%	0%	0.8%	1.1%	0%		0.8%	0.5%	0.8%	0%	0%		0.6%	-
Lights	69	600	68	0		737	95	819	104	0		1018	98	711	174	0		983	202	505	118	0		825	-
Lights %	95.8%	99.3%	95.8%	0%		98.7%	96.9%	99.4%	100%	0%		99.2%	100%	99.2%	98.9%	0%		99.2%	99.5%	99.2%	100%	0%		99.4%	-
Single-Unit Trucks	2	2	0	0		4	0	2	0	0		2	0	5	2	0		7	0	3	0	0		3	-
Single-Unit Trucks %	2.8%	0.3%	0%	0%		0.5%	0%	0.2%	0%	0%		0.2%	0%	0.7%	1.1%	0%		0.7%	0%	0.6%	0%	0%		0.4%	-
Buses	0	2	3	0		5	3	0	0	0		3	0	0	0	0		0	0	1	0	0		1	-
Buses %	0%	0.3%	4.2%	0%		0.7%	3.1%	0%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.1%	-
Articulated Trucks	1	0	0	0		1	0	3	0	0		3	0	1	0	0		1	1	0	0	0		1	-
Articulated Trucks %	1.4%	0%	0%	0%		0.1%	0%	0.4%	0%	0%		0.3%	0%	0.1%	0%	0%		0.1%	0.5%	0%	0%	0%		0.1%	-
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%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	100%		-	-	-	-	0%		-	-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

Peak Hour: 07:45 AM - 08:45 AM Weather: Mist (3.37 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0


782
W
1157
(0.0%) 95
(0.8%) 893
(1.2%) 169
0
1
(1.2%) 85
(1.1%) 697
(11.3%) 53
0
1
199 (0.5%)
499 (2.8%)
126 (0.8%)
824
S
943

Turning Movement Count (9 . BRITANNIA RD W & HWY 407 EAST RAMP TERMINAL)

Start Time	N Approach HWY 407 EAST RAMP TERMINAL					E Approach BRITANNIA RD W					W Approach BRITANNIA RD W					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	U-Turn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
06:00:00	2	0	0	0	2	0	20	0	0	20	52	0	0	0	52	74	
06:15:00	2	2	0	0	4	0	36	0	0	36	87	0	0	0	87	127	
06:30:00	2	2	0	0	4	0	58	0	0	58	124	0	0	0	124	186	
06:45:00	8	3	0	0	11	0	59	0	0	59	145	0	0	0	145	215	602
07:00:00	6	6	0	0	12	0	77	0	0	77	175	0	0	0	175	264	792
07:15:00	6	8	0	0	14	0	79	0	0	79	211	0	0	0	211	304	969
07:30:00	3	3	0	0	6	0	104	0	0	104	231	0	0	0	231	341	1124
07:45:00	9	15	0	0	24	0	125	0	0	125	242	0	0	0	242	391	1300
08:00:00	6	12	0	0	18	0	101	0	0	101	255	0	0	0	255	374	1410
08:15:00	2	13	0	0	15	0	123	0	0	123	227	0	0	0	227	365	1471
08:30:00	2	8	0	0	10	0	119	0	0	119	231	0	0	0	231	360	1490
08:45:00	6	12	0	0	18	0	97	0	0	97	248	0	0	0	248	363	1462
09:00:00	5	4	0	0	9	0	85	0	0	85	158	0	0	0	158	252	1340
09:15:00	6	8	0	0	14	0	67	0	0	67	123	0	0	0	123	204	1179
09:30:00	3	5	0	0	8	0	68	0	0	68	120	0	0	0	120	196	1015
09:45:00	6	6	0	0	12	0	68	0	0	68	90	0	0	0	90	170	822
BREAK																	
15:00:00	6	9	0	0	15	0	163	2	0	165	87	0	0	0	87	267	
15:15:00	3	18	0	0	21	0	182	0	0	182	80	0	0	0	80	283	
15:30:00	7	18	0	0	25	0	202	0	0	202	91	0	0	0	91	318	
15:45:00	6	19	0	0	25	0	217	0	0	217	104	0	0	0	104	346	1214
16:00:00	9	21	0	0	30	0	223	1	0	224	75	0	0	0	75	329	1276
16:15:00	11	26	0	0	37	0	232	0	0	232	101	0	0	0	101	370	1363
16:30:00	11	26	0	0	37	0	230	0	0	230	113	0	0	0	113	380	1425

16:45:00	13	42	0	0	55	0	222	0	0	222	126	0	0	0	126	403	1482
17:00:00	13	39	0	0	52	0	262	0	0	262	159	0	0	0	159	473	1626
17:15:00	12	55	0	0	67	0	248	0	0	248	145	0	0	0	145	460	1716
17:30:00	12	28	0	0	40	0	204	0	0	204	144	0	0	0	144	388	1724
17:45:00	13	41	0	0	54	0	180	0	0	180	161	0	0	0	161	395	1716
18:00:00	8	31	0	0	39	0	186	0	0	186	101	0	0	0	101	326	1569
18:15:00	9	26	0	0	35	0	143	0	0	143	116	0	0	0	116	294	1403
18:30:00	8	25	0	0	33	0	150	0	0	150	93	0	0	0	93	276	1291
18:45:00	4	20	0	0	24	0	127	0	0	127	95	0	0	0	95	246	1142
Grand Total	219	551	0	0	770	0	4457	3	0	4460	4510	0	0	0	4510	**9740**	-
Approach%	28.4%	71.6%	0%		-	0%	99.9%	0.1%		-	100%	0%	0%		-	**-**	-
Totals %	2.2%	5.7%	0%		7.9%	0%	45.8%	0%		45.8%	46.3%	0%	0%		46.3%	**-**	-
Heavy	22	25	0		-	0	54	0		-	54	0	0		-	**-**	-
Heavy %	10%	4.5%	0%		-	0%	1.2%	0%		-	1.2%	0%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

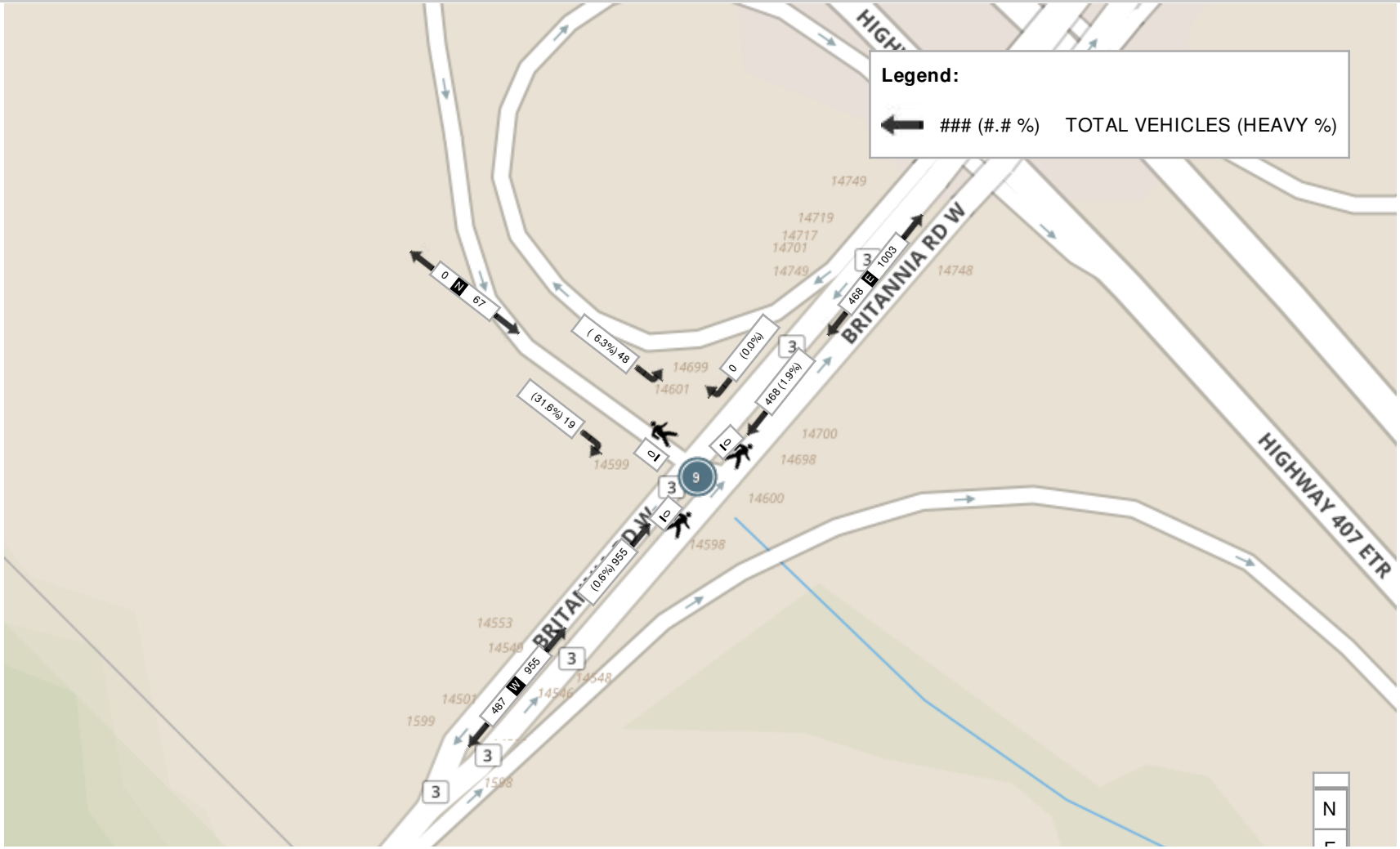
Peak Hour: 07:45 AM - 08:45 AM Weather: Mist (3.37 °C)

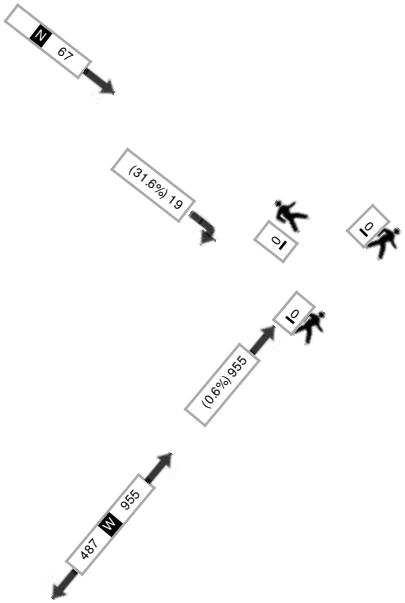
Start Time	N Approach HWY 407 EAST RAMP TERMINAL					E Approach BRITANNIA RD W					W Approach BRITANNIA RD W					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
07:45:00	9	15	0	0	24	0	125	0	0	125	242	0	0	0	242	391
08:00:00	6	12	0	0	18	0	101	0	0	101	255	0	0	0	255	374
08:15:00	2	13	0	0	15	0	123	0	0	123	227	0	0	0	227	365
08:30:00	2	8	0	0	10	0	119	0	0	119	231	0	0	0	231	360
Grand Total	19	48	0	0	67	0	468	0	0	468	955	0	0	0	955	**1490**
Approach%	28.4%	71.6%	0%		-	0%	100%	0%		-	100%	0%	0%		-	-
Totals %	1.3%	3.2%	0%		4.5%	0%	31.4%	0%		31.4%	64.1%	0%	0%		64.1%	-
PHF	0.53	0.8	0		0.7	0	0.94	0		0.94	0.94	0	0		0.94	-
Heavy	6	3	0		9	0	9	0		9	6	0	0		6	-
Heavy %	31.6%	6.3%	0%		13.4%	0%	1.9%	0%		1.9%	0.6%	0%	0%		0.6%	-
Lights	13	45	0		58	0	459	0		459	949	0	0		949	-
Lights %	68.4%	93.8%	0%		86.6%	0%	98.1%	0%		98.1%	99.4%	0%	0%		99.4%	-
Single-Unit Trucks	6	3	0		9	0	6	0		6	6	0	0		6	-
Single-Unit Trucks %	31.6%	6.3%	0%		13.4%	0%	1.3%	0%		1.3%	0.6%	0%	0%		0.6%	-
Buses	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%	-
Articulated Trucks	0	0	0		0	0	3	0		3	0	0	0		0	-
Articulated Trucks %	0%	0%	0%		0%	0%	0.6%	0%		0.6%	0%	0%	0%		0%	-

Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (8.8 °C)

Start Time	N Approach HWY 407 EAST RAMP TERMINAL					E Approach BRITANNIA RD W					W Approach BRITANNIA RD W					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
16:45:00	13	42	0	0	55	0	222	0	0	222	126	0	0	0	126	403
17:00:00	13	39	0	0	52	0	262	0	0	262	159	0	0	0	159	473
17:15:00	12	55	0	0	67	0	248	0	0	248	145	0	0	0	145	460
17:30:00	12	28	0	0	40	0	204	0	0	204	144	0	0	0	144	388
Grand Total	50	164	0	0	214	0	936	0	0	936	574	0	0	0	574	**1724**
Approach%	23.4%	76.6%	0%		-	0%	100%	0%		-	100%	0%	0%		-	-
Totals %	2.9%	9.5%	0%		12.4%	0%	54.3%	0%		54.3%	33.3%	0%	0%		33.3%	-
PHF	0.96	0.75	0		0.8	0	0.89	0		0.89	0.9	0	0		0.9	-
Heavy	2	2	0		4	0	9	0		9	4	0	0		4	-
Heavy %	4%	1.2%	0%		1.9%	0%	1%	0%		1%	0.7%	0%	0%		0.7%	-
Lights	48	162	0		210	0	927	0		927	570	0	0		570	-
Lights %	96%	98.8%	0%		98.1%	0%	99%	0%		99%	99.3%	0%	0%		99.3%	-
Single-Unit Trucks	2	1	0		3	0	6	0		6	2	0	0		2	-
Single-Unit Trucks %	4%	0.6%	0%		1.4%	0%	0.6%	0%		0.6%	0.3%	0%	0%		0.3%	-
Buses	0	0	0		0	0	0	0		0	2	0	0		2	-
Buses %	0%	0%	0%		0%	0%	0%	0%		0%	0.3%	0%	0%		0.3%	-
Articulated Trucks	0	1	0		1	0	3	0		3	0	0	0		0	-
Articulated Trucks %	0%	0.6%	0%		0.5%	0%	0.3%	0%		0.3%	0%	0%	0%		0%	-

Peak Hour: 07:45 AM - 08:45 AM Weather: Mist (3.37 °C)




487
W
955
(0.6%) 955
0
0
(31.6%) 19
N
67

Turning Movement Count (8 . BRITANNIA RD W & HWY 407 WEST RAMP TERMINAL)

Start Time	E Approach BRITANNIA RD W					S Approach HWY 407 WEST RAMP TERMINAL					W Approach BRITANNIA RD W					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	U-Turn W:W	Peds W:	Approach Total		
06:00:00	25	0	0	0	25	3	1	0	0	4	0	49	0	0	49	78	
06:15:00	47	0	0	0	47	3	0	0	0	3	0	92	0	0	92	142	
06:30:00	75	0	0	0	75	11	1	0	0	12	0	123	0	0	123	210	
06:45:00	71	0	0	0	71	12	5	0	0	17	0	145	0	0	145	233	663
07:00:00	98	0	0	0	98	14	2	0	0	16	0	175	0	0	175	289	874
07:15:00	91	0	0	0	91	22	3	0	0	25	0	212	0	0	212	328	1060
07:30:00	144	0	0	0	144	40	1	0	0	41	0	218	0	0	218	403	1253
07:45:00	149	0	0	0	149	43	2	0	0	45	0	245	0	0	245	439	1459
08:00:00	142	0	0	0	142	55	4	0	0	59	0	252	0	0	252	453	1623
08:15:00	144	0	0	0	144	44	6	0	0	50	0	242	0	0	242	436	1731
08:30:00	151	0	0	0	151	49	6	0	0	55	0	225	0	0	225	431	1759
08:45:00	113	0	0	0	113	41	4	0	0	45	0	255	0	0	255	413	1733
09:00:00	99	0	0	0	99	29	2	0	0	31	0	162	0	0	162	292	1572
09:15:00	80	0	0	0	80	12	1	0	0	13	0	122	0	0	122	215	1351
09:30:00	75	0	0	0	75	8	7	0	0	15	0	120	0	0	120	210	1130
09:45:00	82	0	0	0	82	18	2	0	0	20	0	96	0	0	96	198	915
BREAK																	
15:00:00	168	0	0	0	168	10	11	0	0	21	0	96	0	0	96	285	
15:15:00	196	0	0	0	196	16	10	0	0	26	0	91	0	0	91	313	
15:30:00	216	0	0	0	216	19	8	0	0	27	0	105	0	0	105	348	
15:45:00	242	0	0	0	242	20	8	0	0	28	0	118	0	0	118	388	1334
16:00:00	231	0	0	0	231	32	11	0	0	43	0	98	0	0	98	372	1421
16:15:00	267	0	0	0	267	21	8	0	0	29	0	123	0	0	123	419	1527
16:30:00	236	0	0	0	236	26	15	0	0	41	0	137	0	0	137	414	1593

16:45:00	267	0	0	0	267	26	9	0	0	35	0	164	0	0	164	466	1671
17:00:00	253	0	0	0	253	31	13	0	0	44	0	189	0	0	189	486	1785
17:15:00	267	0	0	0	267	30	16	0	0	46	0	194	0	0	194	507	1873
17:30:00	221	0	0	0	221	31	7	0	0	38	0	165	0	0	165	424	1883
17:45:00	199	0	0	0	199	37	9	0	0	46	0	195	0	0	195	440	1857
18:00:00	198	0	0	0	198	30	8	0	0	38	0	137	0	0	137	373	1744
18:15:00	157	0	0	0	157	16	7	0	0	23	0	138	0	0	138	318	1555
18:30:00	162	0	0	0	162	23	12	0	0	35	0	117	0	0	117	314	1445
18:45:00	141	0	0	0	141	14	7	0	0	21	0	112	0	0	112	274	1279
Grand Total	5007	0	0	0	5007	786	206	0	0	992	0	4912	0	0	4912	**10911**	-
Approach%	100%	0%	0%		-	79.2%	20.8%	0%		-	0%	100%	0%		-	**-**	-
Totals %	45.9%	0%	0%		45.9%	7.2%	1.9%	0%		9.1%	0%	45%	0%		45%	**-**	-
Heavy	56	0	0		-	18	8	0		-	0	61	0		-	**-**	-
Heavy %	1.1%	0%	0%		-	2.3%	3.9%	0%		-	0%	1.2%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

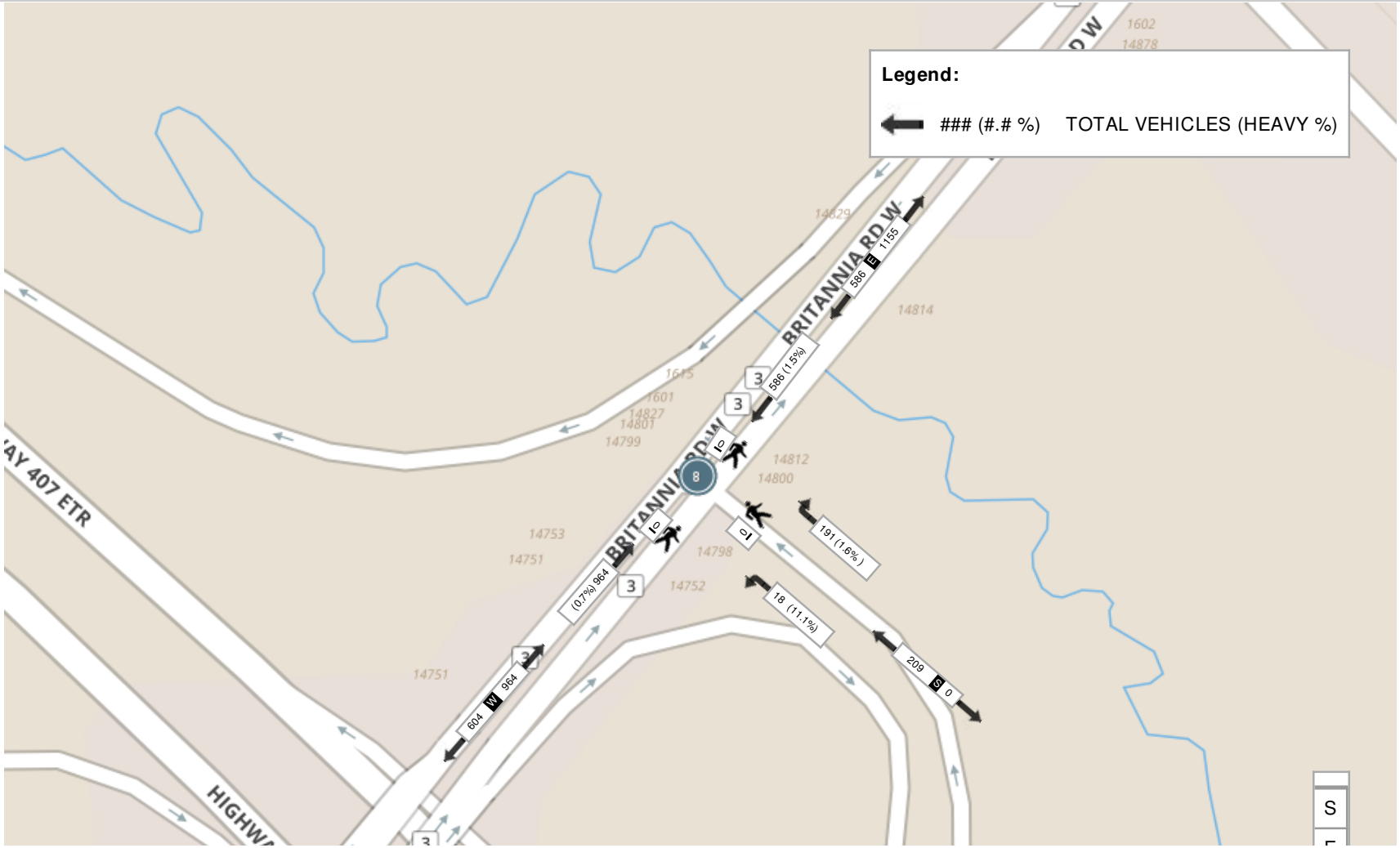
Peak Hour: 07:45 AM - 08:45 AM Weather: Mist (3.37 °C)

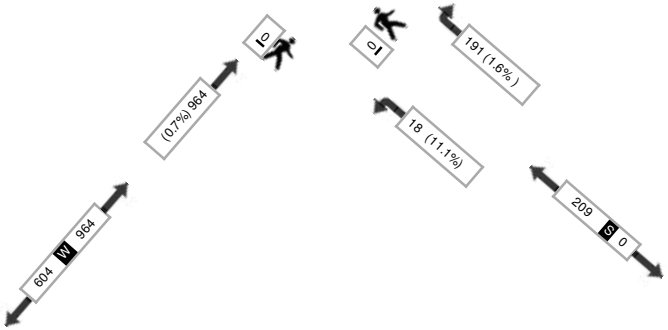
Start Time	E Approach BRITANNIA RD W					S Approach HWY 407 WEST RAMP TERMINAL					W Approach BRITANNIA RD W					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
07:45:00	149	0	0	0	149	43	2	0	0	45	0	245	0	0	245	439
08:00:00	142	0	0	0	142	55	4	0	0	59	0	252	0	0	252	453
08:15:00	144	0	0	0	144	44	6	0	0	50	0	242	0	0	242	436
08:30:00	151	0	0	0	151	49	6	0	0	55	0	225	0	0	225	431
Grand Total	586	0	0	0	586	191	18	0	0	209	0	964	0	0	964	**1759**
Approach%	100%	0%	0%		-	91.4%	8.6%	0%		-	0%	100%	0%		-	-
Totals %	33.3%	0%	0%		33.3%	10.9%	1%	0%		11.9%	0%	54.8%	0%		54.8%	-
PHF	0.97	0	0		0.97	0.87	0.75	0		0.89	0	0.96	0		0.96	-
Heavy	9	0	0		9	3	2	0		5	0	7	0		7	-
Heavy %	1.5%	0%	0%		1.5%	1.6%	11.1%	0%		2.4%	0%	0.7%	0%		0.7%	-
Lights	577	0	0		577	188	16	0		204	0	957	0		957	-
Lights %	98.5%	0%	0%		98.5%	98.4%	88.9%	0%		97.6%	0%	99.3%	0%		99.3%	-
Single-Unit Trucks	7	0	0		7	3	1	0		4	0	6	0		6	-
Single-Unit Trucks %	1.2%	0%	0%		1.2%	1.6%	5.6%	0%		1.9%	0%	0.6%	0%		0.6%	-
Buses	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%	-
Articulated Trucks	2	0	0		2	0	1	0		1	0	1	0		1	-
Articulated Trucks %	0.3%	0%	0%		0.3%	0%	5.6%	0%		0.5%	0%	0.1%	0%		0.1%	-

Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (8.8 °C)

Start Time	E Approach BRITANNIA RD W					S Approach HWY 407 WEST RAMP TERMINAL					W Approach BRITANNIA RD W					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
16:45:00	267	0	0	0	267	26	9	0	0	35	0	164	0	0	164	466
17:00:00	253	0	0	0	253	31	13	0	0	44	0	189	0	0	189	486
17:15:00	267	0	0	0	267	30	16	0	0	46	0	194	0	0	194	507
17:30:00	221	0	0	0	221	31	7	0	0	38	0	165	0	0	165	424
Grand Total	1008	0	0	0	1008	118	45	0	0	163	0	712	0	0	712	**1883**
Approach%	100%	0%	0%		-	72.4%	27.6%	0%		-	0%	100%	0%		-	-
Totals %	53.5%	0%	0%		53.5%	6.3%	2.4%	0%		8.7%	0%	37.8%	0%		37.8%	-
PHF	0.94	0	0		0.94	0.95	0.7	0		0.89	0	0.92	0		0.92	-
Heavy	8	0	0		8	1	1	0		2	0	4	0		4	-
Heavy %	0.8%	0%	0%		0.8%	0.8%	2.2%	0%		1.2%	0%	0.6%	0%		0.6%	-
Lights	1000	0	0		1000	117	44	0		161	0	708	0		708	-
Lights %	99.2%	0%	0%		99.2%	99.2%	97.8%	0%		98.8%	0%	99.4%	0%		99.4%	-
Single-Unit Trucks	5	0	0		5	1	1	0		2	0	2	0		2	-
Single-Unit Trucks %	0.5%	0%	0%		0.5%	0.8%	2.2%	0%		1.2%	0%	0.3%	0%		0.3%	-
Buses	0	0	0		0	0	0	0		0	0	1	0		1	-
Buses %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.1%	0%		0.1%	-
Articulated Trucks	3	0	0		3	0	0	0		0	0	1	0		1	-
Articulated Trucks %	0.3%	0%	0%		0.3%	0%	0%	0%		0%	0%	0.1%	0%		0.1%	-

Peak Hour: 07:45 AM - 08:45 AM Weather: Mist (3.37 °C)




604
W
964
(0.7%) 964
0
1
0
1
18 (11.1%)
191 (1.6%)
209
S
0

Turning Movement Count (10 . WINSTON CHURCHILL BLVD & HWY 401 EAST RAMP TERMINAL)

Start Time	N Approach WINSTON CHURCHILL BLVD					S Approach WINSTON CHURCHILL BLVD					W Approach HWY 401 EAST RAMP TERMINAL					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		
06:00:00	0	109	16	0	125	115	0	0	0	115	25	46	0	0	71	311	
06:15:00	0	105	9	0	114	109	0	0	0	109	43	54	0	0	97	320	
06:30:00	0	120	0	0	120	149	0	0	0	149	61	105	0	0	166	435	
06:45:00	0	155	0	0	155	153	0	0	0	153	82	112	0	0	194	502	1568
07:00:00	0	171	0	0	171	164	0	1	0	165	61	65	0	0	126	462	1719
07:15:00	0	184	0	0	184	181	0	0	0	181	74	70	0	0	144	509	1908
07:30:00	0	222	0	0	222	194	0	0	0	194	69	68	0	0	137	553	2026
07:45:00	0	220	0	0	220	260	0	0	0	260	67	79	0	0	146	626	2150
08:00:00	0	201	0	0	201	211	0	0	0	211	69	75	0	0	144	556	2244
08:15:00	0	209	0	0	209	270	0	0	0	270	71	65	0	0	136	615	2350
08:30:00	0	187	1	0	188	256	0	1	0	257	47	86	0	0	133	578	2375
08:45:00	0	183	0	0	183	227	0	0	0	227	58	89	0	0	147	557	2306
09:00:00	0	172	0	0	172	179	0	0	0	179	41	50	0	0	91	442	2192
09:15:00	0	157	0	0	157	134	0	0	0	134	39	54	0	0	93	384	1961
09:30:00	0	132	0	0	132	118	0	0	1	118	57	45	0	0	102	352	1735
09:45:00	0	145	1	1	146	116	0	1	0	117	64	50	0	1	114	377	1555
BREAK																	
15:00:00	0	232	0	0	232	168	0	0	0	168	52	66	0	0	118	518	
15:15:00	0	206	1	0	207	183	0	0	0	183	42	49	0	2	91	481	
15:30:00	0	219	0	0	219	190	0	0	0	190	51	67	0	0	118	527	
15:45:00	0	231	0	0	231	194	0	1	0	195	37	58	0	0	95	521	2047
16:00:00	0	272	0	0	272	234	0	0	0	234	52	82	0	0	134	640	2169
16:15:00	0	251	1	0	252	223	0	0	0	223	60	87	0	0	147	622	2310
16:30:00	0	374	0	0	374	259	0	0	0	259	65	74	0	0	139	772	2555

16:45:00	0	364	0	0	364	285	0	0	0	285	76	103	0	0	179	828	2862
17:00:00	0	431	0	0	431	271	0	0	0	271	57	87	0	0	144	846	3068
17:15:00	0	404	0	0	404	259	0	0	0	259	74	102	0	0	176	839	3285
17:30:00	0	350	0	0	350	237	0	0	0	237	67	76	0	0	143	730	3243
17:45:00	0	324	0	0	324	206	0	0	0	206	56	70	0	0	126	656	3071
18:00:00	0	284	1	0	285	258	0	0	0	258	43	82	0	0	125	668	2893
18:15:00	0	289	0	0	289	195	0	0	0	195	78	74	0	0	152	636	2690
18:30:00	0	239	1	0	240	187	0	0	0	187	54	44	0	1	98	525	2485
18:45:00	0	227	0	0	227	172	0	0	0	172	44	61	0	0	105	504	2333
Grand Total	0	7369	31	1	7400	6357	0	4	1	6361	1836	2295	0	4	4131	**17892**	-
Approach%	0%	99.6%	0.4%		-	99.9%	0%	0.1%		-	44.4%	55.6%	0%		-	**-**	-
Totals %	0%	41.2%	0.2%		41.4%	35.5%	0%	0%		35.6%	10.3%	12.8%	0%		23.1%	**-**	-
Heavy	0	293	0		-	243	0	0		-	54	184	0		-	**-**	-
Heavy %	0%	4%	0%		-	3.8%	0%	0%		-	2.9%	8%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

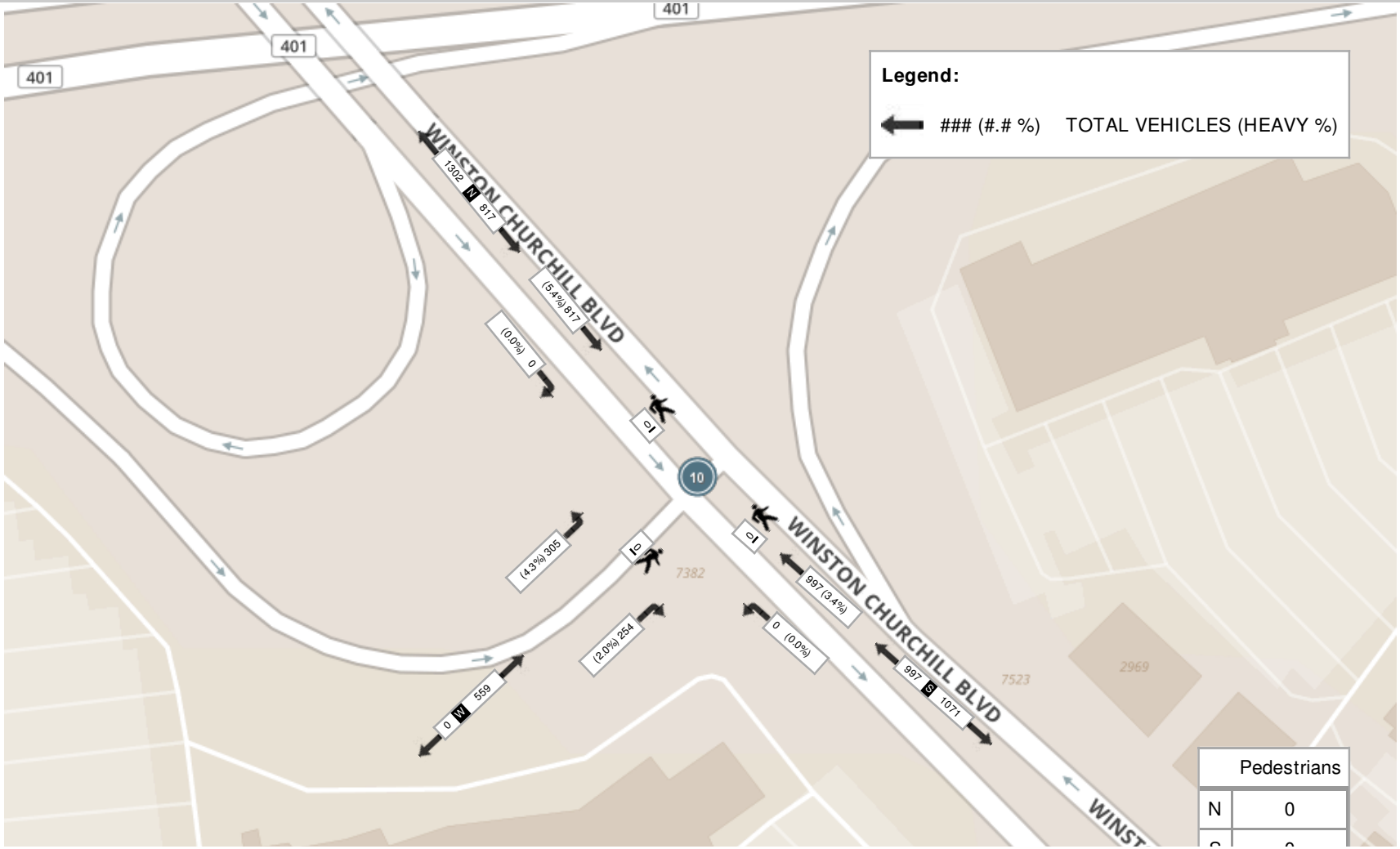
Peak Hour: 07:45 AM - 08:45 AM Weather: Mist (3.37 °C)

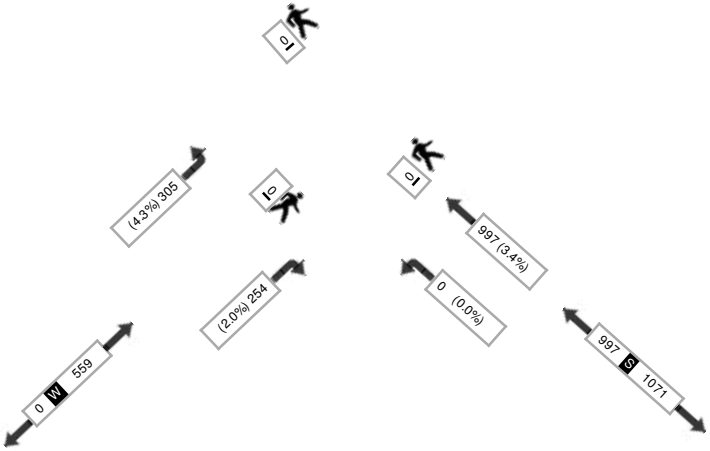
Start Time	N Approach WINSTON CHURCHILL BLVD					S Approach WINSTON CHURCHILL BLVD					W Approach HWY 401 EAST RAMP TERMINAL					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
07:45:00	0	220	0	0	220	260	0	0	0	260	67	79	0	0	146	626
08:00:00	0	201	0	0	201	211	0	0	0	211	69	75	0	0	144	556
08:15:00	0	209	0	0	209	270	0	0	0	270	71	65	0	0	136	615
08:30:00	0	187	1	0	188	256	0	1	0	257	47	86	0	0	133	578
Grand Total	0	817	1	0	818	997	0	1	0	998	254	305	0	0	559	**2375**
Approach%	0%	99.9%	0.1%		-	99.9%	0%	0.1%		-	45.4%	54.6%	0%		-	-
Totals %	0%	34.4%	0%		34.4%	42%	0%	0%		42%	10.7%	12.8%	0%		23.5%	-
PHF	0	0.93	0.25		0.93	0.92	0	0.25		0.92	0.89	0.89	0		0.96	-
Heavy	0	44	0		44	34	0	0		34	5	13	0		18	-
Heavy %	0%	5.4%	0%		5.4%	3.4%	0%	0%		3.4%	2%	4.3%	0%		3.2%	-
Lights	0	773	1		774	963	0	1		964	249	292	0		541	-
Lights %	0%	94.6%	100%		94.6%	96.6%	0%	100%		96.6%	98%	95.7%	0%		96.8%	-
Single-Unit Trucks	0	21	0		21	17	0	0		17	2	8	0		10	-
Single-Unit Trucks %	0%	2.6%	0%		2.6%	1.7%	0%	0%		1.7%	0.8%	2.6%	0%		1.8%	-
Buses	0	9	0		9	7	0	0		7	0	0	0		0	-
Buses %	0%	1.1%	0%		1.1%	0.7%	0%	0%		0.7%	0%	0%	0%		0%	-
Articulated Trucks	0	14	0		14	10	0	0		10	3	5	0		8	-
Articulated Trucks %	0%	1.7%	0%		1.7%	1%	0%	0%		1%	1.2%	1.6%	0%		1.4%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (8.8 °C)

Start Time	N Approach WINSTON CHURCHILL BLVD					S Approach WINSTON CHURCHILL BLVD					W Approach HWY 401 EAST RAMP TERMINAL					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	
16:30:00	0	374	0	0	374	259	0	0	0	259	65	74	0	0	139	772
16:45:00	0	364	0	0	364	285	0	0	0	285	76	103	0	0	179	828
17:00:00	0	431	0	0	431	271	0	0	0	271	57	87	0	0	144	846
17:15:00	0	404	0	0	404	259	0	0	0	259	74	102	0	0	176	839
Grand Total	0	1573	0	0	1573	1074	0	0	0	1074	272	366	0	0	638	**3285**
Approach%	0%	100%	0%		-	100%	0%	0%		-	42.6%	57.4%	0%		-	-
Totals %	0%	47.9%	0%		47.9%	32.7%	0%	0%		32.7%	8.3%	11.1%	0%		19.4%	-
PHF	0	0.91	0		0.91	0.94	0	0		0.94	0.89	0.89	0		0.89	-
Heavy	0	19	0		19	27	0	0		27	9	46	0		55	-
Heavy %	0%	1.2%	0%		1.2%	2.5%	0%	0%		2.5%	3.3%	12.6%	0%		8.6%	-
Lights	0	1554	0		1554	1047	0	0		1047	263	320	0		583	-
Lights %	0%	98.8%	0%		98.8%	97.5%	0%	0%		97.5%	96.7%	87.4%	0%		91.4%	-
Single-Unit Trucks	0	7	0		7	12	0	0		12	2	21	0		23	-
Single-Unit Trucks %	0%	0.4%	0%		0.4%	1.1%	0%	0%		1.1%	0.7%	5.7%	0%		3.6%	-
Buses	0	7	0		7	8	0	0		8	1	5	0		6	-
Buses %	0%	0.4%	0%		0.4%	0.7%	0%	0%		0.7%	0.4%	1.4%	0%		0.9%	-
Articulated Trucks	0	5	0		5	7	0	0		7	6	20	0		26	-
Articulated Trucks %	0%	0.3%	0%		0.3%	0.7%	0%	0%		0.7%	2.2%	5.5%	0%		4.1%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 07:45 AM - 08:45 AM Weather: Mist (3.37 °C)




0
(4.3%) 305
0
0
997 (3.4%)
(2.0%) 254
0 (0.0%)
0 W 559
997 S 1071

Turning Movement Count (11 . WINSTON CHURCHILL BLVD & HWY 401 WEST RAMP TERMINAL)

Start Time	N Approach WINSTON CHURCHILL BLVD					E Approach HWY 401 WEST RAMP TERMINAL					S Approach WINSTON CHURCHILL BLVD					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	U-Turn S:S	Peds S:	Approach Total		
06:00:00	177	0	1	0	178	40	25	0	0	65	0	100	0	0	100	343	
06:15:00	164	0	3	0	167	71	22	0	0	93	0	133	0	0	133	393	
06:30:00	159	0	0	0	159	110	30	0	0	140	0	202	0	0	202	501	
06:45:00	182	0	0	0	182	105	56	0	0	161	0	205	0	0	205	548	1785
07:00:00	177	0	0	0	177	60	36	0	0	96	0	197	0	0	197	470	1912
07:15:00	253	0	0	0	253	84	38	0	0	122	0	184	0	0	184	559	2078
07:30:00	260	0	0	0	260	74	51	0	0	125	0	205	0	0	205	590	2167
07:45:00	283	0	0	0	283	94	44	0	0	138	0	270	0	0	270	691	2310
08:00:00	276	0	0	0	276	93	53	0	0	146	0	228	0	0	228	650	2490
08:15:00	285	0	0	0	285	78	48	0	0	126	1	304	0	0	305	716	2647
08:30:00	265	0	0	0	265	74	33	0	0	107	1	287	0	0	288	660	2717
08:45:00	254	0	0	0	254	86	40	0	1	126	0	248	0	0	248	628	2654
09:00:00	208	0	0	1	208	80	27	0	1	107	0	202	0	1	202	517	2521
09:15:00	214	0	0	0	214	44	43	0	0	87	0	154	0	0	154	455	2260
09:30:00	149	0	0	0	149	66	39	0	1	105	0	122	0	0	122	376	1976
09:45:00	135	0	0	0	135	76	58	0	0	134	0	148	0	0	148	417	1765
BREAK																	
15:00:00	190	0	0	0	190	89	104	0	0	193	0	173	0	0	173	556	
15:15:00	185	0	0	0	185	115	69	0	0	184	0	195	2	1	197	566	
15:30:00	200	0	0	0	200	96	99	0	0	195	0	218	0	0	218	613	
15:45:00	202	0	0	0	202	114	86	0	0	200	0	211	0	0	211	613	2348
16:00:00	238	0	0	0	238	139	101	0	0	240	0	262	0	0	262	740	2532
16:15:00	215	0	0	0	215	189	125	0	0	314	0	238	2	0	240	769	2735
16:30:00	320	0	0	0	320	156	138	0	0	294	0	295	2	0	297	911	3033

16:45:00	275	0	0	0	275	189	173	0	0	362	0	308	0	0	308	945	3365
17:00:00	349	0	0	0	349	174	183	0	0	357	0	263	0	0	263	969	3594
17:15:00	273	0	0	0	273	166	164	0	0	330	0	319	0	0	319	922	3747
17:30:00	252	0	0	0	252	150	169	0	0	319	0	236	0	0	236	807	3643
17:45:00	236	0	0	0	236	127	135	0	0	262	0	246	0	0	246	744	3442
18:00:00	210	0	0	0	210	117	138	0	0	255	0	272	0	0	272	737	3210
18:15:00	219	0	0	0	219	120	137	0	0	257	0	216	1	0	217	693	2981
18:30:00	200	0	0	0	200	106	105	0	0	211	0	182	0	0	182	593	2767
18:45:00	158	0	0	0	158	97	120	0	0	217	0	191	0	0	191	566	2589
Grand Total	7163	0	4	1	7167	3379	2689	0	3	6068	2	7014	7	2	7023	**20258**	-
Approach%	99.9%	0%	0.1%		-	55.7%	44.3%	0%		-	0%	99.9%	0.1%		-	**-**	-
Totals %	35.4%	0%	0%		35.4%	16.7%	13.3%	0%		30%	0%	34.6%	0%		34.7%	**-**	-
Heavy	456	0	0		-	324	109	0		-	0	378	0		-	**-**	-
Heavy %	6.4%	0%	0%		-	9.6%	4.1%	0%		-	0%	5.4%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

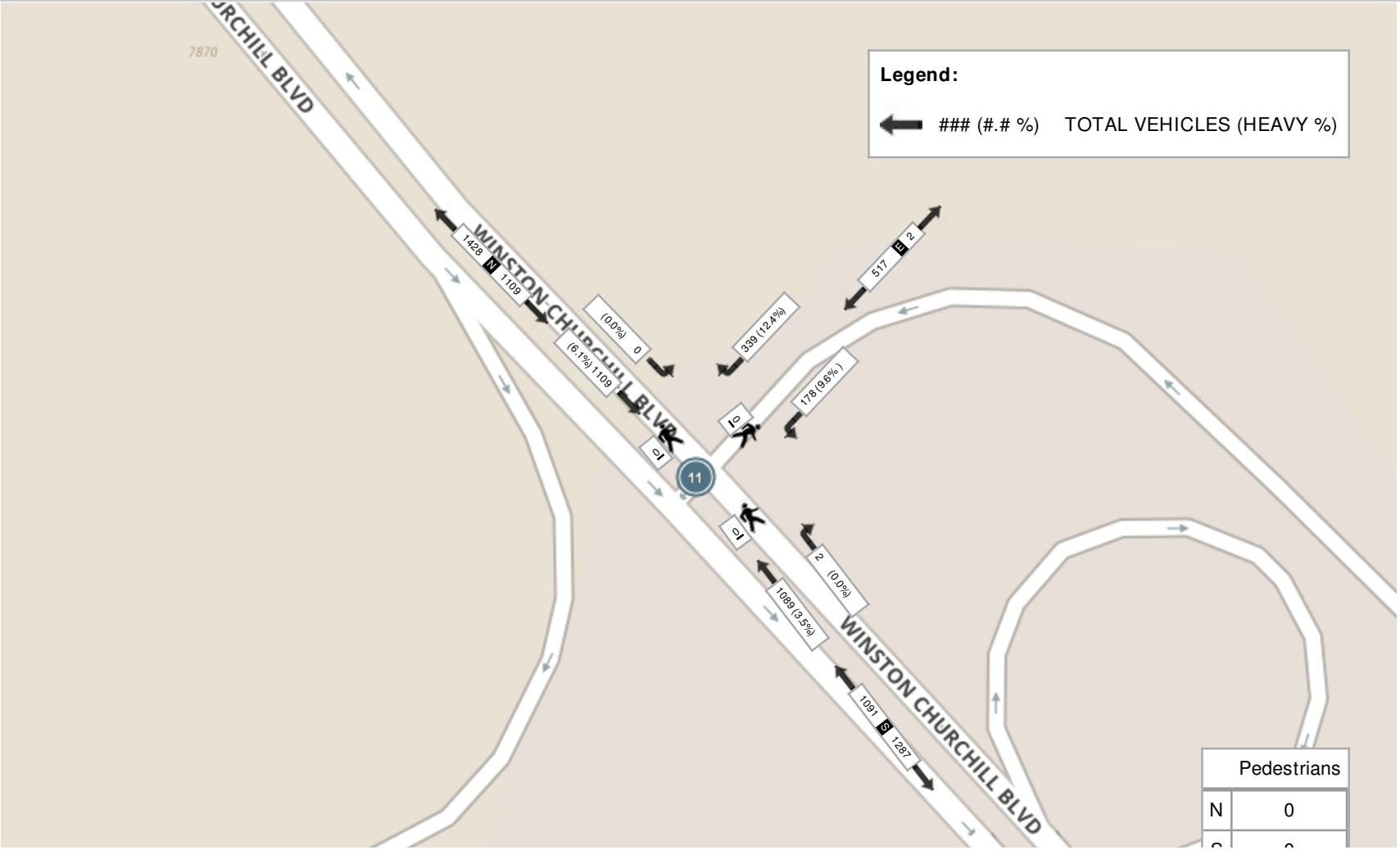
Peak Hour: 07:45 AM - 08:45 AM Weather: Mist (3.37 °C)

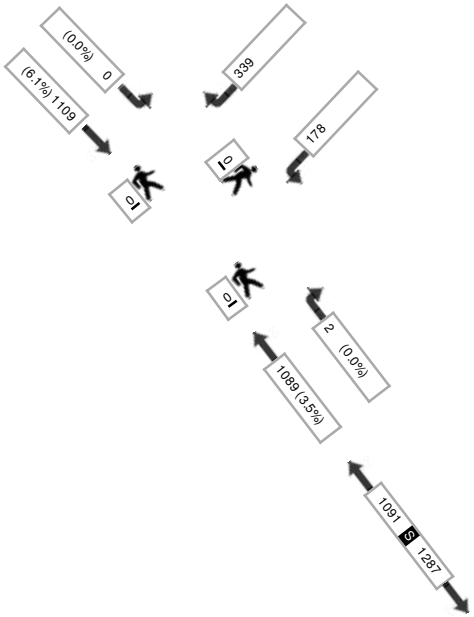
Start Time	N Approach WINSTON CHURCHILL BLVD					E Approach HWY 401 WEST RAMP TERMINAL					S Approach WINSTON CHURCHILL BLVD					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
07:45:00	283	0	0	0	283	94	44	0	0	138	0	270	0	0	270	691
08:00:00	276	0	0	0	276	93	53	0	0	146	0	228	0	0	228	650
08:15:00	285	0	0	0	285	78	48	0	0	126	1	304	0	0	305	716
08:30:00	265	0	0	0	265	74	33	0	0	107	1	287	0	0	288	660
Grand Total	1109	0	0	0	1109	339	178	0	0	517	2	1089	0	0	1091	**2717**
Approach%	100%	0%	0%		-	65.6%	34.4%	0%		-	0.2%	99.8%	0%		-	-
Totals %	40.8%	0%	0%		40.8%	12.5%	6.6%	0%		19%	0.1%	40.1%	0%		40.2%	-
PHF	0.97	0	0		0.97	0.9	0.84	0		0.89	0.5	0.9	0		0.89	-
Heavy	68	0	0		68	42	17	0		59	0	38	0		38	-
Heavy %	6.1%	0%	0%		6.1%	12.4%	9.6%	0%		11.4%	0%	3.5%	0%		3.5%	-
Lights	1041	0	0		1041	297	161	0		458	2	1051	0		1053	-
Lights %	93.9%	0%	0%		93.9%	87.6%	90.4%	0%		88.6%	100%	96.5%	0%		96.5%	-
Single-Unit Trucks	25	0	0		25	21	9	0		30	0	22	0		22	-
Single-Unit Trucks %	2.3%	0%	0%		2.3%	6.2%	5.1%	0%		5.8%	0%	2%	0%		2%	-
Buses	9	0	0		9	0	2	0		2	0	7	0		7	-
Buses %	0.8%	0%	0%		0.8%	0%	1.1%	0%		0.4%	0%	0.6%	0%		0.6%	-
Articulated Trucks	34	0	0		34	21	6	0		27	0	9	0		9	-
Articulated Trucks %	3.1%	0%	0%		3.1%	6.2%	3.4%	0%		5.2%	0%	0.8%	0%		0.8%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (8.8 °C)

Start Time	N Approach WINSTON CHURCHILL BLVD					E Approach HWY 401 WEST RAMP TERMINAL					S Approach WINSTON CHURCHILL BLVD					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
16:30:00	320	0	0	0	320	156	138	0	0	294	0	295	2	0	297	911
16:45:00	275	0	0	0	275	189	173	0	0	362	0	308	0	0	308	945
17:00:00	349	0	0	0	349	174	183	0	0	357	0	263	0	0	263	969
17:15:00	273	0	0	0	273	166	164	0	0	330	0	319	0	0	319	922
Grand Total	1217	0	0	0	1217	685	658	0	0	1343	0	1185	2	0	1187	**3747**
Approach%	100%	0%	0%		-	51%	49%	0%		-	0%	99.8%	0.2%		-	-
Totals %	32.5%	0%	0%		32.5%	18.3%	17.6%	0%		35.8%	0%	31.6%	0.1%		31.7%	-
PHF	0.87	0	0		0.87	0.91	0.9	0		0.93	0	0.93	0.25		0.93	-
Heavy	46	0	0		46	19	8	0		27	0	72	0		72	-
Heavy %	3.8%	0%	0%		3.8%	2.8%	1.2%	0%		2%	0%	6.1%	0%		6.1%	-
Lights	1171	0	0		1171	666	650	0		1316	0	1113	2		1115	-
Lights %	96.2%	0%	0%		96.2%	97.2%	98.8%	0%		98%	0%	93.9%	100%		93.9%	-
Single-Unit Trucks	17	0	0		17	4	4	0		8	0	36	0		36	-
Single-Unit Trucks %	1.4%	0%	0%		1.4%	0.6%	0.6%	0%		0.6%	0%	3%	0%		3%	-
Buses	7	0	0		7	0	0	0		0	0	12	0		12	-
Buses %	0.6%	0%	0%		0.6%	0%	0%	0%		0%	0%	1%	0%		1%	-
Articulated Trucks	22	0	0		22	15	4	0		19	0	24	0		24	-
Articulated Trucks %	1.8%	0%	0%		1.8%	2.2%	0.6%	0%		1.4%	0%	2%	0%		2%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 07:45 AM - 08:45 AM Weather: Mist (3.37 °C)




(0.0%) 0
(6.1%) 1109
339
178
2 (0.0%)
1089 (3.5%)
1091
S
1287

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	**April 17, 2019**		**Prepared Date:**	**March 21, 2019**
Database Rev	**iNet**		**Completed By:**	**AP**
Timing Card / Field rev	**iNet**		**Checked By:**	**SL**

Location: **Britannia Rd at Nith Line Rd. W.**

Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.) WALK	Pedestrian Minimum (sec.) FDWALK	Amber (sec.)	All Red (sec.)	TIME PERIOD (sec.) (Green+Amber+All Red) AM	OFF	PM	
1	Britannia Rd. - WB P.P. LT	5.0			3.0	-	13.0	10.0	-	
2	Britannia Rd. - EB	12.0	7.0	11.0	4.0	2.1	51.0	37.0	67.0	
3	Ninth Line - SB P.P. LT	5.0			3.0	-	13.0	10.0	13.0	
4	Ninth Line - NB	12.0	12.0	18.0	4.0	3.7	83.0	43.0	80.0	
5	Britannia Rd. - EB P.P. LT	5.0			3.0	-	10.0	10.0	13.0	
6	Britannia Rd. - EB	12.0	7.0	11.0	4.0	2.1	54.0	37.0	54.0	
7	Ninth Line - NB P.P. LT	5.0			3.0	-	14.0	10.0	13.0	
8	Ninth Line - SB	12.0	12.0	18.0	4.0	3.7	82.0	43.0	80.0	

System Control	Yes
Local Control	No
Semi-Actuated Mode	Yes

TIME (M-F)	PEAK	CYCLE LENGTH (sec.)	OFFSET (sec.)
06:00 - 09:30	AM	160	142
09:30 - 15:00	OFF	100	14
15:00 - 19:30	PM	160	8

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	**April 17, 2019**		**Prepared Date:**	**April 18, 2019**
Database Rev	**iNet**		**Completed By:**	**AP**
Timing Card / Field rev	**iNet**		**Checked By:**	**SL**

Location: **Derry Rd at Ninth Line Rd. W.**

Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.) WALK	Pedestrian Minimum (sec.) FDWALK	Amber (sec.)	All Red (sec.)	TIME PERIOD (sec.) (Green+Amber+All Red) AM	OFF	PM	
1	Derry Rd. - WB P.P. LT	5.0			3.0		13.0			
2	Derry Rd. - EB	8.0	9.0	15.0	4.0	2.1	65.0	71.0	81.0	
3	Not in Use									
4	Ninth Line - NB	8.0	9.0	14.0	4.0	2.4	82.0	39.0	79.0	
5	Derry Rd. - EB P.P. LT	5.0			3.0				11.0	
6	Derry Rd. - WB	8.0	9.0	15.0	4.0	2.1	78.0	71.0	70.0	
7	Ninth Line - NB P.P. LT	5.0			3.0		18.0		18.0	
8	Ninth Line - SB	8.0	9.0	14.0	4.0	2.4	64.0	39.0	61.0	

System Control	Yes
Local Control	No
Semi-Actuated Mode	Yes

TIME (M-F)	PEAK	CYCLE LENGTH (sec.)	OFFSET (sec.)
06:00 - 09:30	AM	160	42
09:30 - 15:00	OFF	110	43
15:00 - 19:30	PM	160	154

Signal Timing Report

Runtime: 2019-04-17 12:35:47

Device: 5401

Region: Mississauga **Signal ID:** 5401 **Location:** WINSTON CHURCHILL BOULEVARD N at Highway 401/ Off-

Phase	Units	1	2	3	4	5	6	7	8
Walk	Sec	0	9	0	0	0	0	0	0
Ped Clear	Sec	0	12	0	0	0	0	0	0
Min Green	Sec	0	8	0	8	0	0	0	0
Passage	Sec	0.0	4.0	0.0	4.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	0	38	0	40	0	0	0	0
Maximum 2	Sec	0	38	0	40	0	0	0	0
Yellow Change	Sec	3.0	5.0	3.0	4.0	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	2.5	0.0	2.5	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	other	redClear	other	phaseNotOn	other	other	other	other
[P2] Options	Bit	0	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Act Rest In Walk	0	Enabled Non Lock Det	0	0	0	0
[P2] Ring	Ring	0	1	0	1	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()

Coord Pattern	Units	1	2	3	4	5	6	7	8
Cycle Time	Sec	160	160	160	0	0	0	0	0
Offset	Sec	117	138	56	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1

Coord Split	Units	1	2	3	4	5	6	7	8
Split 1 - Mode	Enum	none	none	none	none	none	none	none	none
Split 1 - Time	Sec	0	112	0	48	0	0	0	0
Split 1 - Coord	Enum	false	true	false	false	false	false	false	false
Split 2 - Mode	Enum	none	none	none	none	none	none	none	none
Split 2 - Time	Sec	0	104	0	56	0	0	0	0
Split 2 - Coord	Enum	false	true	false	false	false	false	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	0	99	0	61	0	0	0	0
Split 3 - Coord	Enum	false	true	false	false	false	false	false	false

TB Schedule	Units	1	2	3	4	5	6	7	8
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F---------	---A-------	----M-------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	123456789012345678901234567890 1	123456789012345678901234567890 1	123456789012345678901234567890 1	1---------- ------	----------8------ -------	----------9---- --------	----------0----- ------	1---------- ------
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	Units	9	10	11	12	13	14	15	16
Month	Bit	-------A----	--------S---	---------O--	----------D	----------D	----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	----5---------- ------	-2---------- -------	----------4---------- ------	---------- 5------	---------- 6-----	---------- 4-------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0

TB Dayplan	Units	1	2	3	4	5	6	7	8
Plan 1 Hour	Hour	0	6	9	15	19	3	0	0
Plan 1 Minute	Min	0	0	30	0	30	0	0	0
Plan 1 Action	Number	8	1	2	3	2	7	0	0
Plan 2 Hour	Hour	0	7	3	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	2	7	0	0	0	0	0
Plan 3 Hour	Hour	0	8	23	3	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	2	8	7	0	0	0	0

TB Action	Units	1	2	3	4	5	6	7	8
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Free	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	0

Signal Timing Report

Runtime: 2019-04-17 12:38:03

Device: 5402

Region: Mississauga **Signal ID:** 5402 **Location:** WINSTON CHURCHILL BOULEVARD N at Highway 401/ Off-

Phase	Units	1	2	3	4	5	6	7	8
Walk	Sec	0	8	0	0	0	0	0	0
Ped Clear	Sec	0	10	0	0	0	0	0	0
Min Green	Sec	0	8	0	8	0	0	0	0
Passage	Sec	0.0	3.0	0.0	4.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	0	40	0	40	0	0	0	0
Maximum 2	Sec	0	40	0	40	0	0	0	0
Yellow Change	Sec	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	2.5	0.0	3.5	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	other	redClear	other	phaseNotOn	other	other	other	other
[P2] Options	Bit	0	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Act Rest In Walk	0	Enabled Non Lock Det	0	0	0	0
[P2] Ring	Ring	0	1	0	1	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()

Coord Pattern	Units	1	2	3	4	5	6	7	8
Cycle Time	Sec	160	160	160	0	0	0	0	0
Offset	Sec	106	131	37	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1

Coord Split	Units	1	2	3	4	5	6	7	8
Split 1 - Mode	Enum	none	none	none	none	none	none	none	none
Split 1 - Time	Sec	0	96	0	64	0	0	0	0
Split 1 - Coord	Enum	false	true	false	false	false	false	false	false
Split 2 - Mode	Enum	none	none	none	none	none	none	none	none
Split 2 - Time	Sec	0	104	0	56	0	0	0	0
Split 2 - Coord	Enum	false	true	false	false	false	false	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	0	115	0	45	0	0	0	0
Split 3 - Coord	Enum	false	true	false	false	false	false	false	false

TB Schedule	Units	1	2	3	4	5	6	7	8
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F---------	---A-------	----M-------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	123456789012345678901234567890 1	123456789012345678901234567890 1	123456789012345678901234567890 1	1---------- ------	----------8------ -------	----------9---- --------	----------0----- ------	1---------- ------
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	Units	9	10	11	12	13	14	15	16
Month	Bit	-------A----	--------S---	---------O--	----------D	----------D	----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	----5---------- ------	-2---------- -------	----------4---------- ------	---------- 5------	---------- 6-----	---------- 4-------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0

TB Dayplan	Units	1	2	3	4	5	6	7	8
Plan 1 Hour	Hour	0	6	9	15	19	3	0	0
Plan 1 Minute	Min	0	0	30	0	30	0	0	0
Plan 1 Action	Number	8	1	2	3	2	7	0	0
Plan 2 Hour	Hour	0	7	3	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	2	7	0	0	0	0	0
Plan 3 Hour	Hour	0	8	23	3	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	2	8	7	0	0	0	0

TB Action	Units	1	2	3	4	5	6	7	8
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Free	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	0

Signal Timing Report

Runtime: 2019-04-30 13:29:10

Device: 5608

Region: Mississauga **Signal ID:** 5608 **Location:** NINTH LINE N at Osprey Boulevard

Phase	Units	1	2	3	4	5	6	7	8
Walk	Sec	0	8	0	8	0	0	0	0
Ped Clear	Sec	0	8	0	9	0	0	0	0
Min Green	Sec	5	8	0	8	0	0	0	0
Passage	Sec	2.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	10	37	0	25	0	0	0	0
Maximum 2	Sec	10	37	0	25	0	0	0	0
Yellow Change	Sec	3.0	5.0	3.0	4.0	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	other	phaseNotOn	other	other	other	other
[P2] Options	Bit	Enabled Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Act Rest In Walk	0	Enabled Non Lock Det	0	0	0	0
[P2] Ring	Ring	1	1	0	1	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()

TB Schedule	Units	1	2	3	4	5	6	7	8
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F---------	---A-------	----M------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	123456789012345678901234567890 1	123456789012345678901234567890 1	123456789012345678901234567890 1	1----------	----------8------	----------9----	----------0-----	1----------
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	Units	9	10	11	12	13	14	15	16
Month	Bit	-------A----	-------S---	---------O--	----------D	----------D	----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	----5----------	-2----------	----------4----------	----------	----------	----------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0

TB Dayplan	Units	1	2	3	4	5	6	7	8
Plan 1 Hour	Hour	0	3	0	0	0	0	0	0
Plan 1 Minute	Min	0	0	0	0	0	0	0	0
Plan 1 Action	Number	8	7	0	0	0	0	0	0
Plan 2 Hour	Hour	0	3	0	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	7	0	0	0	0	0	0
Plan 3 Hour	Hour	0	3	0	0	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	7	0	0	0	0	0	0

TB Action	Units	1	2	3	4	5	6	7	8
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Free	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	0

Signal Timing Report

Runtime: 2019-04-30 13:26:42

Device: 5612

Region: Mississauga **Signal ID:** 5612 **Location:** NINTH LINE N at Doug Leavens Boulevard

Phase	Units	1	2	3	4	5	6	7	8
Walk	Sec	0	8	0	8	0	0	0	0
Ped Clear	Sec	0	10	0	8	0	0	0	0
Min Green	Sec	0	8	0	8	0	0	0	0
Passage	Sec	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	0	35	0	20	0	0	0	0
Maximum 2	Sec	0	35	0	20	0	0	0	0
Yellow Change	Sec	3.0	5.0	3.0	4.0	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	2.0	0.0	2.5	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	other	redClear	other	phaseNotOn	other	other	other	other
[P2] Options	Bit	0	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Act Rest In Walk	0	Enabled Non Lock Det	0	0	0	0
[P2] Ring	Ring	0	1	0	1	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()

TB Schedule	Units	1	2	3	4	5	6	7	8
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F---------	---A-------	----M------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	123456789012345678901234567890 1	123456789012345678901234567890 1	123456789012345678901234567890 1	1----------	----------8------	----------9----	----------0-----	1----------
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	Units	9	10	11	12	13	14	15	16
Month	Bit	-------A----	-------S---	---------O--	----------D	----------D	----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	----5----------	-2----------	----------4----------	----------	----------	----------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0

TB Dayplan	Units	1	2	3	4	5	6	7	8
Plan 1 Hour	Hour	0	3	0	0	0	0	0	0
Plan 1 Minute	Min	0	0	0	0	0	0	0	0
Plan 1 Action	Number	8	7	0	0	0	0	0	0
Plan 2 Hour	Hour	0	3	0	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	7	0	0	0	0	0	0
Plan 3 Hour	Hour	0	3	0	0	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	7	0	0	0	0	0	0

TB Action	Units	1	2	3	4	5	6	7	8
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Free	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	0

APPENDIX E

Level of Service Definitions

Level of Service Definitions

Two-Way Stop Controlled Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare.
B	> 10 and ≤ 15	VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal.
C	> 15 and ≤ 25	GOOD. Fewer gaps exist in traffic on the main roadway. Delay on minor approach becomes more noticeable.
D	> 25 and ≤ 35	FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on the minor street.
E	> 35 and ≤ 50	POOR. Very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable.
F	> 50	UNSATISFACTORY. Very few gaps in traffic on the main roadway. Excessive delay with significant queue lengths on the minor street.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

Level of Service Definitions

Signalized Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Extremely favourable progression with most vehicles arriving during the green phase. Most vehicles do not stop and short cycle lengths may contribute to low delay.
B	> 10 and ≤ 20	VERY GOOD. Very good progression and/or short cycle lengths with slightly more vehicles stopping than LOS "A" causing slightly higher levels of average delay.
C	> 20 and ≤ 35	GOOD. Fair progression and longer cycle lengths lead to a greater number of vehicles stopping than LOS "B".
D	> 35 and ≤ 55	FAIR. Congestion becomes noticeable with higher average delays resulting from a combination of long cycle lengths, high volume-to-capacity ratios and unfavourable progression.
E	> 55 and ≤ 80	POOR. Lengthy delays values are indicative of poor progression, long cycle lengths and high volume-to-capacity ratios. Individual cycle failures are common with individual movement failures also common.
F	> 80	UNSATISFACTORY. Indicative of oversaturated conditions with vehicular demand greater than the capacity of the intersection.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

APPENDIX F

Detailed Capacity Analysis Worksheets

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1316	0	0	790	11	139
Future Volume (vph)	1316	0	0	790	11	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3510	2935	1507
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3510	2935	1507
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						92
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	4%	18%	6%
Adj. Flow (vph)	1316	0	0	790	11	139
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1316	0	0	790	11	139
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	119.0			119.0	41.0	41.0
Total Split (%)	74.4%			74.4%	25.6%	25.6%
Maximum Green (s)	113.0			113.0	34.0	34.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	113.1			113.1	10.8	10.8
Actuated g/C Ratio	0.83			0.83	0.08	0.08
v/c Ratio	0.45			0.27	0.05	0.68
Control Delay	4.1			3.1	57.4	40.3
Queue Delay	0.2			0.0	0.0	0.0
Total Delay	4.2			3.1	57.4	40.3
LOS	A			A	E	D
Approach Delay	4.2			3.1	41.6	
Approach LOS	A			A	D	

Intersection Summary	
Area Type:	Other
Cycle Length: 160	
Actuated Cycle Length: 136.9	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 6.3	Intersection LOS: A
Intersection Capacity Utilization 65.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1316	790	11	139
v/c Ratio	0.45	0.27	0.05	0.68
Control Delay	4.1	3.1	57.4	40.3
Queue Delay	0.2	0.0	0.0	0.0
Total Delay	4.2	3.1	57.4	40.3
Queue Length 50th (m)	41.3	20.2	1.5	13.0
Queue Length 95th (m)	69.6	35.4	4.7	35.8
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2957	2900	729	443
Starvation Cap Reductn	673	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.58	0.27	0.02	0.31

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1752	584	0	31	46
Future Volume (vph)	0	1752	584	0	31	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3510	0	3148	1309
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3510	0	3148	1309
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						46
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	10%	22%
Adj. Flow (vph)	0	1752	584	0	31	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1752	584	0	31	46
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		132.0	132.0		28.0	28.0
Total Split (%)		82.5%	82.5%		17.5%	17.5%
Maximum Green (s)		126.0	126.0		21.0	21.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		127.6	127.6		7.8	7.8
Actuated g/C Ratio		0.89	0.89		0.05	0.05
v/c Ratio		0.55	0.19		0.18	0.40
Control Delay		3.3	1.7		68.8	28.3
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		3.3	1.7		68.8	28.3
LOS		A	A		E	C
Approach Delay		3.3	1.7		44.6	
Approach LOS		A	A		D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 144	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.55	
Intersection Signal Delay: 4.2	Intersection LOS: A
Intersection Capacity Utilization 65.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1752	584	31	46
v/c Ratio	0.55	0.19	0.18	0.40
Control Delay	3.3	1.7	68.8	28.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.3	1.7	68.8	28.3
Queue Length 50th (m)	55.8	11.4	4.7	0.0
Queue Length 95th (m)	79.3	17.7	10.5	13.8
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3201	3109	459	230
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	0.19	0.07	0.20

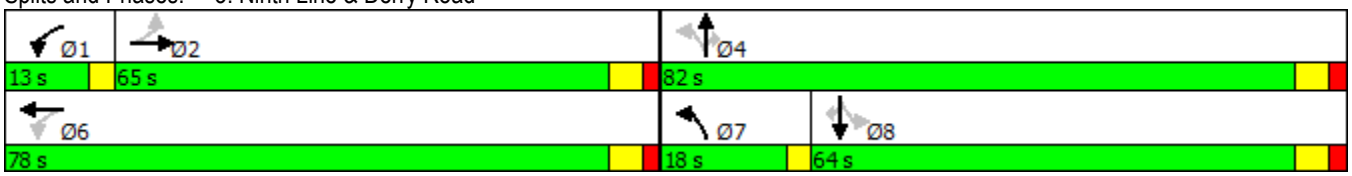
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	1159	89	114	541	44	199	380	172	23	436	249
Future Volume (vph)	209	1159	89	114	541	44	199	380	172	23	436	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		0.0	80.0		0.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.989			0.989				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	3571	0	1733	3476	0	1750	1902	1566	1716	1902	1581
Flt Permitted	0.431			0.074			0.140			0.536		
Satd. Flow (perm)	764	3571	0	135	3476	0	258	1902	1566	968	1902	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			7				171			196
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			1301.8			145.2	
Travel Time (s)		14.1			11.0			66.9			7.5	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	1%	0%	3%	4%	2%	2%	1%	2%	4%	1%	1%
Adj. Flow (vph)	209	1159	89	114	541	44	199	380	172	23	436	249
Shared Lane Traffic (%)												
Lane Group Flow (vph)	209	1248	0	114	585	0	199	380	172	23	436	249
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	1.01	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-0.2	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-0.2	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	8.2	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	2	2		1	6		7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	8.0		5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	30.1	30.1		9.5	30.1		9.5	29.4	29.4	29.4	29.4	29.4
Total Split (s)	65.0	65.0		13.0	78.0		18.0	82.0	82.0	64.0	64.0	64.0
Total Split (%)	40.6%	40.6%		8.1%	48.8%		11.3%	51.3%	51.3%	40.0%	40.0%	40.0%
Maximum Green (s)	58.9	58.9		10.0	71.9		15.0	75.6	75.6	57.6	57.6	57.6
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1		0.0	2.1		0.0	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		3.0	6.1		3.0	6.4	6.4	6.4	6.4	6.4
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		None	Max		None	None	None	None	None	None
Walk Time (s)	9.0	9.0			9.0			9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)	15.0	15.0			15.0			14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)	0	0			0			0	0	0	0	0
Act Effct Green (s)	60.4	60.4		75.4	72.2		58.3	54.9	54.9	37.4	37.4	37.4
Actuated g/C Ratio	0.43	0.43		0.54	0.52		0.42	0.39	0.39	0.27	0.27	0.27
v/c Ratio	0.63	0.81		0.66	0.33		0.76	0.51	0.24	0.09	0.86	0.44
Control Delay	44.5	40.9		40.3	21.2		45.6	34.3	4.2	37.8	65.3	12.1
Queue Delay	0.0	0.9		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	41.8		40.3	21.2		45.6	34.3	4.2	37.8	65.3	12.1
LOS	D	D		D	C		D	C	A	D	E	B
Approach Delay		42.2			24.3			30.4			45.7	
Approach LOS		D			C			C			D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 139.7	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 37.0	Intersection LOS: D
Intersection Capacity Utilization 92.3%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Ninth Line & Derry Road



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	209	1248	114	585	199	380	172	23	436	249
v/c Ratio	0.63	0.81	0.66	0.33	0.76	0.51	0.24	0.09	0.86	0.44
Control Delay	44.5	40.9	40.3	21.2	45.6	34.3	4.2	37.8	65.3	12.1
Queue Delay	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	41.8	40.3	21.2	45.6	34.3	4.2	37.8	65.3	12.1
Queue Length 50th (m)	47.9	167.2	16.0	50.5	37.4	82.7	0.2	5.1	121.2	11.8
Queue Length 95th (m)	93.7	#234.7	#43.5	77.1	#64.4	112.5	14.1	12.5	162.4	35.1
Internal Link Dist (m)		210.9		158.6		1277.8			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	330	1547	187	1800	268	1034	929	400	787	769
Starvation Cap Reductn	0	104	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.86	0.61	0.33	0.74	0.37	0.19	0.06	0.55	0.32

Intersection Summary

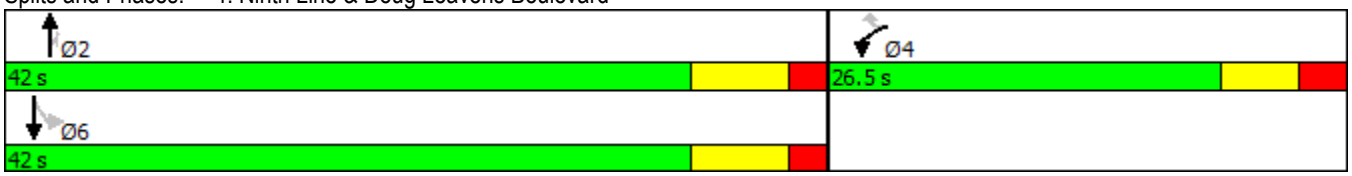
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	127	135	660	96	63	590
Future Volume (vph)	127	135	660	96	63	590
Ideal Flow (vphpl)	1900	1900	1900	1640	1640	1900
Lane Width (m)	3.0	3.3	3.5	3.2	3.0	3.5
Storage Length (m)	0.0	0.0		25.0	80.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				80.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.98	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1636	1531	1842	1222	1454	1860
Flt Permitted	0.950				0.296	
Satd. Flow (perm)	1636	1531	1842	1195	453	1860
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		147		68		
Link Speed (k/h)	50		70			70
Link Distance (m)	218.3		577.9			1301.8
Travel Time (s)	15.7		29.7			66.9
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	2%	9%	0%	1%
Adj. Flow (vph)	138	147	717	104	68	641
Shared Lane Traffic (%)						
Lane Group Flow (vph)	138	147	717	104	68	641
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.09	1.04	1.01	1.28	1.31	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right	Left	Thru
Leading Detector (m)	7.0	7.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	10.0	10.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	4		2			6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.5	25.5	26.0	26.0	26.0	26.0
Total Split (s)	26.5	26.5	42.0	42.0	42.0	42.0
Total Split (%)	38.7%	38.7%	61.3%	61.3%	61.3%	61.3%
Maximum Green (s)	20.0	20.0	35.0	35.0	35.0	35.0
Yellow Time (s)	4.0	4.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.5	-1.5	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	Max	Max
Walk Time (s)	8.0	8.0	8.0	8.0	8.0	8.0
Flash Dont Walk (s)	8.0	8.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	12.4	12.4	39.9	39.9	39.9	39.9
Actuated g/C Ratio	0.20	0.20	0.64	0.64	0.64	0.64
v/c Ratio	0.43	0.35	0.61	0.13	0.23	0.54
Control Delay	24.9	6.5	10.1	2.9	8.3	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.9	6.5	10.1	2.9	8.3	8.9
LOS	C	A	B	A	A	A
Approach Delay	15.4		9.2			8.8
Approach LOS	B		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 68.5	
Actuated Cycle Length: 62.3	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 10.0	Intersection LOS: B
Intersection Capacity Utilization 60.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Doug Leavens Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	138	147	717	104	68	641
v/c Ratio	0.43	0.35	0.61	0.13	0.23	0.54
Control Delay	24.9	6.5	10.1	2.9	8.3	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.9	6.5	10.1	2.9	8.3	8.9
Queue Length 50th (m)	13.8	0.0	41.2	1.3	2.8	34.4
Queue Length 95th (m)	27.7	12.0	87.2	7.1	10.4	72.0
Internal Link Dist (m)	194.3		553.9			1277.8
Turn Bay Length (m)				25.0	80.0	
Base Capacity (vph)	568	628	1178	789	290	1190
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.23	0.61	0.13	0.23	0.54

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	46	67	700	35	30	700
Future Volume (vph)	46	67	700	35	30	700
Ideal Flow (vphpl)	1900	1900	1900	1900	1640	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.0	3.5
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	1507	1808	0	1412	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1685	1507	1808	0	1412	1842
Link Speed (k/h)	50		70			70
Link Distance (m)	166.2		289.9			265.1
Travel Time (s)	12.0		14.9			13.6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	3%	9%	3%	2%
Adj. Flow (vph)	48	70	729	36	31	729
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	70	765	0	31	729
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.01	1.31	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	46	67	700	35	30	700
Future Volume (Veh/h)	46	67	700	35	30	700
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	48	70	729	36	31	729
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			290			
pX, platoon unblocked	0.76	0.76			0.76	
vC, conflicting volume	1538	747			765	
vC1, stage 1 conf vol	747					
vC2, stage 2 conf vol	791					
vCu, unblocked vol	1550	512			535	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	84			96	
cM capacity (veh/h)	321	431			783	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	48	70	765	31	729
Volume Left	48	0	0	31	0
Volume Right	0	70	36	0	0
cSH	321	431	1700	783	1700
Volume to Capacity	0.15	0.16	0.45	0.04	0.43
Queue Length 95th (m)	4.2	4.6	0.0	1.0	0.0
Control Delay (s)	18.2	15.0	0.0	9.8	0.0
Lane LOS	C	B		A	
Approach Delay (s)	16.3		0.0	0.4	
Approach LOS	C				

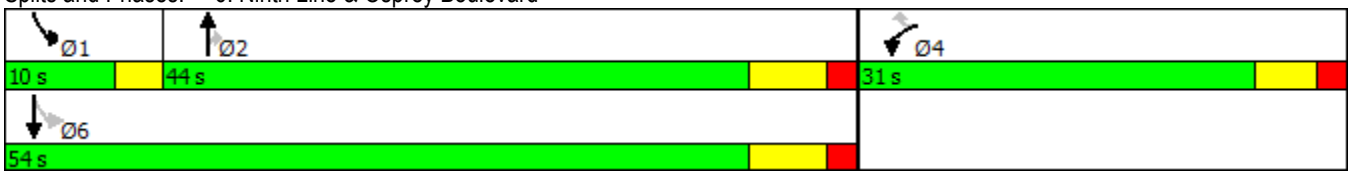
Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	122	58	675	89	20	725
Future Volume (vph)	122	58	675	89	20	725
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.6	3.6
Storage Length (m)	15.0	0.0		25.0	20.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1636	1436	1807	1276	1683	1881
Flt Permitted	0.950				0.306	
Satd. Flow (perm)	1636	1436	1807	1276	542	1881
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		60		43		
Link Speed (k/h)	50		70			70
Link Distance (m)	186.9		633.8			289.9
Travel Time (s)	13.5		32.6			14.9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	5%	4%	8%	5%	1%
Adj. Flow (vph)	126	60	696	92	21	747
Shared Lane Traffic (%)						
Lane Group Flow (vph)	126	60	696	92	21	747
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.22	1.03	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right		Thru
Leading Detector (m)	9.0	9.0	10.0	2.0	20.0	10.0
Trailing Detector (m)	-1.0	-1.0	0.0	0.0	10.0	0.0
Detector 1 Position(m)	-1.0	-1.0	0.0	0.0	10.0	0.0
Detector 1 Size(m)	10.0	10.0	0.6	2.0	10.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	24.0	24.0	25.0	25.0	9.5	25.0
Total Split (s)	31.0	31.0	44.0	44.0	10.0	54.0
Total Split (%)	36.5%	36.5%	51.8%	51.8%	11.8%	63.5%
Maximum Green (s)	25.0	25.0	37.0	37.0	7.0	47.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	12.2	12.2	51.3	51.3	57.4	54.4
Actuated g/C Ratio	0.17	0.17	0.71	0.71	0.79	0.75
v/c Ratio	0.46	0.21	0.55	0.10	0.04	0.53
Control Delay	32.6	9.3	10.6	4.6	3.1	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	9.3	10.6	4.6	3.1	7.4
LOS	C	A	B	A	A	A
Approach Delay	25.1		9.9			7.3
Approach LOS	C		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 85	
Actuated Cycle Length: 72.6	
Natural Cycle: 70	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.55	
Intersection Signal Delay: 10.4	Intersection LOS: B
Intersection Capacity Utilization 53.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Osprey Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	126	60	696	92	21	747
v/c Ratio	0.46	0.21	0.55	0.10	0.04	0.53
Control Delay	32.6	9.3	10.6	4.6	3.1	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	9.3	10.6	4.6	3.1	7.4
Queue Length 50th (m)	16.1	0.0	39.8	1.8	0.6	43.6
Queue Length 95th (m)	31.4	9.1	111.8	9.8	2.5	87.1
Internal Link Dist (m)	162.9		609.8			265.9
Turn Bay Length (m)	15.0			25.0	20.0	
Base Capacity (vph)	586	553	1276	914	569	1410
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.11	0.55	0.10	0.04	0.53

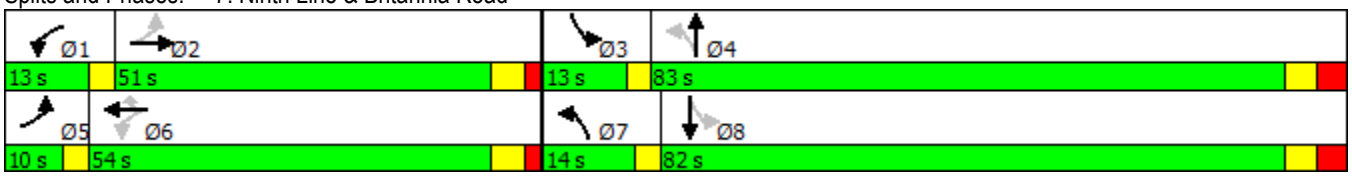
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	893	169	77	498	83	155	499	126	53	697	85
Future Volume (vph)	95	893	169	77	498	83	155	499	126	53	697	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.7	3.5
Storage Length (m)	60.0		0.0	60.0		60.0	50.0		0.0	55.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00				
Frt		0.976				0.850		0.970			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3527	0	1733	3579	1439	1767	1811	0	1608	1872	0
Flt Permitted	0.370			0.083			0.057			0.236		
Satd. Flow (perm)	695	3527	0	151	3579	1439	106	1811	0	399	1872	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14				83		11			5	
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	3%	2%	11%	1%	3%	1%	11%	1%	1%
Adj. Flow (vph)	95	893	169	77	498	83	155	499	126	53	697	85
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	1062	0	77	498	83	155	625	0	53	782	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	0.99	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template		Thru		Left	Thru	Right						
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0		25.0	10.0	
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0		15.0	-3.0	
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0		15.0	-3.0	
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0		10.0	10.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4			8		
Detector Phase	5	2		1	6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0		5.0	12.0	
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7		9.5	37.7	
Total Split (s)	10.0	51.0		13.0	54.0	54.0	14.0	83.0		13.0	82.0	
Total Split (%)	6.3%	31.9%		8.1%	33.8%	33.8%	8.8%	51.9%		8.1%	51.3%	
Maximum Green (s)	7.0	44.9		10.0	47.9	47.9	11.0	75.3		10.0	74.3	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7		0.0	3.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7		3.0	7.7	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	None		None	None	
Walk Time (s)		7.0			7.0	7.0		12.0			12.0	
Flash Dont Walk (s)		11.0			11.0	11.0		18.0			18.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	56.1	46.1		60.2	48.1	48.1	84.8	72.2		78.0	66.4	
Actuated g/C Ratio	0.37	0.30		0.40	0.32	0.32	0.56	0.47		0.51	0.44	
v/c Ratio	0.31	0.99		0.51	0.44	0.16	0.88	0.72		0.20	0.95	
Control Delay	34.4	75.9		42.6	44.1	8.4	76.5	37.5		16.8	63.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	34.4	75.9		42.6	44.1	8.4	76.5	37.5		16.8	63.2	
LOS	C	E		D	D	A	E	D		B	E	
Approach Delay		72.5			39.4			45.2			60.2	
Approach LOS		E			D			D			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 152.2	
Natural Cycle: 125	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 57.0	Intersection LOS: E
Intersection Capacity Utilization 102.9%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 7: Ninth Line & Britannia Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	95	1062	77	498	83	155	625	53	782
v/c Ratio	0.31	0.99	0.51	0.44	0.16	0.88	0.72	0.20	0.95
Control Delay	34.4	75.9	42.6	44.1	8.4	76.5	37.5	16.8	63.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	75.9	42.6	44.1	8.4	76.5	37.5	16.8	63.2
Queue Length 50th (m)	20.4	~199.4	16.4	70.6	0.0	32.6	157.4	7.4	236.2
Queue Length 95th (m)	34.9	#248.6	29.3	90.4	13.8	#78.1	211.7	14.3	#321.1
Internal Link Dist (m)		192.6		220.1			171.1		609.8
Turn Bay Length (m)	60.0		60.0		60.0	50.0		55.0	
Base Capacity (vph)	307	1078	165	1131	511	179	916	292	920
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.99	0.47	0.44	0.16	0.87	0.68	0.18	0.85

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	964	0	0	586	18	191
Future Volume (vph)	964	0	0	586	18	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3579	1608	1566
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3579	1608	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						137
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	2%	11%	2%
Adj. Flow (vph)	964	0	0	586	18	191
Shared Lane Traffic (%)						
Lane Group Flow (vph)	964	0	0	586	18	191
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	104.0			104.0	56.0	56.0
Total Split (%)	65.0%			65.0%	35.0%	35.0%
Maximum Green (s)	98.0			98.0	49.0	49.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	98.6			98.6	10.8	10.8
Actuated g/C Ratio	0.81			0.81	0.09	0.09
v/c Ratio	0.33			0.20	0.13	0.73
Control Delay	3.8			3.2	52.2	33.5
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	3.8			3.2	52.2	33.5
LOS	A			A	D	C
Approach Delay	3.8			3.2	35.1	
Approach LOS	A			A	D	

Intersection Summary	
Area Type:	Other
Cycle Length: 160	
Actuated Cycle Length: 122.4	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 7.3	Intersection LOS: A
Intersection Capacity Utilization 49.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	964	586	18	191
v/c Ratio	0.33	0.20	0.13	0.73
Control Delay	3.8	3.2	52.2	33.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.8	3.2	52.2	33.5
Queue Length 50th (m)	26.0	13.8	4.3	13.1
Queue Length 95th (m)	46.2	25.7	12.1	38.4
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2911	2882	644	709
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.20	0.03	0.27

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	955	468	0	48	19
Future Volume (vph)	0	955	468	0	48	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3579	0	1684	1210
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3579	0	1684	1210
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						19
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	2%	0%	6%	32%
Adj. Flow (vph)	0	955	468	0	48	19
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	955	468	0	48	19
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		121.0	121.0		39.0	39.0
Total Split (%)		75.6%	75.6%		24.4%	24.4%
Maximum Green (s)		115.0	115.0		32.0	32.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		116.7	116.7		9.6	9.6
Actuated g/C Ratio		0.87	0.87		0.07	0.07
v/c Ratio		0.31	0.15		0.40	0.18
Control Delay		2.6	2.1		71.2	26.8
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		2.6	2.1		71.2	26.8
LOS		A	A		E	C
Approach Delay		2.6	2.1		58.6	
Approach LOS		A	A		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 134.8	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.40	
Intersection Signal Delay: 5.0	Intersection LOS: A
Intersection Capacity Utilization 49.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	955	468	48	19
v/c Ratio	0.31	0.15	0.40	0.18
Control Delay	2.6	2.1	71.2	26.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.6	2.1	71.2	26.8
Queue Length 50th (m)	24.9	10.3	13.4	0.0
Queue Length 95th (m)	36.4	16.2	27.3	8.6
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	3127	3097	401	302
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.31	0.15	0.12	0.06

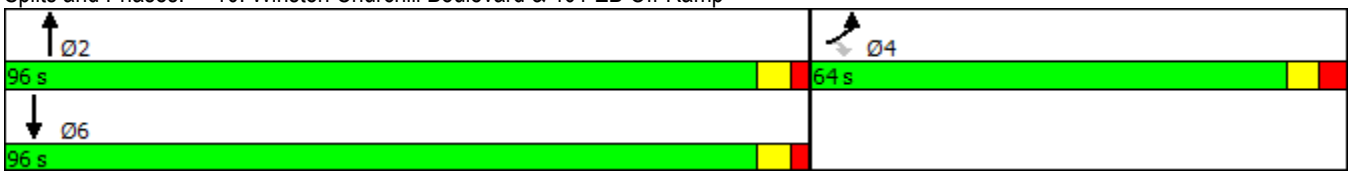
Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	305	254	0	997	817	0
Future Volume (vph)	305	254	0	997	817	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.969	0.850				
Flt Protected	0.962					
Satd. Flow (prot)	3280	1425	0	4980	4885	0
Flt Permitted	0.962					
Satd. Flow (perm)	3280	1425	0	4980	4885	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	24	149				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	0%	3%	5%	0%
Adj. Flow (vph)	321	267	0	1049	860	0
Shared Lane Traffic (%)		31%				
Lane Group Flow (vph)	404	184	0	1049	860	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	64.0	64.0		96.0	96.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	56.5	56.5		89.5	89.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	23.9	23.9		91.1	91.1	
Actuated g/C Ratio	0.19	0.19		0.73	0.73	
v/c Ratio	0.63	0.47		0.29	0.24	
Control Delay	48.0	14.9		6.4	6.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	48.0	14.9		6.4	6.1	
LOS	D	B		A	A	
Approach Delay	37.6			6.4	6.1	
Approach LOS	D			A	A	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 125	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 13.6	Intersection LOS: B
Intersection Capacity Utilization 52.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	404	184	1049	860
v/c Ratio	0.63	0.47	0.29	0.24
Control Delay	48.0	14.9	6.4	6.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	48.0	14.9	6.4	6.1
Queue Length 50th (m)	47.0	8.3	30.3	23.8
Queue Length 95th (m)	63.8	32.1	44.0	35.3
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1562	751	3629	3560
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.26	0.25	0.29	0.24

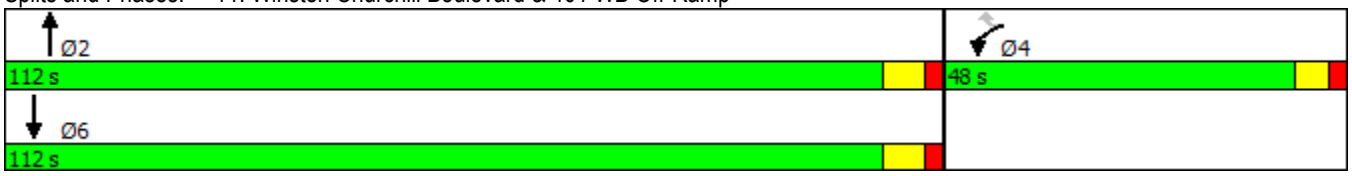
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	178	339	1089	0	0	1109
Future Volume (vph)	178	339	1089	0	0	1109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.95	1.00	1.00	0.95
Frt	0.927	0.850				
Flt Protected	0.975					
Satd. Flow (prot)	2969	1298	3466	0	0	3368
Flt Permitted	0.975					
Satd. Flow (perm)	2969	1298	3466	0	0	3368
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	113	113				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	10%	12%	3%	0%	0%	6%
Adj. Flow (vph)	187	357	1146	0	0	1167
Shared Lane Traffic (%)		50%				
Lane Group Flow (vph)	366	178	1146	0	0	1167
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	48.0	48.0	112.0			112.0
Total Split (%)	30.0%	30.0%	70.0%			70.0%
Maximum Green (s)	41.5	41.5	104.5			104.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	20.5	20.5	107.1			107.1
Actuated g/C Ratio	0.15	0.15	0.78			0.78
v/c Ratio	0.68	0.62	0.42			0.45
Control Delay	44.5	30.2	6.0			6.2
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	44.5	30.2	6.0			6.2
LOS	D	C	A			A
Approach Delay	39.8		6.0			6.2
Approach LOS	D		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 137.6	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 12.5	Intersection LOS: B
Intersection Capacity Utilization 52.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	366	178	1146	1167
v/c Ratio	0.68	0.62	0.42	0.45
Control Delay	44.5	30.2	6.0	6.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	44.5	30.2	6.0	6.2
Queue Length 50th (m)	35.8	18.5	49.5	51.6
Queue Length 95th (m)	53.1	47.0	75.9	79.2
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1006	483	2698	2621
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.37	0.42	0.45

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	881	0	0	1611	67	154
Future Volume (vph)	881	0	0	1611	67	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3614	3362	1597
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3614	3362	1597
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						154
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	1%	3%	0%
Adj. Flow (vph)	881	0	0	1611	67	154
Shared Lane Traffic (%)						
Lane Group Flow (vph)	881	0	0	1611	67	154
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	127.0			127.0	33.0	33.0
Total Split (%)	79.4%			79.4%	20.6%	20.6%
Maximum Green (s)	121.0			121.0	26.0	26.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	121.0			121.0	9.0	9.0
Actuated g/C Ratio	0.85			0.85	0.06	0.06
v/c Ratio	0.29			0.53	0.32	0.63
Control Delay	2.6			3.9	67.9	21.2
Queue Delay	0.0			0.6	0.0	0.0
Total Delay	2.6			4.5	67.9	21.2
LOS	A			A	E	C
Approach Delay	2.6			4.5	35.3	
Approach LOS	A			A	D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 143	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 6.4	Intersection LOS: A
Intersection Capacity Utilization 75.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	881	1611	67	154
v/c Ratio	0.29	0.53	0.32	0.63
Control Delay	2.6	3.9	67.9	21.2
Queue Delay	0.0	0.6	0.0	0.0
Total Delay	2.6	4.5	67.9	21.2
Queue Length 50th (m)	21.0	52.1	10.0	0.0
Queue Length 95th (m)	33.0	79.0	18.4	22.9
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3029	3058	611	416
Starvation Cap Reductn	0	923	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.29	0.75	0.11	0.37

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	750	1578	0	180	347
Future Volume (vph)	0	750	1578	0	180	347
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3510	3614	0	3429	1597
Flt Permitted					0.950	
Satd. Flow (perm)	0	3510	3614	0	3429	1597
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						30
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	4%	1%	0%	1%	0%
Adj. Flow (vph)	0	750	1578	0	180	347
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	750	1578	0	180	347
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		101.0	101.0		59.0	59.0
Total Split (%)		63.1%	63.1%		36.9%	36.9%
Maximum Green (s)		95.0	95.0		52.0	52.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		95.4	95.4		33.9	33.9
Actuated g/C Ratio		0.67	0.67		0.24	0.24
v/c Ratio		0.32	0.65		0.22	0.86
Control Delay		11.2	16.6		43.3	67.9
Queue Delay		0.0	0.4		0.0	0.0
Total Delay		11.2	17.0		43.3	67.9
LOS		B	B		D	E
Approach Delay		11.2	17.0		59.5	
Approach LOS		B	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 142.3	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 23.3	Intersection LOS: C
Intersection Capacity Utilization 75.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	750	1578	180	347
v/c Ratio	0.32	0.65	0.22	0.86
Control Delay	11.2	16.6	43.3	67.9
Queue Delay	0.0	0.4	0.0	0.0
Total Delay	11.2	17.0	43.3	67.9
Queue Length 50th (m)	45.3	133.1	22.2	91.2
Queue Length 95th (m)	74.7	208.4	32.4	129.9
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2352	2421	1257	604
Starvation Cap Reductn	0	339	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.32	0.76	0.14	0.57

Intersection Summary

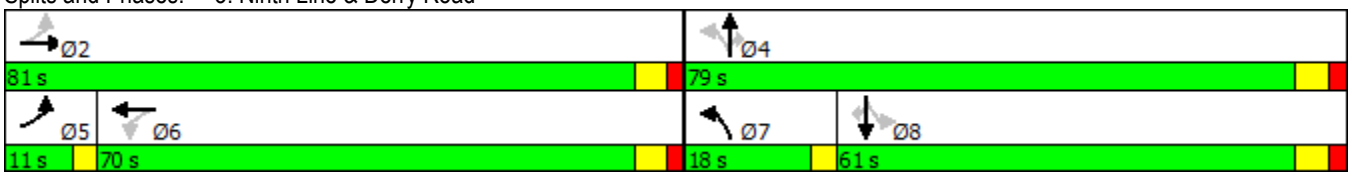
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	129	666	185	165	1357	45	85	488	140	56	383	234
Future Volume (vph)	129	666	185	165	1357	45	85	488	140	56	383	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.0	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		0.0	80.0		0.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor									0.98	1.00		
Frt		0.967			0.995				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1767	3449	0	1767	3595	0	1767	1902	1581	1785	1902	1581
Flt Permitted	0.065			0.322			0.170			0.287		
Satd. Flow (perm)	121	3449	0	599	3595	0	316	1902	1556	538	1902	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30			2				140			203
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			1301.8			145.2	
Travel Time (s)		14.1			11.0			66.9			7.5	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	3%	0%	1%	1%	2%	1%	1%	1%	0%	1%	1%
Adj. Flow (vph)	129	666	185	165	1357	45	85	488	140	56	383	234
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	851	0	165	1402	0	85	488	140	56	383	234
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	0.99	1.09	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	10.0	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2			6		7	4			8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		6	6		7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0		5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	8.0	30.1		30.1	30.1		9.5	29.4	29.4	29.4	29.4	29.4
Total Split (s)	11.0	81.0		70.0	70.0		18.0	79.0	79.0	61.0	61.0	61.0
Total Split (%)	6.9%	50.6%		43.8%	43.8%		11.3%	49.4%	49.4%	38.1%	38.1%	38.1%
Maximum Green (s)	8.0	74.9		63.9	63.9		15.0	72.6	72.6	54.6	54.6	54.6
Yellow Time (s)	3.0	4.0		4.0	4.0		3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	2.1		2.1	2.1		0.0	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		6.1	6.1		3.0	6.4	6.4	6.4	6.4	6.4
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		Max	Max		None	None	None	None	None	None
Walk Time (s)		9.0		9.0	9.0			9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)		15.0		15.0	15.0			14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0		0	0			0	0	0	0	0
Act Effct Green (s)	78.4	75.3		64.3	64.3		48.6	45.2	45.2	32.0	32.0	32.0
Actuated g/C Ratio	0.59	0.57		0.48	0.48		0.37	0.34	0.34	0.24	0.24	0.24
v/c Ratio	0.76	0.43		0.57	0.81		0.37	0.76	0.23	0.43	0.84	0.44
Control Delay	50.0	18.1		37.2	35.1		31.9	46.7	5.1	54.1	64.9	10.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.0	18.1		37.2	35.1		31.9	46.7	5.1	54.1	64.9	10.5
LOS	D	B		D	D		C	D	A	D	E	B
Approach Delay		22.3			35.4			36.8			45.1	
Approach LOS		C			D			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 133.1
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 34.0 — Intersection LOS: C
Intersection Capacity Utilization 97.5% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 3: Ninth Line & Derry Road



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	851	165	1402	85	488	140	56	383	234
v/c Ratio	0.76	0.43	0.57	0.81	0.37	0.76	0.23	0.43	0.84	0.44
Control Delay	50.0	18.1	37.2	35.1	31.9	46.7	5.1	54.1	64.9	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.0	18.1	37.2	35.1	31.9	46.7	5.1	54.1	64.9	10.5
Queue Length 50th (m)	16.2	64.9	31.5	166.6	15.5	118.8	0.0	13.1	100.8	6.7
Queue Length 95th (m)	#60.7	104.7	71.1	246.5	27.2	158.6	13.7	28.5	142.9	29.3
Internal Link Dist (m)		210.9		158.6		1277.8			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	170	1965	289	1736	279	1043	916	222	784	771
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.43	0.57	0.81	0.30	0.47	0.15	0.25	0.49	0.30

Intersection Summary

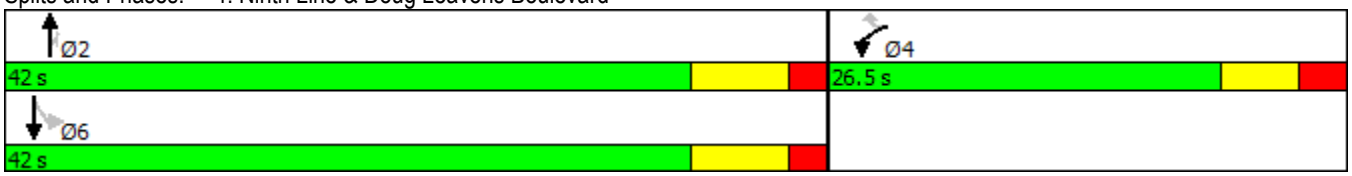
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	100	54	665	123	98	685
Future Volume (vph)	100	54	665	123	98	685
Ideal Flow (vphpl)	1900	1900	1900	1640	1640	1900
Lane Width (m)	3.0	3.3	3.5	3.2	3.0	3.5
Storage Length (m)	0.0	0.0		25.0	80.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				80.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.98	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	1561	1860	1332	1454	1860
Flt Permitted	0.950				0.333	
Satd. Flow (perm)	1685	1561	1860	1300	509	1860
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		56		87		
Link Speed (k/h)	50		70			70
Link Distance (m)	218.3		577.9			1301.8
Travel Time (s)	15.7		29.7			66.9
Confl. Peds. (#/hr)				2	2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	104	56	693	128	102	714
Shared Lane Traffic (%)						
Lane Group Flow (vph)	104	56	693	128	102	714
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.09	1.04	1.01	1.28	1.31	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right	Left	Thru
Leading Detector (m)	7.0	7.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	10.0	10.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	4		2			6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.5	25.5	26.0	26.0	26.0	26.0
Total Split (s)	26.5	26.5	42.0	42.0	42.0	42.0
Total Split (%)	38.7%	38.7%	61.3%	61.3%	61.3%	61.3%
Maximum Green (s)	20.0	20.0	35.0	35.0	35.0	35.0
Yellow Time (s)	4.0	4.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.5	-1.5	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	Max	Max
Walk Time (s)	8.0	8.0	8.0	8.0	8.0	8.0
Flash Dont Walk (s)	8.0	8.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	11.2	11.2	43.6	43.6	43.6	43.6
Actuated g/C Ratio	0.18	0.18	0.72	0.72	0.72	0.72
v/c Ratio	0.34	0.17	0.52	0.13	0.28	0.53
Control Delay	24.2	7.8	7.6	2.4	7.9	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	7.8	7.6	2.4	7.9	7.8
LOS	C	A	A	A	A	A
Approach Delay	18.4		6.8			7.8
Approach LOS	B		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 68.5	
Actuated Cycle Length: 60.7	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 8.3	Intersection LOS: A
Intersection Capacity Utilization 60.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Doug Leavens Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	104	56	693	128	102	714
v/c Ratio	0.34	0.17	0.52	0.13	0.28	0.53
Control Delay	24.2	7.8	7.6	2.4	7.9	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	7.8	7.6	2.4	7.9	7.8
Queue Length 50th (m)	10.2	0.0	35.7	1.4	4.1	37.4
Queue Length 95th (m)	21.9	7.7	73.5	7.1	14.0	77.3
Internal Link Dist (m)	194.3		553.9			1277.8
Turn Bay Length (m)				25.0	80.0	
Base Capacity (vph)	599	591	1336	958	365	1336
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.09	0.52	0.13	0.28	0.53

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	22	17	773	60	42	745
Future Volume (vph)	22	17	773	60	42	745
Ideal Flow (vphpl)	1900	1900	1900	1900	1640	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.0	3.5
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.990			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	1507	1843	0	1426	1879
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1685	1507	1843	0	1426	1879
Link Speed (k/h)	50		70			70
Link Distance (m)	166.2		289.9			265.1
Travel Time (s)	12.0		14.9			13.6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	1%	0%	2%	0%
Adj. Flow (vph)	23	18	805	63	44	776
Shared Lane Traffic (%)						
Lane Group Flow (vph)	23	18	868	0	44	776
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.01	1.31	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	22	17	773	60	42	745
Future Volume (Veh/h)	22	17	773	60	42	745
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	23	18	805	63	44	776
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			290			
pX, platoon unblocked	0.65	0.65			0.65	
vC, conflicting volume	1700	836			868	
vC1, stage 1 conf vol	836					
vC2, stage 2 conf vol	864					
vCu, unblocked vol	1806	486			534	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	95			93	
cM capacity (veh/h)	276	383			676	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	23	18	868	44	776
Volume Left	23	0	0	44	0
Volume Right	0	18	63	0	0
cSH	276	383	1700	676	1700
Volume to Capacity	0.08	0.05	0.51	0.07	0.46
Queue Length 95th (m)	2.2	1.2	0.0	1.7	0.0
Control Delay (s)	19.2	14.9	0.0	10.7	0.0
Lane LOS	C	B		B	
Approach Delay (s)	17.3		0.0	0.6	
Approach LOS	C				

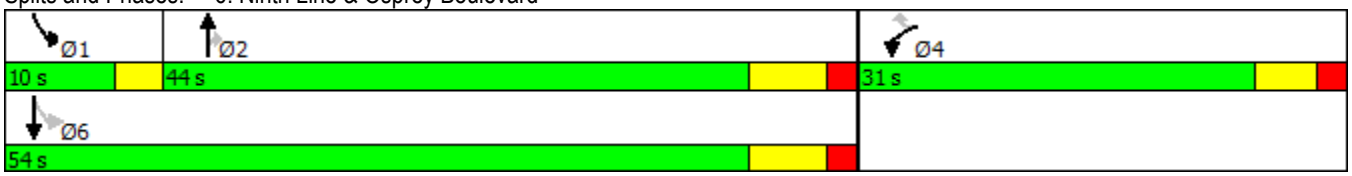
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	68	29	824	100	43	723
Future Volume (vph)	68	29	824	100	43	723
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.6	3.6
Storage Length (m)	15.0	0.0		25.0	20.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.98		
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1574	1463	1860	1351	1767	1900
Flt Permitted	0.950				0.219	
Satd. Flow (perm)	1574	1463	1860	1321	407	1900
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		30		39		
Link Speed (k/h)	50		70			70
Link Distance (m)	186.9		633.8			289.9
Travel Time (s)	13.5		32.6			14.9
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	3%	1%	2%	0%	0%
Adj. Flow (vph)	71	30	858	104	45	753
Shared Lane Traffic (%)						
Lane Group Flow (vph)	71	30	858	104	45	753
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.22	1.03	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right		Thru
Leading Detector (m)	9.0	9.0	10.0	2.0	20.0	10.0
Trailing Detector (m)	-1.0	-1.0	0.0	0.0	10.0	0.0
Detector 1 Position(m)	-1.0	-1.0	0.0	0.0	10.0	0.0
Detector 1 Size(m)	10.0	10.0	0.6	2.0	10.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	24.0	24.0	25.0	25.0	9.5	25.0
Total Split (s)	31.0	31.0	44.0	44.0	10.0	54.0
Total Split (%)	36.5%	36.5%	51.8%	51.8%	11.8%	63.5%
Maximum Green (s)	25.0	25.0	37.0	37.0	7.0	47.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	10.3	10.3	51.1	51.1	59.0	56.1
Actuated g/C Ratio	0.14	0.14	0.71	0.71	0.81	0.77
v/c Ratio	0.32	0.13	0.65	0.11	0.10	0.51
Control Delay	31.3	11.6	12.7	4.6	2.6	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.3	11.6	12.7	4.6	2.6	6.1
LOS	C	B	B	A	A	A
Approach Delay	25.4		11.8			5.9
Approach LOS	C		B			A

Intersection Summary	
Area Type: Other	
Cycle Length: 85	
Actuated Cycle Length: 72.4	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 10.0	Intersection LOS: B
Intersection Capacity Utilization 58.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Osprey Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	71	30	858	104	45	753
v/c Ratio	0.32	0.13	0.65	0.11	0.10	0.51
Control Delay	31.3	11.6	12.7	4.6	2.6	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.3	11.6	12.7	4.6	2.6	6.1
Queue Length 50th (m)	8.8	0.0	76.4	3.3	1.0	37.6
Queue Length 95th (m)	19.9	6.7	#147.6	10.2	3.4	73.1
Internal Link Dist (m)	162.9		609.8			265.9
Turn Bay Length (m)	15.0			25.0	20.0	
Base Capacity (vph)	568	546	1312	943	501	1471
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.05	0.65	0.11	0.09	0.51

Intersection Summary

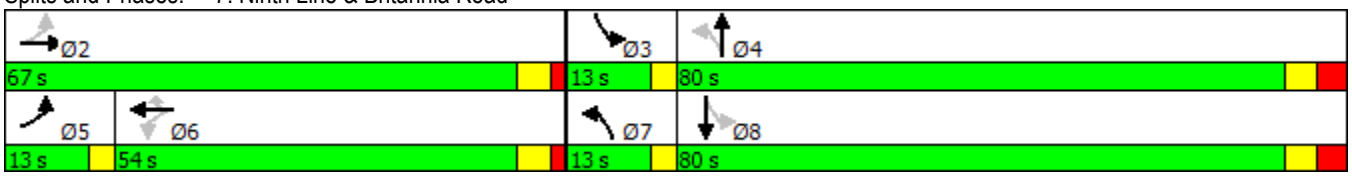
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	509	203	104	824	98	176	717	98	71	604	72
Future Volume (vph)	118	509	203	104	824	98	176	717	98	71	604	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.7	3.5	3.7	3.5
Storage Length (m)	60.0		0.0	60.0		60.0	50.0		0.0	55.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00				
Frt		0.957				0.850		0.982			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3468	0	1785	3614	1551	1767	1866	0	1716	1866	0
Flt Permitted	0.138			0.332			0.133			0.059		
Satd. Flow (perm)	259	3468	0	624	3614	1551	247	1866	0	107	1866	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43				73		6			5	
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	1%	1%	0%	4%	1%	4%
Adj. Flow (vph)	118	509	203	104	824	98	176	717	98	71	604	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	712	0	104	824	98	176	815	0	71	676	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	0.99	1.01	0.99	1.01	1.01	0.99	0.99	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template		Thru		Left	Thru	Right						
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0		25.0	10.0	
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0		15.0	-3.0	
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0		15.0	-3.0	
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0		10.0	10.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2			6		7	4		3	8	
Permitted Phases	2			6		6	4			8		
Detector Phase	5	2		6	6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	12.0		12.0	12.0	12.0	5.0	12.0		5.0	12.0	
Minimum Split (s)	9.5	24.1		24.1	24.1	24.1	9.5	37.7		9.5	37.7	
Total Split (s)	13.0	67.0		54.0	54.0	54.0	13.0	80.0		13.0	80.0	
Total Split (%)	8.1%	41.9%		33.8%	33.8%	33.8%	8.1%	50.0%		8.1%	50.0%	
Maximum Green (s)	10.0	60.9		47.9	47.9	47.9	10.0	72.3		10.0	72.3	
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	0.0	2.1		2.1	2.1	2.1	0.0	3.7		0.0	3.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	6.1		6.1	6.1	6.1	3.0	7.7		3.0	7.7	
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		Max	Max	Max	None	None		None	None	
Walk Time (s)		7.0		7.0	7.0	7.0		12.0			12.0	
Flash Dont Walk (s)		11.0		11.0	11.0	11.0		18.0			18.0	
Pedestrian Calls (#/hr)		0		0	0	0		0			0	
Act Effct Green (s)	64.1	61.0		48.6	48.6	48.6	84.1	69.8		80.1	67.7	
Actuated g/C Ratio	0.41	0.39		0.31	0.31	0.31	0.54	0.45		0.52	0.44	
v/c Ratio	0.59	0.51		0.53	0.73	0.18	0.77	0.97		0.53	0.83	
Control Delay	42.6	35.6		57.7	52.8	14.2	40.7	65.6		34.0	48.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	42.6	35.6		57.7	52.8	14.2	40.7	65.6		34.0	48.4	
LOS	D	D		E	D	B	D	E		C	D	
Approach Delay		36.6			49.6			61.2			47.1	
Approach LOS		D			D			E			D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 155.3	
Natural Cycle: 95	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 49.3	Intersection LOS: D
Intersection Capacity Utilization 98.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 7: Ninth Line & Britannia Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	118	712	104	824	98	176	815	71	676
v/c Ratio	0.59	0.51	0.53	0.73	0.18	0.77	0.97	0.53	0.83
Control Delay	42.6	35.6	57.7	52.8	14.2	40.7	65.6	34.0	48.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.6	35.6	57.7	52.8	14.2	40.7	65.6	34.0	48.4
Queue Length 50th (m)	24.7	89.0	28.8	129.5	5.9	27.8	253.4	10.5	190.9
Queue Length 95th (m)	40.8	111.8	53.3	158.3	21.2	#50.4	#353.9	22.7	247.7
Internal Link Dist (m)		192.6		220.1			171.1		609.8
Turn Bay Length (m)	60.0		60.0		60.0	50.0		55.0	
Base Capacity (vph)	205	1388	195	1131	535	231	873	160	872
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.51	0.53	0.73	0.18	0.76	0.93	0.44	0.78

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	712	0	0	1008	45	118
Future Volume (vph)	712	0	0	1008	45	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3614	1750	1581
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3614	1750	1581
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						118
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Adj. Flow (vph)	712	0	0	1008	45	118
Shared Lane Traffic (%)						
Lane Group Flow (vph)	712	0	0	1008	45	118
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	116.0			116.0	44.0	44.0
Total Split (%)	72.5%			72.5%	27.5%	27.5%
Maximum Green (s)	110.0			110.0	37.0	37.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	110.1			110.1	9.0	9.0
Actuated g/C Ratio	0.83			0.83	0.07	0.07
v/c Ratio	0.24			0.33	0.38	0.54
Control Delay	2.6			3.0	67.8	19.5
Queue Delay	0.0			0.3	0.0	0.0
Total Delay	2.6			3.2	67.8	19.5
LOS	A			A	E	B
Approach Delay	2.6			3.2	32.8	
Approach LOS	A			A	C	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 132.1	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay: 5.6	Intersection LOS: A
Intersection Capacity Utilization 45.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	712	1008	45	118
v/c Ratio	0.24	0.33	0.38	0.54
Control Delay	2.6	3.0	67.8	19.5
Queue Delay	0.0	0.3	0.0	0.0
Total Delay	2.6	3.2	67.8	19.5
Queue Length 50th (m)	16.4	25.8	12.0	0.0
Queue Length 95th (m)	24.3	37.3	25.3	19.3
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	3010	3010	490	527
Starvation Cap Reductn	0	1188	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.24	0.55	0.09	0.22

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	574	936	0	164	50
Future Volume (vph)	0	574	936	0	164	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3614	0	1767	1536
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3614	0	1767	1536
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						50
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	1%	4%
Adj. Flow (vph)	0	574	936	0	164	50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	574	936	0	164	50
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		105.0	105.0		55.0	55.0
Total Split (%)		65.6%	65.6%		34.4%	34.4%
Maximum Green (s)		99.0	99.0		48.0	48.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		99.1	99.1		17.3	17.3
Actuated g/C Ratio		0.77	0.77		0.13	0.13
v/c Ratio		0.21	0.34		0.69	0.20
Control Delay		4.7	5.5		69.2	14.6
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		4.7	5.5		69.2	14.6
LOS		A	A		E	B
Approach Delay		4.7	5.5		56.5	
Approach LOS		A	A		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 129.4	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 11.6	Intersection LOS: B
Intersection Capacity Utilization 45.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	574	936	164	50
v/c Ratio	0.21	0.34	0.69	0.20
Control Delay	4.7	5.5	69.2	14.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.7	5.5	69.2	14.6
Queue Length 50th (m)	19.4	35.9	42.6	0.0
Queue Length 95th (m)	31.2	55.0	67.3	11.9
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2767	2767	656	601
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.21	0.34	0.25	0.08

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	366	272	0	1074	1573	0
Future Volume (vph)	366	272	0	1074	1573	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.975	0.850				
Flt Protected	0.960					
Satd. Flow (prot)	3065	1411	0	4980	5079	0
Flt Permitted	0.960					
Satd. Flow (perm)	3065	1411	0	4980	5079	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	14	*149				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	13%	3%	0%	3%	1%	0%
Adj. Flow (vph)	377	280	0	1107	1622	0
Shared Lane Traffic (%)		27%				
Lane Group Flow (vph)	453	204	0	1107	1622	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	45.0	45.0		115.0	115.0	
Total Split (%)	28.1%	28.1%		71.9%	71.9%	
Maximum Green (s)	37.5	37.5		108.5	108.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	31.3	31.3		110.1	110.1	
Actuated g/C Ratio	0.21	0.21		0.73	0.73	
v/c Ratio	0.70	0.50		0.31	0.44	
Control Delay	60.2	19.5		7.9	9.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	60.2	19.5		7.9	9.1	
LOS	E	B		A	A	
Approach Delay	47.5			7.9	9.1	
Approach LOS	D			A	A	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 151.4	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 16.2	Intersection LOS: B
Intersection Capacity Utilization 69.4%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	453	204	1107	1622
v/c Ratio	0.70	0.50	0.31	0.44
Control Delay	60.2	19.5	7.9	9.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	60.2	19.5	7.9	9.1
Queue Length 50th (m)	67.1	15.9	40.6	68.0
Queue Length 95th (m)	86.5	44.2	58.0	94.2
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	820	482	3622	3694
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	0.42	0.31	0.44

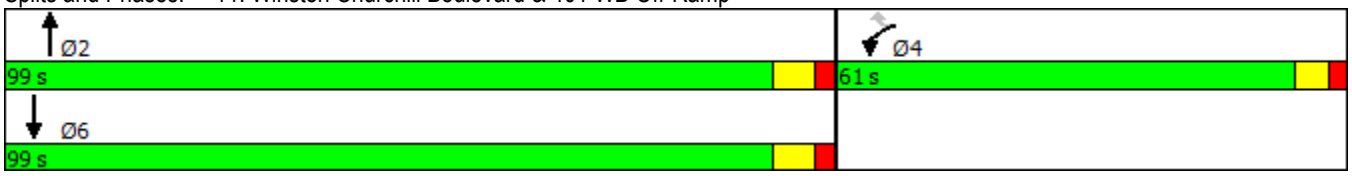
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	658	685	1185	0	0	1217
Future Volume (vph)	658	685	1185	0	0	1217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.95	1.00	1.00	0.95
Frt	0.958	0.850				
Flt Protected	0.965					
Satd. Flow (prot)	3318	1411	3368	0	0	3433
Flt Permitted	0.965					
Satd. Flow (perm)	3318	1411	3368	0	0	3433
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	42	*349				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	3%	6%	0%	0%	4%
Adj. Flow (vph)	678	706	1222	0	0	1255
Shared Lane Traffic (%)		38%				
Lane Group Flow (vph)	946	438	1222	0	0	1255
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	61.0	61.0	99.0			99.0
Total Split (%)	38.1%	38.1%	61.9%			61.9%
Maximum Green (s)	54.5	54.5	91.5			91.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	51.8	51.8	94.1			94.1
Actuated g/C Ratio	0.33	0.33	0.60			0.60
v/c Ratio	0.84	0.62	0.60			0.61
Control Delay	53.5	13.0	21.3			21.4
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	53.5	13.0	21.3			21.4
LOS	D	B	C			C
Approach Delay	40.6		21.3			21.4
Approach LOS	D		C			C

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 155.9	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 28.3	Intersection LOS: C
Intersection Capacity Utilization 69.4%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	946	438	1222	1255
v/c Ratio	0.84	0.62	0.60	0.61
Control Delay	53.5	13.0	21.3	21.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	53.5	13.0	21.3	21.4
Queue Length 50th (m)	141.5	23.5	134.5	138.9
Queue Length 95th (m)	169.2	66.2	157.5	161.5
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1219	730	2032	2072
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.78	0.60	0.60	0.61

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1531	0	0	865	12	151
Future Volume (vph)	1531	0	0	865	12	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3510	2935	1507
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3510	2935	1507
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						63
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	4%	18%	6%
Adj. Flow (vph)	1531	0	0	865	12	151
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1531	0	0	865	12	151
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	121.0			121.0	39.0	39.0
Total Split (%)	75.6%			75.6%	24.4%	24.4%
Maximum Green (s)	115.0			115.0	32.0	32.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	115.2			115.2	14.1	14.1
Actuated g/C Ratio	0.81			0.81	0.10	0.10
v/c Ratio	0.53			0.30	0.04	0.73
Control Delay	5.8			4.1	56.6	56.3
Queue Delay	0.3			0.0	0.0	0.0
Total Delay	6.0			4.1	56.6	56.3
LOS	A			A	E	E
Approach Delay	6.0			4.1	56.3	
Approach LOS	A			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 142.3	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 8.6	Intersection LOS: A
Intersection Capacity Utilization 72.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1531	865	12	151
v/c Ratio	0.53	0.30	0.04	0.73
Control Delay	5.8	4.1	56.6	56.3
Queue Delay	0.3	0.0	0.0	0.0
Total Delay	6.0	4.1	56.6	56.3
Queue Length 50th (m)	65.7	28.2	1.7	25.6
Queue Length 95th (m)	106.0	47.2	5.1	50.7
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2896	2841	661	388
Starvation Cap Reductn	607	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.67	0.30	0.02	0.39

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2001	641	0	34	50
Future Volume (vph)	0	2001	641	0	34	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3510	0	3148	1309
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3510	0	3148	1309
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						50
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	10%	22%
Adj. Flow (vph)	0	2001	641	0	34	50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2001	641	0	34	50
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		133.0	133.0		27.0	27.0
Total Split (%)		83.1%	83.1%		16.9%	16.9%
Maximum Green (s)		127.0	127.0		20.0	20.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		128.6	128.6		7.9	7.9
Actuated g/C Ratio		0.89	0.89		0.05	0.05
v/c Ratio		0.62	0.21		0.20	0.42
Control Delay		4.0	1.8		69.6	27.7
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		4.0	1.8		69.6	27.7
LOS		A	A		E	C
Approach Delay		4.0	1.8		44.7	
Approach LOS		A	A		D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 145.1	
Natural Cycle: 75	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 4.7	Intersection LOS: A
Intersection Capacity Utilization 72.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2001	641	34	50
v/c Ratio	0.62	0.21	0.20	0.42
Control Delay	4.0	1.8	69.6	27.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.0	1.8	69.6	27.7
Queue Length 50th (m)	74.0	12.9	5.2	0.0
Queue Length 95th (m)	106.2	20.0	11.4	14.2
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3202	3109	434	224
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.21	0.08	0.22

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	325	1252	107	132	587	287	213	640	194	43	477	258
Future Volume (vph)	325	1252	107	132	587	287	213	640	194	43	477	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		50.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00										
Frt		0.988			0.951				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	3569	0	1733	3359	0	1750	3614	1566	1716	3614	1581
Flt Permitted	0.197			0.107			0.198			0.318		
Satd. Flow (perm)	349	3569	0	195	3359	0	365	3614	1566	575	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			57				194			258
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			1301.8			145.2	
Travel Time (s)		14.1			11.0			66.9			7.5	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	1%	0%	3%	4%	2%	2%	1%	2%	4%	1%	1%
Adj. Flow (vph)	325	1252	107	132	587	287	213	640	194	43	477	258
Shared Lane Traffic (%)												
Lane Group Flow (vph)	325	1359	0	132	874	0	213	640	194	43	477	258
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-0.2	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-0.2	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	8.2	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1		9.5	30.1		9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	39.0	81.0		19.0	61.0		24.0	50.2	50.2	9.8	36.0	36.0
Total Split (%)	24.4%	50.6%		11.9%	38.1%		15.0%	31.4%	31.4%	6.1%	22.5%	22.5%
Maximum Green (s)	36.0	74.9		16.0	54.9		21.0	43.8	43.8	6.8	29.6	29.6
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0			15.0			14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	91.7	75.3		76.5	63.1		49.4	38.3	38.3	34.5	24.5	24.5
Actuated g/C Ratio	0.62	0.51		0.52	0.43		0.34	0.26	0.26	0.23	0.17	0.17
v/c Ratio	0.77	0.74		0.63	0.59		0.72	0.68	0.35	0.23	0.79	0.54
Control Delay	29.8	32.9		35.8	34.7		51.4	53.6	7.3	37.4	69.8	10.4
Queue Delay	0.0	2.1		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	35.0		35.8	34.7		51.4	53.6	7.3	37.4	69.8	10.4
LOS	C	C		D	C		D	D	A	D	E	B
Approach Delay		34.0			34.8			44.5			48.3	
Approach LOS		C			C			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 147.2
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 39.1 — Intersection LOS: D
Intersection Capacity Utilization 87.4% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 3: Ninth Line & Derry Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	325	1359	132	874	213	640	194	43	477	258
v/c Ratio	0.77	0.74	0.63	0.59	0.72	0.68	0.35	0.23	0.79	0.54
Control Delay	29.8	32.9	35.8	34.7	51.4	53.6	7.3	37.4	69.8	10.4
Queue Delay	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	35.0	35.8	34.7	51.4	53.6	7.3	37.4	69.8	10.4
Queue Length 50th (m)	46.8	173.2	16.6	104.1	48.8	94.3	0.0	8.9	75.3	0.0
Queue Length 95th (m)	83.3	233.3	40.9	154.0	76.1	122.5	20.4	19.3	101.0	26.4
Internal Link Dist (m)		210.9		158.6		1277.8			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	545	1829	276	1471	321	1081	604	188	730	525
Starvation Cap Reductn	0	314	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.90	0.48	0.59	0.66	0.59	0.32	0.23	0.65	0.49

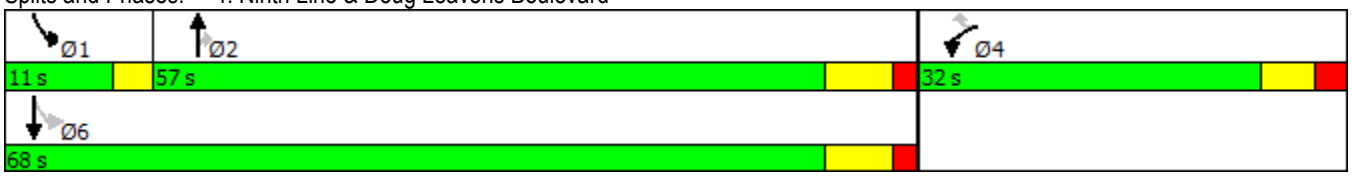
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	141	172	910	99	65	650
Future Volume (vph)	141	172	910	99	65	650
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.3	3.5	3.2	3.0	3.5
Storage Length (m)	0.0	0.0		25.0	80.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				80.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.98	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1636	1531	3500	1222	1649	3535
Flt Permitted	0.950				0.240	
Satd. Flow (perm)	1636	1531	3500	1194	416	3535
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		187		64		
Link Speed (k/h)	50		70			70
Link Distance (m)	218.3		577.9			1301.8
Travel Time (s)	15.7		29.7			66.9
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	2%	9%	0%	1%
Adj. Flow (vph)	153	187	989	108	71	707
Shared Lane Traffic (%)						
Lane Group Flow (vph)	153	187	989	108	71	707
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.04	1.01	1.28	1.12	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right	Left	Thru
Leading Detector (m)	7.0	7.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	10.0	10.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	25.5	25.5	26.0	26.0	9.5	26.0
Total Split (s)	32.0	32.0	57.0	57.0	11.0	68.0
Total Split (%)	32.0%	32.0%	57.0%	57.0%	11.0%	68.0%
Maximum Green (s)	25.5	25.5	50.0	50.0	8.0	61.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.5	2.5	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.5	-1.5	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	8.0	8.0	8.0	8.0		8.0
Flash Dont Walk (s)	8.0	8.0	10.0	10.0		10.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	15.2	15.2	55.8	55.8	67.5	63.5
Actuated g/C Ratio	0.17	0.17	0.63	0.63	0.76	0.72
v/c Ratio	0.55	0.45	0.45	0.14	0.16	0.28
Control Delay	41.0	8.6	10.5	4.7	4.2	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.0	8.6	10.5	4.7	4.2	5.2
LOS	D	A	B	A	A	A
Approach Delay	23.2		9.9			5.1
Approach LOS	C		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 88.7	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.55	
Intersection Signal Delay: 10.3	Intersection LOS: B
Intersection Capacity Utilization 48.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Doug Leavens Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	153	187	989	108	71	707
v/c Ratio	0.55	0.45	0.45	0.14	0.16	0.28
Control Delay	41.0	8.6	10.5	4.7	4.2	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.0	8.6	10.5	4.7	4.2	5.2
Queue Length 50th (m)	25.1	0.0	46.0	2.9	2.5	19.7
Queue Length 95th (m)	44.2	17.0	74.4	11.5	7.2	34.1
Internal Link Dist (m)	194.3		553.9			1277.8
Turn Bay Length (m)				25.0	80.0	
Base Capacity (vph)	498	596	2200	774	456	2531
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.31	0.45	0.14	0.16	0.28

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	68	952	36	31	779
Future Volume (vph)	47	68	952	36	31	779
Ideal Flow (vphpl)	1900	1900	1900	1900	1640	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.0	3.5
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				15.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	1507	3438	0	1412	3500
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1685	1507	3438	0	1412	3500
Link Speed (k/h)	50		70			70
Link Distance (m)	166.2		289.9			265.1
Travel Time (s)	12.0		14.9			13.6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	3%	9%	3%	2%
Adj. Flow (vph)	49	71	992	38	32	811
Shared Lane Traffic (%)						
Lane Group Flow (vph)	49	71	1030	0	32	811
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.01	1.31	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	47	68	952	36	31	779
Future Volume (Veh/h)	47	68	952	36	31	779
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	49	71	992	38	32	811
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			290			
pX, platoon unblocked	0.90	0.90			0.90	
vC, conflicting volume	1480	515			1030	
vC1, stage 1 conf vol	1011					
vC2, stage 2 conf vol	470					
vCu, unblocked vol	1305	229			803	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	90			96	
cM capacity (veh/h)	327	699			726	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	49	71	661	369	32	406	406
Volume Left	49	0	0	0	32	0	0
Volume Right	0	71	0	38	0	0	0
cSH	327	699	1700	1700	726	1700	1700
Volume to Capacity	0.15	0.10	0.39	0.22	0.04	0.24	0.24
Queue Length 95th (m)	4.2	2.7	0.0	0.0	1.1	0.0	0.0
Control Delay (s)	18.0	10.7	0.0	0.0	10.2	0.0	0.0
Lane LOS	C	B			B		
Approach Delay (s)	13.7		0.0		0.4		
Approach LOS	B						

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	124	93	886	92	20	805
Future Volume (vph)	124	93	886	92	20	805
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.6	3.6
Storage Length (m)	15.0	0.0		25.0	20.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1636	1436	3433	1276	1683	3574
Flt Permitted	0.950				0.282	
Satd. Flow (perm)	1636	1436	3433	1276	500	3574
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		96		64		
Link Speed (k/h)	50		70			70
Link Distance (m)	186.9		633.8			289.9
Travel Time (s)	13.5		32.6			14.9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	5%	4%	8%	5%	1%
Adj. Flow (vph)	128	96	913	95	21	830
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	96	913	95	21	830
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.22	1.03	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right		Thru
Leading Detector (m)	9.0	9.0	10.0	2.0	20.0	10.0
Trailing Detector (m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Position(m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Size(m)	9.2	10.0	0.6	2.0	10.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	24.0	24.0	25.0	25.0	9.5	25.0
Total Split (s)	31.0	31.0	59.0	59.0	10.0	69.0
Total Split (%)	31.0%	31.0%	59.0%	59.0%	10.0%	69.0%
Maximum Green (s)	25.0	25.0	52.0	52.0	7.0	62.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	13.4	13.4	64.0	64.0	71.3	67.2
Actuated g/C Ratio	0.15	0.15	0.71	0.71	0.79	0.74
v/c Ratio	0.53	0.33	0.38	0.10	0.04	0.31
Control Delay	42.8	10.2	6.9	3.1	3.0	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	10.2	6.9	3.1	3.0	4.6
LOS	D	B	A	A	A	A
Approach Delay	28.8		6.5			4.6
Approach LOS	C		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 90.7	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 8.1	Intersection LOS: A
Intersection Capacity Utilization 39.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Osprey Boulevard

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	128	96	913	95	21	830
v/c Ratio	0.53	0.33	0.38	0.10	0.04	0.31
Control Delay	42.8	10.2	6.9	3.1	3.0	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	10.2	6.9	3.1	3.0	4.6
Queue Length 50th (m)	21.0	0.0	24.9	1.2	0.6	21.5
Queue Length 95th (m)	38.4	13.0	57.5	8.3	2.6	36.8
Internal Link Dist (m)	162.9		609.8			265.9
Turn Bay Length (m)	15.0			25.0	20.0	
Base Capacity (vph)	469	480	2424	919	510	2649
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.20	0.38	0.10	0.04	0.31

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	1228	357	95	540	145	165	625	138	65	770	93
Future Volume (vph)	130	1228	357	95	540	145	165	625	138	65	770	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		0.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98	1.00		
Frt		0.966				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3491	0	1733	3579	1439	1767	3544	1581	1608	3614	1581
Flt Permitted	0.405			0.050			0.099			0.297		
Satd. Flow (perm)	761	3491	0	91	3579	1439	184	3544	1557	502	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34				145			95			82
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	3%	2%	11%	1%	3%	1%	11%	1%	1%
Adj. Flow (vph)	130	1228	357	95	540	145	165	625	138	65	770	93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	1585	0	95	540	145	165	625	138	65	770	93
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template		Thru		Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		8
Detector Phase	5	2		1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	10.7	86.0		11.0	86.3	86.3	16.0	52.5	52.5	10.5	47.0	47.0
Total Split (%)	6.7%	53.8%		6.9%	53.9%	53.9%	10.0%	32.8%	32.8%	6.6%	29.4%	29.4%
Maximum Green (s)	7.7	79.9		8.0	80.2	80.2	13.0	44.8	44.8	7.5	39.3	39.3
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0			11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	90.6	80.0		91.2	80.3	80.3	57.6	44.6	44.6	48.8	37.0	37.0
Actuated g/C Ratio	0.58	0.51		0.58	0.51	0.51	0.37	0.28	0.28	0.31	0.23	0.23
v/c Ratio	0.27	0.89		0.71	0.30	0.18	0.84	0.62	0.27	0.32	0.91	0.21
Control Delay	15.9	41.6		54.7	23.2	3.5	70.6	52.8	16.9	37.4	73.7	13.0
Queue Delay	0.0	45.9		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	87.5		54.7	23.2	3.5	70.6	52.8	16.9	37.4	73.7	13.0
LOS	B	F		D	C	A	E	D	B	D	E	B
Approach Delay		82.0			23.4			50.6			65.0	
Approach LOS		F			C			D			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 157.5	
Natural Cycle: 115	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 61.2	Intersection LOS: E
Intersection Capacity Utilization 99.2%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 7: Ninth Line & Britannia Road

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	130	1585	95	540	145	165	625	138	65	770	93
v/c Ratio	0.27	0.89	0.71	0.30	0.18	0.84	0.62	0.27	0.32	0.91	0.21
Control Delay	15.9	41.6	54.7	23.2	3.5	70.6	52.8	16.9	37.4	73.7	13.0
Queue Delay	0.0	45.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	87.5	54.7	23.2	3.5	70.6	52.8	16.9	37.4	73.7	13.0
Queue Length 50th (m)	18.7	245.8	14.8	54.8	0.0	38.0	96.8	10.7	14.2	131.2	2.8
Queue Length 95th (m)	29.5	283.0	#43.7	68.4	12.1	#78.4	119.1	29.9	25.9	#158.1	18.4
Internal Link Dist (m)		192.6		220.1			171.1			609.8	
Turn Bay Length (m)	60.0		60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	488	1789	136	1823	804	197	1014	513	209	902	456
Starvation Cap Reductn	0	346	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	1.10	0.70	0.30	0.18	0.84	0.62	0.27	0.31	0.85	0.20

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1498	0	0	641	19	208
Future Volume (vph)	1498	0	0	641	19	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3579	1608	1566
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3579	1608	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						56
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	2%	11%	2%
Adj. Flow (vph)	1498	0	0	641	19	208
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1498	0	0	641	19	208
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	114.0			114.0	46.0	46.0
Total Split (%)	71.3%			71.3%	28.8%	28.8%
Maximum Green (s)	108.0			108.0	39.0	39.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	108.2			108.2	19.3	19.3
Actuated g/C Ratio	0.77			0.77	0.14	0.14
v/c Ratio	0.54			0.23	0.09	0.79
Control Delay	7.8			5.2	52.2	63.5
Queue Delay	0.3			0.0	0.0	0.0
Total Delay	8.1			5.2	52.2	63.5
LOS	A			A	D	E
Approach Delay	8.1			5.2	62.5	
Approach LOS	A			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 140.5	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 12.6	Intersection LOS: B
Intersection Capacity Utilization 65.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1498	641	19	208
v/c Ratio	0.54	0.23	0.09	0.79
Control Delay	7.8	5.2	52.2	63.5
Queue Delay	0.3	0.0	0.0	0.0
Total Delay	8.1	5.2	52.2	63.5
Queue Length 50th (m)	78.7	24.0	4.9	44.0
Queue Length 95th (m)	124.3	40.4	12.9	73.2
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2782	2755	446	475
Starvation Cap Reductn	573	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.68	0.23	0.04	0.44

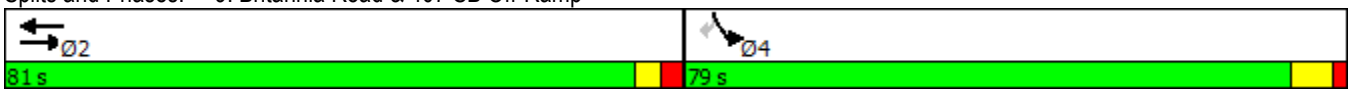
Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1098	511	0	443	21
Future Volume (vph)	0	1098	511	0	443	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3579	0	1684	1210
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3579	0	1684	1210
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						19
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	2%	0%	6%	32%
Adj. Flow (vph)	0	1098	511	0	443	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1098	511	0	443	21
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		81.0	81.0		79.0	79.0
Total Split (%)		50.6%	50.6%		49.4%	49.4%
Maximum Green (s)		75.0	75.0		72.0	72.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		75.4	75.4		38.1	38.1
Actuated g/C Ratio		0.60	0.60		0.30	0.30
v/c Ratio		0.51	0.24		0.88	0.06
Control Delay		17.0	13.5		60.5	12.7
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		17.0	13.5		60.5	12.7
LOS		B	B		E	B
Approach Delay		17.0	13.5		58.3	
Approach LOS		B	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 126.5	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 25.4	Intersection LOS: C
Intersection Capacity Utilization 65.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1098	511	443	21
v/c Ratio	0.51	0.24	0.88	0.06
Control Delay	17.0	13.5	60.5	12.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.0	13.5	60.5	12.7
Queue Length 50th (m)	82.8	31.2	109.6	0.4
Queue Length 95th (m)	129.8	52.7	151.7	6.4
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2153	2132	963	700
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.51	0.24	0.46	0.03

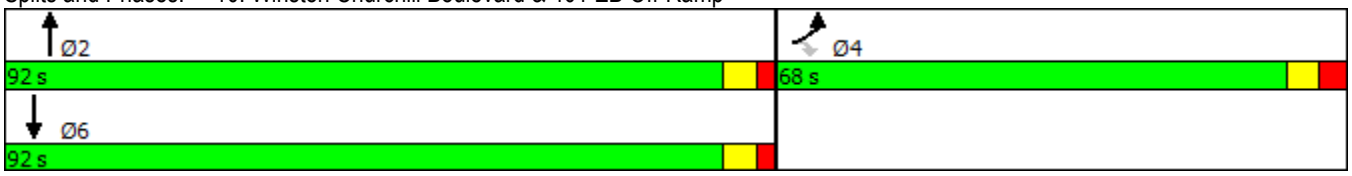
Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	330	275	0	1044	914	0
Future Volume (vph)	330	275	0	1044	914	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.969	0.850				
Flt Protected	0.962					
Satd. Flow (prot)	3280	1425	0	4980	4885	0
Flt Permitted	0.962					
Satd. Flow (perm)	3280	1425	0	4980	4885	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	25	105				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	0%	3%	5%	0%
Adj. Flow (vph)	347	289	0	1099	962	0
Shared Lane Traffic (%)		31%				
Lane Group Flow (vph)	437	199	0	1099	962	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	68.0	68.0		92.0	92.0	
Total Split (%)	42.5%	42.5%		57.5%	57.5%	
Maximum Green (s)	60.5	60.5		85.5	85.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	24.8	24.8		87.1	87.1	
Actuated g/C Ratio	0.20	0.20		0.71	0.71	
v/c Ratio	0.64	0.53		0.31	0.28	
Control Delay	46.1	25.5		7.0	6.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	46.1	25.5		7.0	6.8	
LOS	D	C		A	A	
Approach Delay	39.7			7.0	6.8	
Approach LOS	D			A	A	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 121.9	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 45.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	437	199	1099	962
v/c Ratio	0.64	0.53	0.31	0.28
Control Delay	46.1	25.5	7.0	6.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	46.1	25.5	7.0	6.8
Queue Length 50th (m)	49.3	22.5	33.0	28.1
Queue Length 95th (m)	66.5	49.7	47.9	41.3
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1708	787	3557	3490
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.26	0.25	0.31	0.28

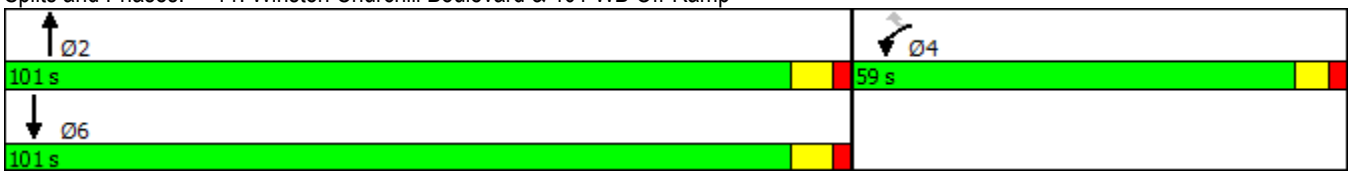
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	196	367	1140	0	0	1237
Future Volume (vph)	196	367	1140	0	0	1237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.91
Frt	0.927	0.850				
Flt Protected	0.975					
Satd. Flow (prot)	2969	1298	4980	0	0	4839
Flt Permitted	0.975					
Satd. Flow (perm)	2969	1298	4980	0	0	4839
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	76	76				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	10%	12%	3%	0%	0%	6%
Adj. Flow (vph)	206	386	1200	0	0	1302
Shared Lane Traffic (%)		50%				
Lane Group Flow (vph)	399	193	1200	0	0	1302
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	59.0	59.0	101.0			101.0
Total Split (%)	36.9%	36.9%	63.1%			63.1%
Maximum Green (s)	52.5	52.5	93.5			93.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	22.9	22.9	96.1			96.1
Actuated g/C Ratio	0.18	0.18	0.74			0.74
v/c Ratio	0.68	0.66	0.32			0.36
Control Delay	45.8	40.5	6.2			6.5
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	45.8	40.5	6.2			6.5
LOS	D	D	A			A
Approach Delay	44.1		6.2			6.5
Approach LOS	D		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 129	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 13.6	Intersection LOS: B
Intersection Capacity Utilization 45.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	399	193	1200	1302
v/c Ratio	0.68	0.66	0.32	0.36
Control Delay	45.8	40.5	6.2	6.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	45.8	40.5	6.2	6.5
Queue Length 50th (m)	42.1	32.3	34.5	38.8
Queue Length 95th (m)	59.4	61.7	53.2	59.8
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1288	588	3710	3605
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.31	0.33	0.32	0.36

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	961	0	0	1774	73	169
Future Volume (vph)	961	0	0	1774	73	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3614	3362	1597
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3614	3362	1597
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						169
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	1%	3%	0%
Adj. Flow (vph)	961	0	0	1774	73	169
Shared Lane Traffic (%)						
Lane Group Flow (vph)	961	0	0	1774	73	169
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	129.0			129.0	31.0	31.0
Total Split (%)	80.6%			80.6%	19.4%	19.4%
Maximum Green (s)	123.0			123.0	24.0	24.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	123.0			123.0	9.3	9.3
Actuated g/C Ratio	0.85			0.85	0.06	0.06
v/c Ratio	0.32			0.58	0.34	0.65
Control Delay	2.7			4.4	69.2	21.0
Queue Delay	0.0			0.7	0.0	0.0
Total Delay	2.7			5.1	69.2	21.0
LOS	A			A	E	C
Approach Delay	2.7			5.1	35.6	
Approach LOS	A			A	D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 145.3	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 6.8	Intersection LOS: A
Intersection Capacity Utilization 82.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	961	1774	73	169
v/c Ratio	0.32	0.58	0.34	0.65
Control Delay	2.7	4.4	69.2	21.0
Queue Delay	0.0	0.7	0.0	0.0
Total Delay	2.7	5.1	69.2	21.0
Queue Length 50th (m)	24.0	63.5	11.1	0.0
Queue Length 95th (m)	37.9	97.3	19.8	24.0
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3030	3060	555	404
Starvation Cap Reductn	0	853	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.32	0.80	0.13	0.42

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	820	1738	0	196	376
Future Volume (vph)	0	820	1738	0	196	376
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3510	3614	0	3429	1597
Flt Permitted					0.950	
Satd. Flow (perm)	0	3510	3614	0	3429	1597
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						21
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	4%	1%	0%	1%	0%
Adj. Flow (vph)	0	820	1738	0	196	376
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	820	1738	0	196	376
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		102.0	102.0		58.0	58.0
Total Split (%)		63.8%	63.8%		36.3%	36.3%
Maximum Green (s)		96.0	96.0		51.0	51.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		96.3	96.3		37.7	37.7
Actuated g/C Ratio		0.65	0.65		0.26	0.26
v/c Ratio		0.36	0.73		0.22	0.88
Control Delay		12.9	20.7		42.9	72.1
Queue Delay		0.0	0.8		0.0	0.0
Total Delay		12.9	21.5		42.9	72.1
LOS		B	C		D	E
Approach Delay		12.9	21.5		62.1	
Approach LOS		B	C		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 147.1	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 26.7	Intersection LOS: C
Intersection Capacity Utilization 82.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	820	1738	196	376
v/c Ratio	0.36	0.73	0.22	0.88
Control Delay	12.9	20.7	42.9	72.1
Queue Delay	0.0	0.8	0.0	0.0
Total Delay	12.9	21.5	42.9	72.1
Queue Length 50th (m)	56.3	176.3	24.5	105.9
Queue Length 95th (m)	86.9	259.2	35.3	147.1
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2298	2366	1192	569
Starvation Cap Reductn	0	313	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.85	0.16	0.66

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	712	209	194	1437	80	102	583	174	152	763	298
Future Volume (vph)	152	712	209	194	1437	80	102	583	174	152	763	298
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		50.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98	1.00		
Frt		0.966			0.992				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1767	3446	0	1767	3583	0	1767	3614	1581	1785	3614	1581
Flt Permitted	0.051			0.225			0.118			0.183		
Satd. Flow (perm)	95	3446	0	419	3583	0	220	3614	1556	344	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			5				174			202
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			1301.8			145.2	
Travel Time (s)		14.1			11.0			66.9			7.5	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	3%	0%	1%	1%	2%	1%	1%	1%	0%	1%	1%
Adj. Flow (vph)	152	712	209	194	1437	80	102	583	174	152	763	298
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	921	0	194	1517	0	102	583	174	152	763	298
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	10.0	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1		9.5	30.1		9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	18.0	80.5		21.5	84.0		12.0	43.0	43.0	15.0	46.0	46.0
Total Split (%)	11.3%	50.3%		13.4%	52.5%		7.5%	26.9%	26.9%	9.4%	28.8%	28.8%
Maximum Green (s)	15.0	74.4		18.5	77.9		9.0	36.6	36.6	12.0	39.6	39.6
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0			15.0			14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	93.9	78.5		93.1	78.1		46.2	33.9	33.9	51.6	36.6	36.6
Actuated g/C Ratio	0.61	0.51		0.60	0.51		0.30	0.22	0.22	0.33	0.24	0.24
v/c Ratio	0.80	0.52		0.54	0.84		0.66	0.74	0.36	0.68	0.89	0.56
Control Delay	65.1	26.4		18.7	38.8		58.0	62.5	8.7	54.3	70.6	21.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.1	26.4		18.7	38.8		58.0	62.5	8.7	54.3	70.6	21.0
LOS	E	C		B	D		E	E	A	D	E	C
Approach Delay		31.9			36.5			51.1			56.4	
Approach LOS		C			D			D			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 154.4	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 43.0	Intersection LOS: D
Intersection Capacity Utilization 94.5%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Ninth Line & Derry Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	152	921	194	1517	102	583	174	152	763	298
v/c Ratio	0.80	0.52	0.54	0.84	0.66	0.74	0.36	0.68	0.89	0.56
Control Delay	65.1	26.4	18.7	38.8	58.0	62.5	8.7	54.3	70.6	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.1	26.4	18.7	38.8	58.0	62.5	8.7	54.3	70.6	21.0
Queue Length 50th (m)	32.2	103.5	26.7	230.2	23.6	94.6	0.0	36.2	128.2	26.5
Queue Length 95th (m)	#63.9	130.2	39.5	268.2	#40.0	118.0	20.6	56.1	155.9	59.9
Internal Link Dist (m)		210.9		158.6		1277.8			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	221	1767	423	1813	156	858	502	227	928	556
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.52	0.46	0.84	0.65	0.68	0.35	0.67	0.82	0.54

Intersection Summary

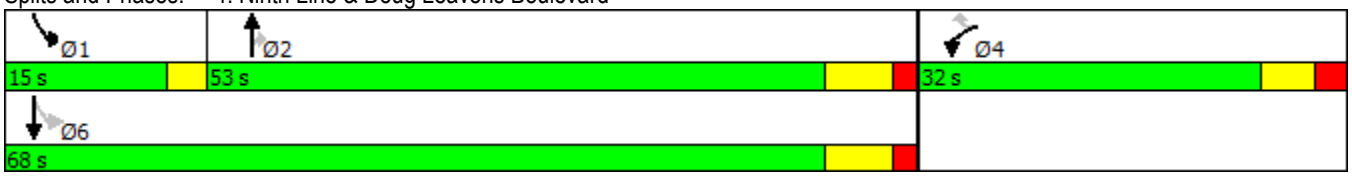
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	104	58	797	134	123	1072
Future Volume (vph)	104	58	797	134	123	1072
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.3	3.5	3.2	3.0	3.5
Storage Length (m)	0.0	0.0		25.0	80.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				80.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	1561	3535	1332	1649	3535
Flt Permitted	0.950				0.304	
Satd. Flow (perm)	1685	1561	3535	1298	527	3535
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		60		91		
Link Speed (k/h)	50		70			70
Link Distance (m)	218.3		577.9			1301.8
Travel Time (s)	15.7		29.7			66.9
Confl. Peds. (#/hr)				2	2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	108	60	830	140	128	1117
Shared Lane Traffic (%)						
Lane Group Flow (vph)	108	60	830	140	128	1117
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.04	1.01	1.28	1.12	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right	Left	Thru
Leading Detector (m)	7.0	7.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	10.0	10.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	25.5	25.5	26.0	26.0	9.5	26.0
Total Split (s)	32.0	32.0	53.0	53.0	15.0	68.0
Total Split (%)	32.0%	32.0%	53.0%	53.0%	15.0%	68.0%
Maximum Green (s)	25.5	25.5	46.0	46.0	12.0	61.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.5	2.5	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.5	-1.5	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	8.0	8.0	8.0	8.0		8.0
Flash Dont Walk (s)	8.0	8.0	10.0	10.0		10.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	12.7	12.7	56.1	56.1	70.1	67.2
Actuated g/C Ratio	0.15	0.15	0.65	0.65	0.82	0.78
v/c Ratio	0.44	0.21	0.36	0.16	0.23	0.40
Control Delay	38.8	10.9	8.6	3.8	3.5	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	10.9	8.6	3.8	3.5	4.7
LOS	D	B	A	A	A	A
Approach Delay	28.8		7.9			4.6
Approach LOS	C		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 85.8	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.44	
Intersection Signal Delay: 7.7	Intersection LOS: A
Intersection Capacity Utilization 47.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Doug Leavens Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	108	60	830	140	128	1117
v/c Ratio	0.44	0.21	0.36	0.16	0.23	0.40
Control Delay	38.8	10.9	8.6	3.8	3.5	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	10.9	8.6	3.8	3.5	4.7
Queue Length 50th (m)	17.2	0.0	33.5	3.0	3.8	31.4
Queue Length 95th (m)	32.6	10.4	54.6	12.0	9.6	51.3
Internal Link Dist (m)	194.3		553.9			1277.8
Turn Bay Length (m)				25.0	80.0	
Base Capacity (vph)	530	532	2309	879	614	2767
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.11	0.36	0.16	0.21	0.40

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	22	17	916	61	43	1135
Future Volume (vph)	22	17	916	61	43	1135
Ideal Flow (vphpl)	1900	1900	1900	1900	1640	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.0	3.5
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				15.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	1507	3505	0	1426	3570
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1685	1507	3505	0	1426	3570
Link Speed (k/h)	50		70			70
Link Distance (m)	166.2		289.9			265.1
Travel Time (s)	12.0		14.9			13.6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	1%	0%	2%	0%
Adj. Flow (vph)	23	18	954	64	45	1182
Shared Lane Traffic (%)						
Lane Group Flow (vph)	23	18	1018	0	45	1182
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.01	1.31	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.9%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	22	17	916	61	43	1135
Future Volume (Veh/h)	22	17	916	61	43	1135
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	23	18	954	64	45	1182
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			290			
pX, platoon unblocked	0.90	0.90			0.90	
vC, conflicting volume	1667	509			1018	
vC1, stage 1 conf vol	986					
vC2, stage 2 conf vol	681					
vCu, unblocked vol	1512	220			788	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	97			94	
cM capacity (veh/h)	298	708			741	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	23	18	636	382	45	591	591
Volume Left	23	0	0	0	45	0	0
Volume Right	0	18	0	64	0	0	0
cSH	298	708	1700	1700	741	1700	1700
Volume to Capacity	0.08	0.03	0.37	0.22	0.06	0.35	0.35
Queue Length 95th (m)	2.0	0.6	0.0	0.0	1.5	0.0	0.0
Control Delay (s)	18.1	10.2	0.0	0.0	10.2	0.0	0.0
Lane LOS	C	B			B		
Approach Delay (s)	14.6		0.0		0.4		
Approach LOS	B						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	69	30	977	102	44	1112
Future Volume (vph)	69	30	977	102	44	1112
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.6	3.6
Storage Length (m)	15.0	0.0		25.0	20.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.98	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1574	1463	3535	1351	1767	3610
Flt Permitted	0.950				0.254	
Satd. Flow (perm)	1574	1463	3535	1321	472	3610
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		31		67		
Link Speed (k/h)	50		70			70
Link Distance (m)	186.9		633.8			289.9
Travel Time (s)	13.5		32.6			14.9
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	3%	1%	2%	0%	0%
Adj. Flow (vph)	72	31	1018	106	46	1158
Shared Lane Traffic (%)						
Lane Group Flow (vph)	72	31	1018	106	46	1158
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.22	1.03	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right		Thru
Leading Detector (m)	9.0	9.0	10.0	2.0	20.0	10.0
Trailing Detector (m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Position(m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Size(m)	9.2	10.0	0.6	2.0	10.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	24.0	24.0	25.0	25.0	9.5	25.0
Total Split (s)	28.0	28.0	61.0	61.0	11.0	72.0
Total Split (%)	28.0%	28.0%	61.0%	61.0%	11.0%	72.0%
Maximum Green (s)	22.0	22.0	54.0	54.0	8.0	65.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	11.0	11.0	69.2	69.2	77.1	74.1
Actuated g/C Ratio	0.12	0.12	0.76	0.76	0.85	0.81
v/c Ratio	0.38	0.15	0.38	0.10	0.09	0.39
Control Delay	42.2	14.1	6.0	2.8	2.3	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.2	14.1	6.0	2.8	2.3	3.8
LOS	D	B	A	A	A	A
Approach Delay	33.7		5.7			3.8
Approach LOS	C		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 91.2	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.39	
Intersection Signal Delay: 5.9	Intersection LOS: A
Intersection Capacity Utilization 49.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Osprey Boulevard

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	72	31	1018	106	46	1158
v/c Ratio	0.38	0.15	0.38	0.10	0.09	0.39
Control Delay	42.2	14.1	6.0	2.8	2.3	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.2	14.1	6.0	2.8	2.3	3.8
Queue Length 50th (m)	11.9	0.0	37.4	2.0	1.1	28.7
Queue Length 95th (m)	25.0	8.0	56.8	8.0	3.5	46.5
Internal Link Dist (m)	162.9		609.8			265.9
Turn Bay Length (m)	15.0			25.0	20.0	
Base Capacity (vph)	398	393	2681	1018	541	2933
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.08	0.38	0.10	0.09	0.39

Intersection Summary

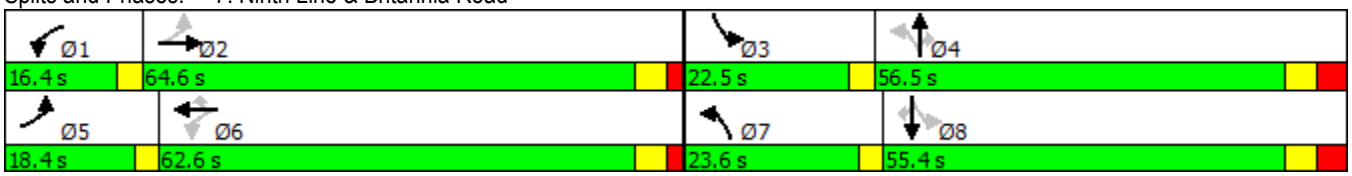
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	672	307	123	906	131	193	840	121	175	824	143
Future Volume (vph)	144	672	307	123	906	131	193	840	121	175	824	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		0.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98	1.00		
Frt		0.953				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3455	0	1785	3614	1551	1767	3614	1597	1716	3614	1536
Flt Permitted	0.182			0.158			0.112			0.119		
Satd. Flow (perm)	342	3455	0	297	3614	1551	208	3614	1570	215	3614	1536
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52				81			64			90
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	1%	1%	0%	4%	1%	4%
Adj. Flow (vph)	144	672	307	123	906	131	193	840	121	175	824	143
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	979	0	123	906	131	193	840	121	175	824	143
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template		Thru		Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		8
Detector Phase	5	2		1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	18.4	64.6		16.4	62.6	62.6	23.6	56.5	56.5	22.5	55.4	55.4
Total Split (%)	11.5%	40.4%		10.3%	39.1%	39.1%	14.8%	35.3%	35.3%	14.1%	34.6%	34.6%
Maximum Green (s)	15.4	58.5		13.4	56.5	56.5	20.6	48.8	48.8	19.5	47.7	47.7
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0			11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	73.1	59.0		71.9	58.4	58.4	59.1	39.4	39.4	57.0	38.3	38.3
Actuated g/C Ratio	0.51	0.41		0.50	0.41	0.41	0.41	0.28	0.28	0.40	0.27	0.27
v/c Ratio	0.50	0.67		0.48	0.61	0.19	0.78	0.84	0.25	0.76	0.85	0.30
Control Delay	25.4	36.6		25.4	37.5	13.9	51.5	57.5	21.1	50.0	58.9	18.2
Queue Delay	0.0	0.4		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	37.0		25.4	37.5	13.9	51.5	57.5	21.1	50.0	58.9	18.2
LOS	C	D		C	D	B	D	E	C	D	E	B
Approach Delay		35.5			33.5			52.7			52.5	
Approach LOS		D			C			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 142.7
Natural Cycle: 85
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 43.6 — Intersection LOS: D
Intersection Capacity Utilization 86.8% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 7: Ninth Line & Britannia Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	144	979	123	906	131	193	840	121	175	824	143
v/c Ratio	0.50	0.67	0.48	0.61	0.19	0.78	0.84	0.25	0.76	0.85	0.30
Control Delay	25.4	36.6	25.4	37.5	13.9	51.5	57.5	21.1	50.0	58.9	18.2
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	37.0	25.4	37.5	13.9	51.5	57.5	21.1	50.0	58.9	18.2
Queue Length 50th (m)	21.6	118.6	18.2	112.0	9.1	36.2	123.9	12.7	32.6	122.1	12.0
Queue Length 95th (m)	41.1	171.4	35.7	163.6	27.8	65.7	160.5	31.4	58.2	158.6	32.1
Internal Link Dist (m)		192.6		220.1			171.1			609.8	
Turn Bay Length (m)	60.0		60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	337	1458	295	1478	682	315	1246	583	297	1218	577
Starvation Cap Reductn	0	138	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.74	0.42	0.61	0.19	0.61	0.67	0.21	0.59	0.68	0.25

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	992	0	0	1185	49	130
Future Volume (vph)	992	0	0	1185	49	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3614	1750	1581
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3614	1750	1581
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						130
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Adj. Flow (vph)	992	0	0	1185	49	130
Shared Lane Traffic (%)						
Lane Group Flow (vph)	992	0	0	1185	49	130
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	120.0			120.0	40.0	40.0
Total Split (%)	75.0%			75.0%	25.0%	25.0%
Maximum Green (s)	114.0			114.0	33.0	33.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	114.0			114.0	9.4	9.4
Actuated g/C Ratio	0.84			0.84	0.07	0.07
v/c Ratio	0.33			0.39	0.41	0.57
Control Delay	3.0			3.3	70.9	19.6
Queue Delay	0.0			0.4	0.0	0.0
Total Delay	3.0			3.6	70.9	19.6
LOS	A			A	E	B
Approach Delay	3.0			3.6	33.6	
Approach LOS	A			A	C	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 136.4	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 5.6	Intersection LOS: A
Intersection Capacity Utilization 62.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	992	1185	49	130
v/c Ratio	0.33	0.39	0.41	0.57
Control Delay	3.0	3.3	70.9	19.6
Queue Delay	0.0	0.4	0.0	0.0
Total Delay	3.0	3.6	70.9	19.6
Queue Length 50th (m)	25.9	33.4	13.6	0.0
Queue Length 95th (m)	37.7	48.1	27.3	20.6
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	3020	3020	423	481
Starvation Cap Reductn	0	1135	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.63	0.12	0.27

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	634	1105	0	388	54
Future Volume (vph)	0	634	1105	0	388	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3614	0	1767	1536
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3614	0	1767	1536
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						51
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	1%	4%
Adj. Flow (vph)	0	634	1105	0	388	54
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	634	1105	0	388	54
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		88.0	88.0		72.0	72.0
Total Split (%)		55.0%	55.0%		45.0%	45.0%
Maximum Green (s)		82.0	82.0		65.0	65.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		82.3	82.3		33.1	33.1
Actuated g/C Ratio		0.64	0.64		0.26	0.26
v/c Ratio		0.27	0.48		0.85	0.12
Control Delay		11.3	13.7		63.1	10.4
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		11.3	13.7		63.1	10.4
LOS		B	B		E	B
Approach Delay		11.3	13.7		56.7	
Approach LOS		B	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 128.4	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 21.7	Intersection LOS: C
Intersection Capacity Utilization 62.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	634	1105	388	54
v/c Ratio	0.27	0.48	0.85	0.12
Control Delay	11.3	13.7	63.1	10.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.3	13.7	63.1	10.4
Queue Length 50th (m)	36.0	74.5	98.4	0.6
Queue Length 95th (m)	58.4	115.1	136.8	10.9
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2315	2315	897	805
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.48	0.43	0.07

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	396	294	0	1226	1664	0
Future Volume (vph)	396	294	0	1226	1664	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.975	0.850				
Flt Protected	0.960					
Satd. Flow (prot)	3065	1411	0	4980	5079	0
Flt Permitted	0.960					
Satd. Flow (perm)	3065	1411	0	4980	5079	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	16	*171				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	13%	3%	0%	3%	1%	0%
Adj. Flow (vph)	408	303	0	1264	1715	0
Shared Lane Traffic (%)		27%				
Lane Group Flow (vph)	490	221	0	1264	1715	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	60.0	60.0		100.0	100.0	
Total Split (%)	37.5%	37.5%		62.5%	62.5%	
Maximum Green (s)	52.5	52.5		93.5	93.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	30.7	30.7		95.2	95.2	
Actuated g/C Ratio	0.23	0.23		0.70	0.70	
v/c Ratio	0.70	0.49		0.36	0.48	
Control Delay	52.1	15.3		9.0	10.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	52.1	15.3		9.0	10.3	
LOS	D	B		A	B	
Approach Delay	40.6			9.0	10.3	
Approach LOS	D			A	B	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 135.9	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 15.7	Intersection LOS: B
Intersection Capacity Utilization 65.1%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	490	221	1264	1715
v/c Ratio	0.70	0.49	0.36	0.48
Control Delay	52.1	15.3	9.0	10.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	52.1	15.3	9.0	10.3
Queue Length 50th (m)	63.8	12.5	47.3	72.3
Queue Length 95th (m)	83.0	39.4	69.0	103.0
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1252	673	3488	3557
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.39	0.33	0.36	0.48

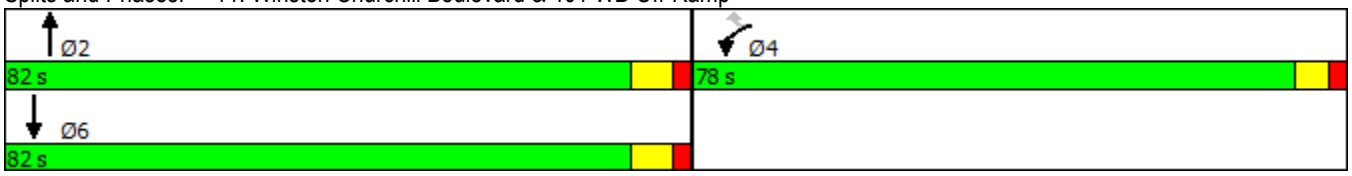
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	720	741	1353	0	0	1282
Future Volume (vph)	720	741	1353	0	0	1282
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.91
Frt	0.958	0.850				
Flt Protected	0.965					
Satd. Flow (prot)	3318	1411	4839	0	0	4932
Flt Permitted	0.965					
Satd. Flow (perm)	3318	1411	4839	0	0	4932
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	21	*419				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	3%	6%	0%	0%	4%
Adj. Flow (vph)	742	764	1395	0	0	1322
Shared Lane Traffic (%)		38%				
Lane Group Flow (vph)	1032	474	1395	0	0	1322
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	78.0	78.0	82.0			82.0
Total Split (%)	48.8%	48.8%	51.3%			51.3%
Maximum Green (s)	71.5	71.5	74.5			74.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	56.7	56.7	77.4			77.4
Actuated g/C Ratio	0.39	0.39	0.54			0.54
v/c Ratio	0.78	0.59	0.54			0.50
Control Delay	41.8	7.4	23.9			23.1
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	41.8	7.4	23.9			23.1
LOS	D	A	C			C
Approach Delay	31.0		23.9			23.1
Approach LOS	C		C			C

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 144.2	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 26.2	Intersection LOS: C
Intersection Capacity Utilization 65.1%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	1032	474	1395	1322
v/c Ratio	0.78	0.59	0.54	0.50
Control Delay	41.8	7.4	23.9	23.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	41.8	7.4	23.9	23.1
Queue Length 50th (m)	135.9	11.3	96.1	88.4
Queue Length 95th (m)	161.2	43.7	138.6	128.0
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1698	923	2597	2647
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.61	0.51	0.54	0.50

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1621	0	0	928	13	161
Future Volume (vph)	1621	0	0	928	13	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3510	2935	1507
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3510	2935	1507
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						53
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	4%	18%	6%
Adj. Flow (vph)	1621	0	0	928	13	161
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1621	0	0	928	13	161
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	121.0			121.0	39.0	39.0
Total Split (%)	75.6%			75.6%	24.4%	24.4%
Maximum Green (s)	115.0			115.0	32.0	32.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	115.1			115.1	16.0	16.0
Actuated g/C Ratio	0.80			0.80	0.11	0.11
v/c Ratio	0.57			0.33	0.04	0.75
Control Delay	6.8			4.7	55.7	62.3
Queue Delay	0.3			0.0	0.0	0.0
Total Delay	7.1			4.7	55.7	62.3
LOS	A			A	E	E
Approach Delay	7.1			4.7	61.9	
Approach LOS	A			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 144.2	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 9.8	Intersection LOS: A
Intersection Capacity Utilization 75.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1621	928	13	161
v/c Ratio	0.57	0.33	0.04	0.75
Control Delay	6.8	4.7	55.7	62.3
Queue Delay	0.3	0.0	0.0	0.0
Total Delay	7.1	4.7	55.7	62.3
Queue Length 50th (m)	79.9	34.0	1.8	32.0
Queue Length 95th (m)	126.5	55.6	5.4	58.0
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2857	2802	652	376
Starvation Cap Reductn	570	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.33	0.02	0.43

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2120	688	0	37	53
Future Volume (vph)	0	2120	688	0	37	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3510	0	3148	1309
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3510	0	3148	1309
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						53
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	10%	22%
Adj. Flow (vph)	0	2120	688	0	37	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2120	688	0	37	53
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		134.0	134.0		26.0	26.0
Total Split (%)		83.8%	83.8%		16.3%	16.3%
Maximum Green (s)		128.0	128.0		19.0	19.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		129.5	129.5		8.0	8.0
Actuated g/C Ratio		0.89	0.89		0.05	0.05
v/c Ratio		0.66	0.22		0.22	0.44
Control Delay		4.4	1.8		70.4	27.6
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		4.4	1.8		70.4	27.6
LOS		A	A		E	C
Approach Delay		4.4	1.8		45.2	
Approach LOS		A	A		D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 146.2	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 5.1	Intersection LOS: A
Intersection Capacity Utilization 75.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2120	688	37	53
v/c Ratio	0.66	0.22	0.22	0.44
Control Delay	4.4	1.8	70.4	27.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.4	1.8	70.4	27.6
Queue Length 50th (m)	85.8	14.3	5.7	0.0
Queue Length 95th (m)	123.0	21.8	12.2	14.6
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3202	3110	410	216
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.66	0.22	0.09	0.25

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	343	1326	115	142	623	315	224	670	214	65	498	266
Future Volume (vph)	343	1326	115	142	623	315	224	670	214	65	498	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		50.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00										
Frt		0.988			0.950				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	3569	0	1733	3356	0	1750	3614	1566	1716	3614	1581
Flt Permitted	0.160			0.083			0.177			0.286		
Satd. Flow (perm)	284	3569	0	151	3356	0	326	3614	1566	517	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			60				214			266
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			1301.8			145.2	
Travel Time (s)		14.1			11.0			66.9			7.5	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	1%	0%	3%	4%	2%	2%	1%	2%	4%	1%	1%
Adj. Flow (vph)	343	1326	115	142	623	315	224	670	214	65	498	266
Shared Lane Traffic (%)												
Lane Group Flow (vph)	343	1441	0	142	938	0	224	670	214	65	498	266
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-0.2	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-0.2	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	8.2	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1		9.5	30.1		9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	40.0	82.0		19.0	61.0		24.0	49.0	49.0	10.0	35.0	35.0
Total Split (%)	25.0%	51.3%		11.9%	38.1%		15.0%	30.6%	30.6%	6.3%	21.9%	21.9%
Maximum Green (s)	37.0	75.9		16.0	54.9		21.0	42.6	42.6	7.0	28.6	28.6
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0			15.0			14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	93.9	76.2		76.3	61.6		50.7	39.4	39.4	35.4	25.1	25.1
Actuated g/C Ratio	0.62	0.51		0.51	0.41		0.34	0.26	0.26	0.24	0.17	0.17
v/c Ratio	0.82	0.80		0.72	0.67		0.77	0.71	0.38	0.37	0.83	0.55
Control Delay	39.7	36.2		51.7	38.8		56.5	55.7	7.3	42.1	73.7	10.5
Queue Delay	0.0	5.1		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.7	41.3		51.7	38.8		56.5	55.7	7.3	42.1	73.7	10.5
LOS	D	D		D	D		E	E	A	D	E	B
Approach Delay		41.0			40.5			46.5			50.9	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 150.6
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 43.9 — Intersection LOS: D
Intersection Capacity Utilization 91.5% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 3: Ninth Line & Derry Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	343	1441	142	938	224	670	214	65	498	266
v/c Ratio	0.82	0.80	0.72	0.67	0.77	0.71	0.38	0.37	0.83	0.55
Control Delay	39.7	36.2	51.7	38.8	56.5	55.7	7.3	42.1	73.7	10.5
Queue Delay	0.0	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.7	41.3	51.7	38.8	56.5	55.7	7.3	42.1	73.7	10.5
Queue Length 50th (m)	63.4	205.1	23.4	125.8	53.7	103.4	0.0	14.2	82.0	0.0
Queue Length 95th (m)	102.3	252.6	51.9	168.6	#83.2	130.6	21.2	26.8	106.6	27.1
Internal Link Dist (m)		210.9		158.6		1277.8			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	522	1810	249	1408	309	1026	598	178	689	516
Starvation Cap Reductn	0	307	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.96	0.57	0.67	0.72	0.65	0.36	0.37	0.72	0.52

Intersection Summary

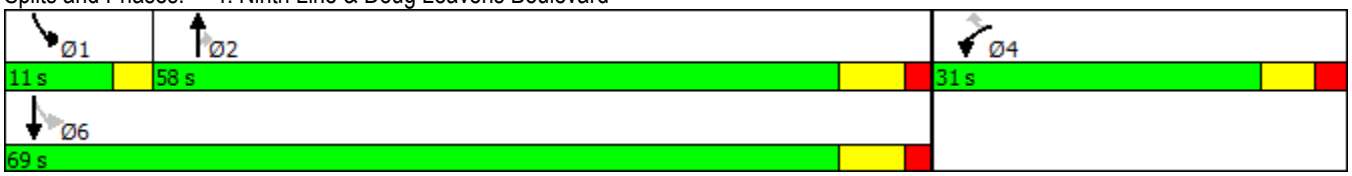
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	144	175	961	101	68	675
Future Volume (vph)	144	175	961	101	68	675
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.3	3.5	3.2	3.0	3.5
Storage Length (m)	0.0	0.0		25.0	80.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				80.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.98	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1636	1531	3500	1222	1649	3535
Flt Permitted	0.950				0.222	
Satd. Flow (perm)	1636	1531	3500	1194	385	3535
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		190		63		
Link Speed (k/h)	50		70			70
Link Distance (m)	218.3		577.9			1301.8
Travel Time (s)	15.7		29.7			66.9
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	2%	9%	0%	1%
Adj. Flow (vph)	157	190	1045	110	74	734
Shared Lane Traffic (%)						
Lane Group Flow (vph)	157	190	1045	110	74	734
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.04	1.01	1.28	1.12	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right	Left	Thru
Leading Detector (m)	7.0	7.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	10.0	10.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	25.5	25.5	26.0	26.0	9.5	26.0
Total Split (s)	31.0	31.0	58.0	58.0	11.0	69.0
Total Split (%)	31.0%	31.0%	58.0%	58.0%	11.0%	69.0%
Maximum Green (s)	24.5	24.5	51.0	51.0	8.0	62.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.5	2.5	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.5	-1.5	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	8.0	8.0	8.0	8.0		8.0
Flash Dont Walk (s)	8.0	8.0	10.0	10.0		10.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	15.5	15.5	56.6	56.6	68.4	64.4
Actuated g/C Ratio	0.17	0.17	0.63	0.63	0.76	0.72
v/c Ratio	0.56	0.45	0.47	0.14	0.18	0.29
Control Delay	41.7	8.6	10.9	4.9	4.4	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.7	8.6	10.9	4.9	4.4	5.3
LOS	D	A	B	A	A	A
Approach Delay	23.6		10.3			5.2
Approach LOS	C		B			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 89.9	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay: 10.5	Intersection LOS: B
Intersection Capacity Utilization 50.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Doug Leavens Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	157	190	1045	110	74	734
v/c Ratio	0.56	0.45	0.47	0.14	0.18	0.29
Control Delay	41.7	8.6	10.9	4.9	4.4	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.7	8.6	10.9	4.9	4.4	5.3
Queue Length 50th (m)	26.3	0.0	50.4	3.2	2.7	21.1
Queue Length 95th (m)	45.9	17.2	81.2	11.9	7.6	36.3
Internal Link Dist (m)	194.3		553.9			1277.8
Turn Bay Length (m)				25.0	80.0	
Base Capacity (vph)	473	578	2203	775	433	2532
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.33	0.47	0.14	0.17	0.29

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	48	69	1005	36	31	815
Future Volume (vph)	48	69	1005	36	31	815
Ideal Flow (vphpl)	1900	1900	1900	1900	1640	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.0	3.5
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				15.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.995			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	1507	3442	0	1412	3500
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1685	1507	3442	0	1412	3500
Link Speed (k/h)	50		70			70
Link Distance (m)	166.2		289.9			265.1
Travel Time (s)	12.0		14.9			13.6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	3%	9%	3%	2%
Adj. Flow (vph)	50	72	1047	38	32	849
Shared Lane Traffic (%)						
Lane Group Flow (vph)	50	72	1085	0	32	849
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.01	1.31	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.9%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	48	69	1005	36	31	815
Future Volume (Veh/h)	48	69	1005	36	31	815
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	50	72	1047	38	32	849
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			290			
pX, platoon unblocked	0.89	0.89			0.89	
vC, conflicting volume	1554	542			1085	
vC1, stage 1 conf vol	1066					
vC2, stage 2 conf vol	488					
vCu, unblocked vol	1367	224			837	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	90			95	
cM capacity (veh/h)	310	695			696	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	50	72	698	387	32	424	424
Volume Left	50	0	0	0	32	0	0
Volume Right	0	72	0	38	0	0	0
cSH	310	695	1700	1700	696	1700	1700
Volume to Capacity	0.16	0.10	0.41	0.23	0.05	0.25	0.25
Queue Length 95th (m)	4.5	2.8	0.0	0.0	1.2	0.0	0.0
Control Delay (s)	18.8	10.8	0.0	0.0	10.4	0.0	0.0
Lane LOS	C	B			B		
Approach Delay (s)	14.1		0.0		0.4		
Approach LOS	B						

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	127	94	933	93	21	841
Future Volume (vph)	127	94	933	93	21	841
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.6	3.6
Storage Length (m)	15.0	0.0		25.0	20.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1636	1436	3433	1276	1683	3574
Flt Permitted	0.950				0.265	
Satd. Flow (perm)	1636	1436	3433	1276	469	3574
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		97		61		
Link Speed (k/h)	50		70			70
Link Distance (m)	186.9		633.8			289.9
Travel Time (s)	13.5		32.6			14.9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	5%	4%	8%	5%	1%
Adj. Flow (vph)	131	97	962	96	22	867
Shared Lane Traffic (%)						
Lane Group Flow (vph)	131	97	962	96	22	867
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.22	1.03	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right		Thru
Leading Detector (m)	9.0	9.0	10.0	2.0	20.0	10.0
Trailing Detector (m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Position(m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Size(m)	9.2	10.0	0.6	2.0	10.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	24.0	24.0	25.0	25.0	9.5	25.0
Total Split (s)	31.0	31.0	59.0	59.0	10.0	69.0
Total Split (%)	31.0%	31.0%	59.0%	59.0%	10.0%	69.0%
Maximum Green (s)	25.0	25.0	52.0	52.0	7.0	62.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	13.6	13.6	64.0	64.0	71.2	67.2
Actuated g/C Ratio	0.15	0.15	0.70	0.70	0.78	0.74
v/c Ratio	0.54	0.33	0.40	0.10	0.05	0.33
Control Delay	42.9	10.1	7.1	3.3	3.0	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	10.1	7.1	3.3	3.0	4.8
LOS	D	B	A	A	A	A
Approach Delay	29.0		6.8			4.7
Approach LOS	C		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 90.8	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay: 8.3	Intersection LOS: A
Intersection Capacity Utilization 41.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Osprey Boulevard

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	131	97	962	96	22	867
v/c Ratio	0.54	0.33	0.40	0.10	0.05	0.33
Control Delay	42.9	10.1	7.1	3.3	3.0	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	10.1	7.1	3.3	3.0	4.8
Queue Length 50th (m)	21.5	0.0	27.0	1.4	0.7	23.1
Queue Length 95th (m)	39.0	13.0	61.8	8.7	2.7	39.3
Internal Link Dist (m)	162.9		609.8			265.9
Turn Bay Length (m)	15.0			25.0	20.0	
Base Capacity (vph)	469	481	2419	917	488	2645
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.20	0.40	0.10	0.05	0.33

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	1311	374	103	574	156	173	659	149	77	799	100
Future Volume (vph)	143	1311	374	103	574	156	173	659	149	77	799	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		0.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98	1.00		
Frt		0.967				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3495	0	1733	3579	1439	1767	3544	1581	1608	3614	1581
Flt Permitted	0.381			0.050			0.099			0.246		
Satd. Flow (perm)	716	3495	0	91	3579	1439	184	3544	1557	416	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33				156			96			82
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	3%	2%	11%	1%	3%	1%	11%	1%	1%
Adj. Flow (vph)	143	1311	374	103	574	156	173	659	149	77	799	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	143	1685	0	103	574	156	173	659	149	77	799	100
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template		Thru		Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		8
Detector Phase	5	2		1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	11.6	87.0		11.0	86.4	86.4	16.0	51.2	51.2	10.8	46.0	46.0
Total Split (%)	7.3%	54.4%		6.9%	54.0%	54.0%	10.0%	32.0%	32.0%	6.8%	28.8%	28.8%
Maximum Green (s)	8.6	80.9		8.0	80.3	80.3	13.0	43.5	43.5	7.8	38.3	38.3
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0			11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	92.4	80.9		91.6	80.5	80.5	58.0	42.9	42.9	49.5	37.3	37.3
Actuated g/C Ratio	0.58	0.51		0.58	0.51	0.51	0.36	0.27	0.27	0.31	0.23	0.23
v/c Ratio	0.30	0.94		0.77	0.32	0.19	0.88	0.69	0.30	0.42	0.94	0.23
Control Delay	16.1	47.3		63.3	23.9	3.4	77.7	56.5	19.0	41.3	79.1	14.8
Queue Delay	0.0	44.7		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.1	92.1		63.3	23.9	3.4	77.7	56.5	19.0	41.3	79.1	14.8
LOS	B	F		E	C	A	E	E	B	D	E	B
Approach Delay		86.1			24.9			54.6			69.5	
Approach LOS		F			C			D			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 159	
Natural Cycle: 125	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 64.9	Intersection LOS: E
Intersection Capacity Utilization 103.7%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 7: Ninth Line & Britannia Road

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	143	1685	103	574	156	173	659	149	77	799	100
v/c Ratio	0.30	0.94	0.77	0.32	0.19	0.88	0.69	0.30	0.42	0.94	0.23
Control Delay	16.1	47.3	63.3	23.9	3.4	77.7	56.5	19.0	41.3	79.1	14.8
Queue Delay	0.0	44.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.1	92.1	63.3	23.9	3.4	77.7	56.5	19.0	41.3	79.1	14.8
Queue Length 50th (m)	20.4	272.3	17.6	59.0	0.0	40.5	104.6	13.5	17.1	138.8	4.7
Queue Length 95th (m)	31.6	#321.3	#50.7	73.0	12.4	#85.5	127.7	34.0	30.1	#177.2	21.1
Internal Link Dist (m)		192.6		220.1			171.1			609.8	
Turn Bay Length (m)	60.0		60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	474	1795	135	1812	805	196	969	496	189	871	442
Starvation Cap Reductn	0	339	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	1.16	0.76	0.32	0.19	0.88	0.68	0.30	0.41	0.92	0.23

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1591	0	0	686	21	221
Future Volume (vph)	1591	0	0	686	21	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3579	1608	1566
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3579	1608	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						46
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	2%	11%	2%
Adj. Flow (vph)	1591	0	0	686	21	221
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1591	0	0	686	21	221
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	114.0			114.0	46.0	46.0
Total Split (%)	71.3%			71.3%	28.8%	28.8%
Maximum Green (s)	108.0			108.0	39.0	39.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	108.2			108.2	21.6	21.6
Actuated g/C Ratio	0.76			0.76	0.15	0.15
v/c Ratio	0.58			0.25	0.09	0.80
Control Delay	9.2			6.0	51.4	67.4
Queue Delay	0.4			0.0	0.0	0.0
Total Delay	9.6			6.0	51.4	67.4
LOS	A			A	D	E
Approach Delay	9.6			6.0	66.0	
Approach LOS	A			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 142.8	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 14.0	Intersection LOS: B
Intersection Capacity Utilization 68.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1591	686	21	221
v/c Ratio	0.58	0.25	0.09	0.80
Control Delay	9.2	6.0	51.4	67.4
Queue Delay	0.4	0.0	0.0	0.0
Total Delay	9.6	6.0	51.4	67.4
Queue Length 50th (m)	95.0	28.2	5.5	51.4
Queue Length 95th (m)	147.6	46.8	13.8	81.9
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2738	2711	440	462
Starvation Cap Reductn	538	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.72	0.25	0.05	0.48

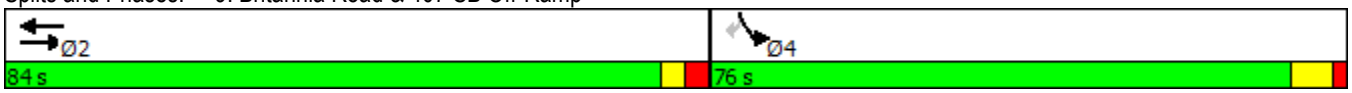
Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1189	547	0	447	22
Future Volume (vph)	0	1189	547	0	447	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3579	0	1684	1210
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3579	0	1684	1210
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						19
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	2%	0%	6%	32%
Adj. Flow (vph)	0	1189	547	0	447	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1189	547	0	447	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		84.0	84.0		76.0	76.0
Total Split (%)		52.5%	52.5%		47.5%	47.5%
Maximum Green (s)		78.0	78.0		69.0	69.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		78.4	78.4		39.5	39.5
Actuated g/C Ratio		0.60	0.60		0.30	0.30
v/c Ratio		0.55	0.26		0.88	0.06
Control Delay		18.2	14.0		62.4	13.5
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		18.2	14.0		62.4	13.5
LOS		B	B		E	B
Approach Delay		18.2	14.0		60.1	
Approach LOS		B	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 131	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 26.1	Intersection LOS: C
Intersection Capacity Utilization 68.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1189	547	447	22
v/c Ratio	0.55	0.26	0.88	0.06
Control Delay	18.2	14.0	62.4	13.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.2	14.0	62.4	13.5
Queue Length 50th (m)	96.0	34.9	115.0	0.6
Queue Length 95th (m)	149.6	58.4	157.7	6.8
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2162	2141	891	649
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	0.26	0.50	0.03

Intersection Summary

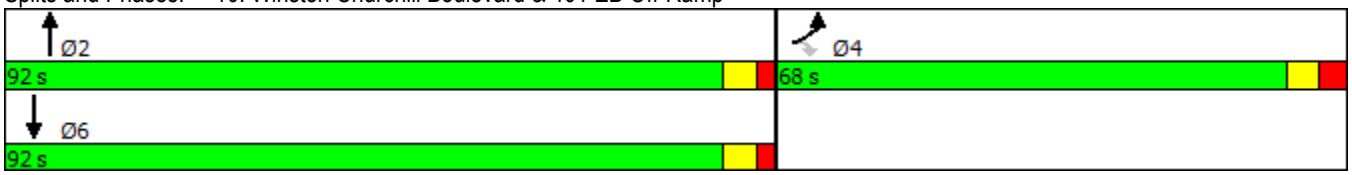
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	350	292	0	1080	996	0
Future Volume (vph)	350	292	0	1080	996	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.969	0.850				
Flt Protected	0.962					
Satd. Flow (prot)	3280	1425	0	4980	4885	0
Flt Permitted	0.962					
Satd. Flow (perm)	3280	1425	0	4980	4885	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	24	84				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	0%	3%	5%	0%
Adj. Flow (vph)	368	307	0	1137	1048	0
Shared Lane Traffic (%)		31%				
Lane Group Flow (vph)	463	212	0	1137	1048	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	68.0	68.0		92.0	92.0	
Total Split (%)	42.5%	42.5%		57.5%	57.5%	
Maximum Green (s)	60.5	60.5		85.5	85.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	26.1	26.1		87.1	87.1	
Actuated g/C Ratio	0.21	0.21		0.71	0.71	
v/c Ratio	0.65	0.58		0.32	0.30	
Control Delay	46.4	32.1		7.5	7.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	46.4	32.1		7.5	7.4	
LOS	D	C		A	A	
Approach Delay	41.9			7.5	7.4	
Approach LOS	D			A	A	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 123.2
Natural Cycle: 50
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 15.6 — Intersection LOS: B
Intersection Capacity Utilization 47.2% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	463	212	1137	1048
v/c Ratio	0.65	0.58	0.32	0.30
Control Delay	46.4	32.1	7.5	7.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	46.4	32.1	7.5	7.4
Queue Length 50th (m)	53.0	31.9	35.8	32.5
Queue Length 95th (m)	70.8	60.6	51.7	47.3
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1690	770	3520	3453
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.28	0.32	0.30

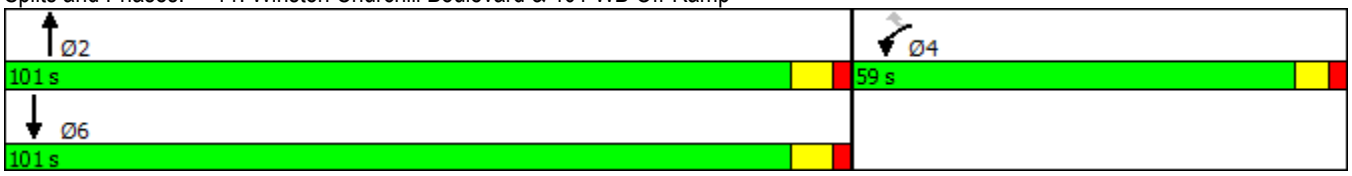
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	211	389	1180	0	0	1342
Future Volume (vph)	211	389	1180	0	0	1342
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.91
Frt	0.928	0.850				
Flt Protected	0.975					
Satd. Flow (prot)	2972	1298	4980	0	0	4839
Flt Permitted	0.975					
Satd. Flow (perm)	2972	1298	4980	0	0	4839
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	69	69				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	10%	12%	3%	0%	0%	6%
Adj. Flow (vph)	222	409	1242	0	0	1413
Shared Lane Traffic (%)		50%				
Lane Group Flow (vph)	427	204	1242	0	0	1413
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	59.0	59.0	101.0			101.0
Total Split (%)	36.9%	36.9%	63.1%			63.1%
Maximum Green (s)	52.5	52.5	93.5			93.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	24.8	24.8	96.2			96.2
Actuated g/C Ratio	0.19	0.19	0.73			0.73
v/c Ratio	0.69	0.68	0.34			0.40
Control Delay	47.1	43.7	6.9			7.4
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	47.1	43.7	6.9			7.4
LOS	D	D	A			A
Approach Delay	46.0		6.9			7.4
Approach LOS	D		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 131	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 47.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	427	204	1242	1413
v/c Ratio	0.69	0.68	0.34	0.40
Control Delay	47.1	43.7	6.9	7.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	47.1	43.7	6.9	7.4
Queue Length 50th (m)	47.3	37.9	38.2	46.1
Queue Length 95th (m)	65.2	68.5	59.4	71.0
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1267	576	3655	3551
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.34	0.35	0.34	0.40

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1024	0	0	1865	77	181
Future Volume (vph)	1024	0	0	1865	77	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3614	3362	1597
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3614	3362	1597
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						181
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	1%	3%	0%
Adj. Flow (vph)	1024	0	0	1865	77	181
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1024	0	0	1865	77	181
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	128.0			128.0	32.0	32.0
Total Split (%)	80.0%			80.0%	20.0%	20.0%
Maximum Green (s)	122.0			122.0	25.0	25.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	122.1			122.1	9.4	9.4
Actuated g/C Ratio	0.84			0.84	0.07	0.07
v/c Ratio	0.34			0.61	0.35	0.66
Control Delay	2.9			4.8	68.8	20.7
Queue Delay	0.0			0.9	0.0	0.0
Total Delay	2.9			5.6	68.8	20.7
LOS	A			A	E	C
Approach Delay	2.9			5.6	35.1	
Approach LOS	A			A	D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 144.5	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 7.2	Intersection LOS: A
Intersection Capacity Utilization 86.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1024	1865	77	181
v/c Ratio	0.34	0.61	0.35	0.66
Control Delay	2.9	4.8	68.8	20.7
Queue Delay	0.0	0.9	0.0	0.0
Total Delay	2.9	5.6	68.8	20.7
Queue Length 50th (m)	26.5	71.2	11.6	0.0
Queue Length 95th (m)	41.9	109.0	20.4	24.6
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3023	3053	581	426
Starvation Cap Reductn	0	801	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.34	0.83	0.13	0.42

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	875	1826	0	209	399
Future Volume (vph)	0	875	1826	0	209	399
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3510	3614	0	3429	1597
Flt Permitted					0.950	
Satd. Flow (perm)	0	3510	3614	0	3429	1597
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						17
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	4%	1%	0%	1%	0%
Adj. Flow (vph)	0	875	1826	0	209	399
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	875	1826	0	209	399
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		102.0	102.0		58.0	58.0
Total Split (%)		63.8%	63.8%		36.3%	36.3%
Maximum Green (s)		96.0	96.0		51.0	51.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		96.3	96.3		40.3	40.3
Actuated g/C Ratio		0.64	0.64		0.27	0.27
v/c Ratio		0.39	0.79		0.23	0.90
Control Delay		14.2	23.8		42.4	74.7
Queue Delay		0.0	1.4		0.0	0.0
Total Delay		14.2	25.2		42.4	74.7
LOS		B	C		D	E
Approach Delay		14.2	25.2		63.6	
Approach LOS		B	C		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 149.7	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 29.3	Intersection LOS: C
Intersection Capacity Utilization 86.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	875	1826	209	399
v/c Ratio	0.39	0.79	0.23	0.90
Control Delay	14.2	23.8	42.4	74.7
Queue Delay	0.0	1.4	0.0	0.0
Total Delay	14.2	25.2	42.4	74.7
Queue Length 50th (m)	65.5	207.6	26.2	116.3
Queue Length 95th (m)	94.3	285.3	37.3	160.6
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2258	2325	1172	556
Starvation Cap Reductn	0	293	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.39	0.90	0.18	0.72

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	748	230	217	1501	101	110	612	185	228	807	315
Future Volume (vph)	167	748	230	217	1501	101	110	612	185	228	807	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		50.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt		0.965			0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1767	3443	0	1767	3579	0	1767	3614	1581	1785	3614	1581
Flt Permitted	0.052			0.195			0.133			0.121		
Satd. Flow (perm)	97	3443	0	363	3579	0	247	3614	1556	227	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			6				185			187
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			1301.8			145.2	
Travel Time (s)		14.1			11.0			66.9			7.5	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	3%	0%	1%	1%	2%	1%	1%	1%	0%	1%	1%
Adj. Flow (vph)	167	748	230	217	1501	101	110	612	185	228	807	315
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	978	0	217	1602	0	110	612	185	228	807	315
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	10.0	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1		9.5	30.1		9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	17.0	76.0		25.0	84.0		12.0	38.0	38.0	21.0	47.0	47.0
Total Split (%)	10.6%	47.5%		15.6%	52.5%		7.5%	23.8%	23.8%	13.1%	29.4%	29.4%
Maximum Green (s)	14.0	69.9		22.0	77.9		9.0	31.6	31.6	18.0	40.6	40.6
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0			15.0			14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	93.5	77.5		94.1	78.0		42.4	30.0	30.0	54.0	38.7	38.7
Actuated g/C Ratio	0.60	0.49		0.60	0.50		0.27	0.19	0.19	0.34	0.25	0.25
v/c Ratio	0.86	0.57		0.65	0.90		0.72	0.89	0.41	0.90	0.91	0.59
Control Delay	75.9	29.3		22.8	44.4		63.7	77.6	9.7	78.0	72.1	25.5
Queue Delay	0.0	0.5		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.9	29.8		22.8	44.4		63.7	77.6	9.7	78.0	72.1	25.5
LOS	E	C		C	D		E	E	A	E	E	C
Approach Delay		36.6			41.8			62.1			62.2	
Approach LOS		D			D			E			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 157	
Natural Cycle: 100	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 49.5	Intersection LOS: D
Intersection Capacity Utilization 100.7%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 3: Ninth Line & Derry Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	167	978	217	1602	110	612	185	228	807	315
v/c Ratio	0.86	0.57	0.65	0.90	0.72	0.89	0.41	0.90	0.91	0.59
Control Delay	75.9	29.3	22.8	44.4	63.7	77.6	9.7	78.0	72.1	25.5
Queue Delay	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.9	29.8	22.8	44.4	63.7	77.6	9.7	78.0	72.1	25.5
Queue Length 50th (m)	37.9	116.1	30.8	257.1	25.6	105.4	0.0	57.0	137.8	37.2
Queue Length 95th (m)	#81.3	147.4	44.8	294.7	#47.5	#134.3	22.2	#108.7	#167.3	71.7
Internal Link Dist (m)		210.9		158.6		1277.8			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	207	1716	421	1781	154	728	461	256	936	547
Starvation Cap Reductn	0	340	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.71	0.52	0.90	0.71	0.84	0.40	0.89	0.86	0.58

Intersection Summary

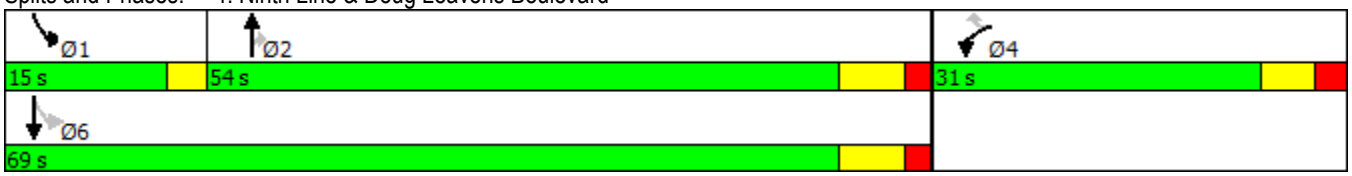
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	107	61	837	136	125	1140
Future Volume (vph)	107	61	837	136	125	1140
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.3	3.5	3.2	3.0	3.5
Storage Length (m)	0.0	0.0		25.0	80.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				80.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	1561	3535	1332	1649	3535
Flt Permitted	0.950				0.288	
Satd. Flow (perm)	1685	1561	3535	1298	499	3535
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		64		90		
Link Speed (k/h)	50		70			70
Link Distance (m)	218.3		577.9			1301.8
Travel Time (s)	15.7		29.7			66.9
Confl. Peds. (#/hr)				2	2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	111	64	872	142	130	1188
Shared Lane Traffic (%)						
Lane Group Flow (vph)	111	64	872	142	130	1188
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.04	1.01	1.28	1.12	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right	Left	Thru
Leading Detector (m)	7.0	7.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	10.0	10.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	25.5	25.5	26.0	26.0	9.5	26.0
Total Split (s)	31.0	31.0	54.0	54.0	15.0	69.0
Total Split (%)	31.0%	31.0%	54.0%	54.0%	15.0%	69.0%
Maximum Green (s)	24.5	24.5	47.0	47.0	12.0	62.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.5	2.5	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.5	-1.5	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	8.0	8.0	8.0	8.0		8.0
Flash Dont Walk (s)	8.0	8.0	10.0	10.0		10.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	12.9	12.9	57.0	57.0	71.1	68.2
Actuated g/C Ratio	0.15	0.15	0.66	0.66	0.82	0.78
v/c Ratio	0.45	0.22	0.38	0.16	0.25	0.43
Control Delay	39.6	10.8	8.8	3.9	3.7	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.6	10.8	8.8	3.9	3.7	4.9
LOS	D	B	A	A	A	A
Approach Delay	29.0		8.1			4.8
Approach LOS	C		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 87	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 7.8	Intersection LOS: A
Intersection Capacity Utilization 48.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Doug Leavens Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	111	64	872	142	130	1188
v/c Ratio	0.45	0.22	0.38	0.16	0.25	0.43
Control Delay	39.6	10.8	8.8	3.9	3.7	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.6	10.8	8.8	3.9	3.7	4.9
Queue Length 50th (m)	18.0	0.0	36.3	3.2	4.0	34.9
Queue Length 95th (m)	33.9	10.8	58.7	12.5	9.9	57.0
Internal Link Dist (m)	194.3		553.9			1277.8
Turn Bay Length (m)				25.0	80.0	
Base Capacity (vph)	503	511	2316	881	593	2769
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.13	0.38	0.16	0.22	0.43

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	23	18	957	62	43	1206
Future Volume (vph)	23	18	957	62	43	1206
Ideal Flow (vphpl)	1900	1900	1900	1900	1640	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.0	3.5
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				15.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	1507	3505	0	1426	3570
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1685	1507	3505	0	1426	3570
Link Speed (k/h)	50		70			70
Link Distance (m)	166.2		289.9			265.1
Travel Time (s)	12.0		14.9			13.6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	1%	0%	2%	0%
Adj. Flow (vph)	24	19	997	65	45	1256
Shared Lane Traffic (%)						
Lane Group Flow (vph)	24	19	1062	0	45	1256
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.01	1.31	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	23	18	957	62	43	1206
Future Volume (Veh/h)	23	18	957	62	43	1206
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	24	19	997	65	45	1256
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			290			
pX, platoon unblocked	0.89	0.89			0.89	
vC, conflicting volume	1748	531			1062	
vC1, stage 1 conf vol	1030					
vC2, stage 2 conf vol	718					
vCu, unblocked vol	1587	214			813	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	97			94	
cM capacity (veh/h)	284	707			717	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	24	19	665	397	45	628	628
Volume Left	24	0	0	0	45	0	0
Volume Right	0	19	0	65	0	0	0
cSH	284	707	1700	1700	717	1700	1700
Volume to Capacity	0.08	0.03	0.39	0.23	0.06	0.37	0.37
Queue Length 95th (m)	2.2	0.7	0.0	0.0	1.6	0.0	0.0
Control Delay (s)	18.9	10.2	0.0	0.0	10.4	0.0	0.0
Lane LOS	C	B			B		
Approach Delay (s)	15.1		0.0		0.4		
Approach LOS	C						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	45.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	71	30	1027	105	45	1182
Future Volume (vph)	71	30	1027	105	45	1182
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.6	3.6
Storage Length (m)	15.0	0.0		25.0	20.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.98	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1574	1463	3535	1351	1767	3610
Flt Permitted	0.950				0.238	
Satd. Flow (perm)	1574	1463	3535	1321	443	3610
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		31		65		
Link Speed (k/h)	50		70			70
Link Distance (m)	186.9		633.8			289.9
Travel Time (s)	13.5		32.6			14.9
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	3%	1%	2%	0%	0%
Adj. Flow (vph)	74	31	1070	109	47	1231
Shared Lane Traffic (%)						
Lane Group Flow (vph)	74	31	1070	109	47	1231
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.22	1.03	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right		Thru
Leading Detector (m)	9.0	9.0	10.0	2.0	20.0	10.0
Trailing Detector (m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Position(m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Size(m)	9.2	10.0	0.6	2.0	10.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	24.0	24.0	25.0	25.0	9.5	25.0
Total Split (s)	28.0	28.0	61.0	61.0	11.0	72.0
Total Split (%)	28.0%	28.0%	61.0%	61.0%	11.0%	72.0%
Maximum Green (s)	22.0	22.0	54.0	54.0	8.0	65.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	11.1	11.1	69.2	69.2	77.1	74.1
Actuated g/C Ratio	0.12	0.12	0.76	0.76	0.84	0.81
v/c Ratio	0.39	0.15	0.40	0.11	0.10	0.42
Control Delay	42.3	14.1	6.2	2.9	2.4	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.3	14.1	6.2	2.9	2.4	4.0
LOS	D	B	A	A	A	A
Approach Delay	34.0		5.9			3.9
Approach LOS	C		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 91.3	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.42	
Intersection Signal Delay: 6.1	Intersection LOS: A
Intersection Capacity Utilization 50.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Osprey Boulevard

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	74	31	1070	109	47	1231
v/c Ratio	0.39	0.15	0.40	0.11	0.10	0.42
Control Delay	42.3	14.1	6.2	2.9	2.4	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.3	14.1	6.2	2.9	2.4	4.0
Queue Length 50th (m)	12.2	0.0	40.4	2.3	1.1	31.7
Queue Length 95th (m)	25.6	7.8	61.5	8.6	3.6	51.2
Internal Link Dist (m)	162.9		609.8			265.9
Turn Bay Length (m)	15.0			25.0	20.0	
Base Capacity (vph)	397	392	2677	1016	519	2930
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.08	0.40	0.11	0.09	0.42

Intersection Summary

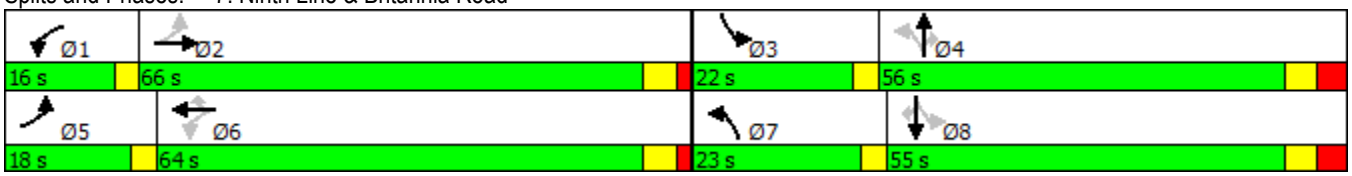
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	703	323	140	972	151	197	878	127	188	874	155
Future Volume (vph)	161	703	323	140	972	151	197	878	127	188	874	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		0.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98	1.00		
Frt		0.953				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3455	0	1785	3614	1551	1767	3614	1597	1716	3614	1536
Flt Permitted	0.150			0.137			0.096			0.100		
Satd. Flow (perm)	282	3455	0	257	3614	1551	179	3614	1570	181	3614	1536
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		54				88			64			91
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	1%	1%	0%	4%	1%	4%
Adj. Flow (vph)	161	703	323	140	972	151	197	878	127	188	874	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	161	1026	0	140	972	151	197	878	127	188	874	155
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template		Thru		Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		8
Detector Phase	5	2		1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	18.0	66.0		16.0	64.0	64.0	23.0	56.0	56.0	22.0	55.0	55.0
Total Split (%)	11.3%	41.3%		10.0%	40.0%	40.0%	14.4%	35.0%	35.0%	13.8%	34.4%	34.4%
Maximum Green (s)	15.0	59.9		13.0	57.9	57.9	20.0	48.3	48.3	19.0	47.3	47.3
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0			11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	75.2	60.3		73.5	59.5	59.5	61.8	41.5	41.5	60.3	40.8	40.8
Actuated g/C Ratio	0.51	0.41		0.50	0.40	0.40	0.42	0.28	0.28	0.41	0.28	0.28
v/c Ratio	0.61	0.71		0.58	0.67	0.22	0.81	0.86	0.26	0.83	0.88	0.32
Control Delay	30.3	39.2		30.0	40.6	15.1	60.4	60.3	22.3	63.2	62.0	19.9
Queue Delay	0.0	0.7		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	39.9		30.0	40.6	15.1	60.4	60.3	22.3	63.2	62.0	19.9
LOS	C	D		C	D	B	E	E	C	E	E	B
Approach Delay		38.6			36.4			56.3			56.8	
Approach LOS		D			D			E			E	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 147.5
Natural Cycle: 85
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 46.9 — Intersection LOS: D
Intersection Capacity Utilization 90.8% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 7: Ninth Line & Britannia Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	161	1026	140	972	151	197	878	127	188	874	155
v/c Ratio	0.61	0.71	0.58	0.67	0.22	0.81	0.86	0.26	0.83	0.88	0.32
Control Delay	30.3	39.2	30.0	40.6	15.1	60.4	60.3	22.3	63.2	62.0	19.9
Queue Delay	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	39.9	30.0	40.6	15.1	60.4	60.3	22.3	63.2	62.0	19.9
Queue Length 50th (m)	26.1	135.6	22.4	131.6	12.4	41.5	136.1	14.6	39.2	136.6	15.0
Queue Length 95th (m)	44.9	179.8	39.5	176.3	32.0	72.4	170.4	33.9	#71.2	171.3	36.5
Internal Link Dist (m)		192.6		220.1			171.1			609.8	
Turn Bay Length (m)	60.0		60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	301	1445	266	1457	677	293	1191	560	275	1167	558
Starvation Cap Reductn	0	152	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.79	0.53	0.67	0.22	0.67	0.74	0.23	0.68	0.75	0.28

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1047	0	0	1274	52	141
Future Volume (vph)	1047	0	0	1274	52	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3614	1750	1581
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3614	1750	1581
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						141
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Adj. Flow (vph)	1047	0	0	1274	52	141
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1047	0	0	1274	52	141
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	121.0			121.0	39.0	39.0
Total Split (%)	75.6%			75.6%	24.4%	24.4%
Maximum Green (s)	115.0			115.0	32.0	32.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	115.1			115.1	9.6	9.6
Actuated g/C Ratio	0.84			0.84	0.07	0.07
v/c Ratio	0.35			0.42	0.43	0.59
Control Delay	3.1			3.5	72.0	19.4
Queue Delay	0.0			0.4	0.0	0.0
Total Delay	3.1			3.9	72.0	19.4
LOS	A			A	E	B
Approach Delay	3.1			3.9	33.6	
Approach LOS	A			A	C	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 137.7	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 5.8	Intersection LOS: A
Intersection Capacity Utilization 65.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1047	1274	52	141
v/c Ratio	0.35	0.42	0.43	0.59
Control Delay	3.1	3.5	72.0	19.4
Queue Delay	0.0	0.4	0.0	0.0
Total Delay	3.1	3.9	72.0	19.4
Queue Length 50th (m)	28.3	37.7	14.6	0.0
Queue Length 95th (m)	41.2	54.4	29.1	21.4
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	3019	3019	406	475
Starvation Cap Reductn	0	1097	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.35	0.66	0.13	0.30

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	677	1186	0	402	57
Future Volume (vph)	0	677	1186	0	402	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3614	0	1767	1536
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3614	0	1767	1536
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						51
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	1%	4%
Adj. Flow (vph)	0	677	1186	0	402	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	677	1186	0	402	57
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		89.0	89.0		71.0	71.0
Total Split (%)		55.6%	55.6%		44.4%	44.4%
Maximum Green (s)		83.0	83.0		64.0	64.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		83.3	83.3		34.7	34.7
Actuated g/C Ratio		0.64	0.64		0.26	0.26
v/c Ratio		0.29	0.52		0.86	0.13
Control Delay		12.0	14.9		64.0	11.1
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		12.0	14.9		64.0	11.1
LOS		B	B		E	B
Approach Delay		12.0	14.9		57.4	
Approach LOS		B	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 131.1	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 22.5	Intersection LOS: C
Intersection Capacity Utilization 65.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	677	1186	402	57
v/c Ratio	0.29	0.52	0.86	0.13
Control Delay	12.0	14.9	64.0	11.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.0	14.9	64.0	11.1
Queue Length 50th (m)	40.5	85.9	104.0	1.2
Queue Length 95th (m)	65.3	132.2	143.4	11.6
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2296	2296	865	778
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.29	0.52	0.46	0.07

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	420	312	0	1354	1738	0
Future Volume (vph)	420	312	0	1354	1738	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.975	0.850				
Flt Protected	0.960					
Satd. Flow (prot)	3065	1411	0	4980	5079	0
Flt Permitted	0.960					
Satd. Flow (perm)	3065	1411	0	4980	5079	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	16	*171				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	13%	3%	0%	3%	1%	0%
Adj. Flow (vph)	433	322	0	1396	1792	0
Shared Lane Traffic (%)		27%				
Lane Group Flow (vph)	520	235	0	1396	1792	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	60.0	60.0		100.0	100.0	
Total Split (%)	37.5%	37.5%		62.5%	62.5%	
Maximum Green (s)	52.5	52.5		93.5	93.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	32.4	32.4		95.2	95.2	
Actuated g/C Ratio	0.24	0.24		0.69	0.69	
v/c Ratio	0.71	0.51		0.41	0.51	
Control Delay	52.2	16.9		10.0	11.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	52.2	16.9		10.0	11.3	
LOS	D	B		B	B	
Approach Delay	41.2			10.0	11.3	
Approach LOS	D			B	B	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 137.6	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 16.6	Intersection LOS: B
Intersection Capacity Utilization 69.7%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	520	235	1396	1792
v/c Ratio	0.71	0.51	0.41	0.51
Control Delay	52.2	16.9	10.0	11.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	52.2	16.9	10.0	11.3
Queue Length 50th (m)	68.7	16.2	58.1	83.0
Queue Length 95th (m)	88.4	44.7	81.8	114.5
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1236	667	3444	3513
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	0.35	0.41	0.51

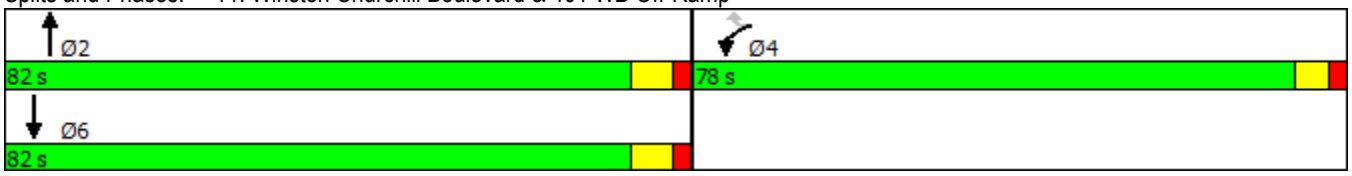
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	772	787	1494	0	0	1332
Future Volume (vph)	772	787	1494	0	0	1332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.91
Frt	0.959	0.850				
Flt Protected	0.965					
Satd. Flow (prot)	3322	1411	4839	0	0	4932
Flt Permitted	0.965					
Satd. Flow (perm)	3322	1411	4839	0	0	4932
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	14	*419				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	3%	6%	0%	0%	4%
Adj. Flow (vph)	796	811	1540	0	0	1373
Shared Lane Traffic (%)		37%				
Lane Group Flow (vph)	1096	511	1540	0	0	1373
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	78.0	78.0	82.0			82.0
Total Split (%)	48.8%	48.8%	51.3%			51.3%
Maximum Green (s)	71.5	71.5	74.5			74.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	60.8	60.8	77.3			77.3
Actuated g/C Ratio	0.41	0.41	0.52			0.52
v/c Ratio	0.80	0.62	0.61			0.53
Control Delay	42.5	9.3	27.3			25.5
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	42.5	9.3	27.3			25.5
LOS	D	A	C			C
Approach Delay	31.9		27.3			25.5
Approach LOS	C		C			C

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 148.2	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 28.4	Intersection LOS: C
Intersection Capacity Utilization 69.7%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	1096	511	1540	1373
v/c Ratio	0.80	0.62	0.61	0.53
Control Delay	42.5	9.3	27.3	25.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	42.5	9.3	27.3	25.5
Queue Length 50th (m)	149.6	19.4	121.7	102.5
Queue Length 95th (m)	176.5	59.2	158.5	134.6
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1650	909	2525	2573
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.66	0.56	0.61	0.53

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1786	0	0	1042	14	178
Future Volume (vph)	1786	0	0	1042	14	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3510	2935	1507
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3510	2935	1507
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						37
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	4%	18%	6%
Adj. Flow (vph)	1786	0	0	1042	14	178
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1786	0	0	1042	14	178
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	120.0			120.0	40.0	40.0
Total Split (%)	75.0%			75.0%	25.0%	25.0%
Maximum Green (s)	114.0			114.0	33.0	33.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	114.2			114.2	19.3	19.3
Actuated g/C Ratio	0.78			0.78	0.13	0.13
v/c Ratio	0.64			0.38	0.04	0.77
Control Delay	9.1			6.0	53.9	70.1
Queue Delay	0.5			0.3	0.0	0.0
Total Delay	9.6			6.3	53.9	70.1
LOS	A			A	D	E
Approach Delay	9.6			6.3	68.9	
Approach LOS	A			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 146.5	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 12.3	Intersection LOS: B
Intersection Capacity Utilization 81.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1786	1042	14	178
v/c Ratio	0.64	0.38	0.04	0.77
Control Delay	9.1	6.0	53.9	70.1
Queue Delay	0.5	0.3	0.0	0.0
Total Delay	9.6	6.3	53.9	70.1
Queue Length 50th (m)	109.7	45.6	1.9	42.4
Queue Length 95th (m)	170.1	72.8	5.6	70.4
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2788	2735	662	368
Starvation Cap Reductn	499	977	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.78	0.59	0.02	0.48

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2334	774	0	40	58
Future Volume (vph)	0	2334	774	0	40	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3510	0	3148	1309
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3510	0	3148	1309
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						58
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	10%	22%
Adj. Flow (vph)	0	2334	774	0	40	58
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2334	774	0	40	58
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		135.0	135.0		25.0	25.0
Total Split (%)		84.4%	84.4%		15.6%	15.6%
Maximum Green (s)		129.0	129.0		18.0	18.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		130.5	130.5		8.1	8.1
Actuated g/C Ratio		0.89	0.89		0.05	0.05
v/c Ratio		0.73	0.25		0.23	0.46
Control Delay		5.5	1.9		71.1	27.5
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		5.5	1.9		71.1	27.5
LOS		A	A		E	C
Approach Delay		5.5	1.9		45.3	
Approach LOS		A	A		D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 147.3	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 5.9	Intersection LOS: A
Intersection Capacity Utilization 81.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2334	774	40	58
v/c Ratio	0.73	0.25	0.23	0.46
Control Delay	5.5	1.9	71.1	27.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	5.5	1.9	71.1	27.5
Queue Length 50th (m)	111.2	16.6	6.2	0.0
Queue Length 95th (m)	161.0	25.5	12.9	15.4
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3202	3110	385	211
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.73	0.25	0.10	0.27

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	377	1460	129	162	689	370	246	728	254	105	539	279
Future Volume (vph)	377	1460	129	162	689	370	246	728	254	105	539	279
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		50.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00										
Frt		0.988			0.948				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	3569	0	1733	3350	0	1750	3614	1566	1716	3614	1581
Flt Permitted	0.090			0.069			0.137			0.173		
Satd. Flow (perm)	160	3569	0	126	3350	0	252	3614	1566	313	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			68				201			260
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			1301.8			145.2	
Travel Time (s)		14.1			11.0			66.9			7.5	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	1%	0%	3%	4%	2%	2%	1%	2%	4%	1%	1%
Adj. Flow (vph)	377	1460	129	162	689	370	246	728	254	105	539	279
Shared Lane Traffic (%)												
Lane Group Flow (vph)	377	1589	0	162	1059	0	246	728	254	105	539	279
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-0.2	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-0.2	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	8.2	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1		9.5	30.1		9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	40.0	84.0		18.0	62.0		24.0	46.0	46.0	12.0	34.0	34.0
Total Split (%)	25.0%	52.5%		11.3%	38.8%		15.0%	28.8%	28.8%	7.5%	21.3%	21.3%
Maximum Green (s)	37.0	77.9		15.0	55.9		21.0	39.6	39.6	9.0	27.6	27.6
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0			15.0			14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	97.0	78.0		74.2	58.2		53.0	37.7	37.7	38.6	26.3	26.3
Actuated g/C Ratio	0.62	0.50		0.48	0.37		0.34	0.24	0.24	0.25	0.17	0.17
v/c Ratio	0.90	0.89		0.84	0.82		0.88	0.83	0.48	0.67	0.88	0.58
Control Delay	66.1	43.0		76.3	48.6		72.7	65.8	15.1	59.9	80.5	13.5
Queue Delay	0.0	33.4		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.1	76.5		76.3	48.6		72.7	65.8	15.1	59.9	80.5	13.5
LOS	E	E		E	D		E	E	B	E	F	B
Approach Delay		74.5			52.3			56.7			57.9	
Approach LOS		E			D			E			E	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 156
Natural Cycle: 100
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 62.4 — Intersection LOS: E
Intersection Capacity Utilization 99.1% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 3: Ninth Line & Derry Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	377	1589	162	1059	246	728	254	105	539	279
v/c Ratio	0.90	0.89	0.84	0.82	0.88	0.83	0.48	0.67	0.88	0.58
Control Delay	66.1	43.0	76.3	48.6	72.7	65.8	15.1	59.9	80.5	13.5
Queue Delay	0.0	33.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.1	76.5	76.3	48.6	72.7	65.8	15.1	59.9	80.5	13.5
Queue Length 50th (m)	98.2	253.5	36.8	164.9	63.0	122.0	14.0	24.6	93.7	5.4
Queue Length 95th (m)	#151.8	290.9	#74.3	196.7	#112.7	147.6	41.7	#44.4	#122.7	35.0
Internal Link Dist (m)		210.9		158.6		1277.8			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	461	1788	216	1291	287	918	547	159	640	493
Starvation Cap Reductn	0	301	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	1.07	0.75	0.82	0.86	0.79	0.46	0.66	0.84	0.57

Intersection Summary

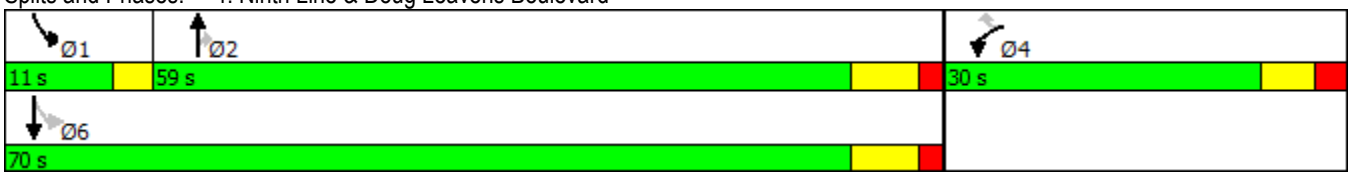
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	148	178	1058	106	72	723
Future Volume (vph)	148	178	1058	106	72	723
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.3	3.5	3.2	3.0	3.5
Storage Length (m)	0.0	0.0		25.0	80.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				80.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.98		
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1636	1531	3500	1222	1649	3535
Flt Permitted	0.950				0.190	
Satd. Flow (perm)	1636	1531	3500	1194	330	3535
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		193		61		
Link Speed (k/h)	50		70			70
Link Distance (m)	218.3		577.9			1301.8
Travel Time (s)	15.7		29.7			66.9
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	2%	9%	0%	1%
Adj. Flow (vph)	161	193	1150	115	78	786
Shared Lane Traffic (%)						
Lane Group Flow (vph)	161	193	1150	115	78	786
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.04	1.01	1.28	1.12	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right	Left	Thru
Leading Detector (m)	7.0	7.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	10.0	10.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	25.5	25.5	26.0	26.0	9.5	26.0
Total Split (s)	30.0	30.0	59.0	59.0	11.0	70.0
Total Split (%)	30.0%	30.0%	59.0%	59.0%	11.0%	70.0%
Maximum Green (s)	23.5	23.5	52.0	52.0	8.0	63.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.5	2.5	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.5	-1.5	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	8.0	8.0	8.0	8.0		8.0
Flash Dont Walk (s)	8.0	8.0	10.0	10.0		10.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	15.9	15.9	57.5	57.5	69.3	65.3
Actuated g/C Ratio	0.17	0.17	0.63	0.63	0.76	0.72
v/c Ratio	0.57	0.45	0.52	0.15	0.21	0.31
Control Delay	42.4	8.5	11.6	5.2	4.7	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.4	8.5	11.6	5.2	4.7	5.5
LOS	D	A	B	A	A	A
Approach Delay	23.9		11.0			5.4
Approach LOS	C		B			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 91.2	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 10.9	Intersection LOS: B
Intersection Capacity Utilization 53.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Doug Leavens Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	161	193	1150	115	78	786
v/c Ratio	0.57	0.45	0.52	0.15	0.21	0.31
Control Delay	42.4	8.5	11.6	5.2	4.7	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.4	8.5	11.6	5.2	4.7	5.5
Queue Length 50th (m)	27.4	0.0	58.7	3.7	2.9	23.4
Queue Length 95th (m)	47.2	17.5	94.1	13.0	8.1	40.1
Internal Link Dist (m)	194.3		553.9			1277.8
Turn Bay Length (m)				25.0	80.0	
Base Capacity (vph)	449	560	2206	775	395	2532
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.34	0.52	0.15	0.20	0.31

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	49	71	1107	37	32	881
Future Volume (vph)	49	71	1107	37	32	881
Ideal Flow (vphpl)	1900	1900	1900	1900	1640	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.0	3.5
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				15.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.995			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	1507	3442	0	1412	3500
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1685	1507	3442	0	1412	3500
Link Speed (k/h)	50		70			70
Link Distance (m)	166.2		289.9			265.1
Travel Time (s)	12.0		14.9			13.6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	3%	9%	3%	2%
Adj. Flow (vph)	51	74	1153	39	33	918
Shared Lane Traffic (%)						
Lane Group Flow (vph)	51	74	1192	0	33	918
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.01	1.31	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	49	71	1107	37	32	881
Future Volume (Veh/h)	49	71	1107	37	32	881
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	51	74	1153	39	33	918
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			290			
pX, platoon unblocked	0.87	0.87			0.87	
vC, conflicting volume	1698	596			1192	
vC1, stage 1 conf vol	1172					
vC2, stage 2 conf vol	525					
vCu, unblocked vol	1496	225			913	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	89			95	
cM capacity (veh/h)	278	680			638	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	51	74	769	423	33	459	459
Volume Left	51	0	0	0	33	0	0
Volume Right	0	74	0	39	0	0	0
cSH	278	680	1700	1700	638	1700	1700
Volume to Capacity	0.18	0.11	0.45	0.25	0.05	0.27	0.27
Queue Length 95th (m)	5.3	2.9	0.0	0.0	1.3	0.0	0.0
Control Delay (s)	20.8	10.9	0.0	0.0	11.0	0.0	0.0
Lane LOS	C	B			B		
Approach Delay (s)	15.0		0.0		0.4		
Approach LOS	B						

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	42.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	131	96	1021	96	21	908
Future Volume (vph)	131	96	1021	96	21	908
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.6	3.6
Storage Length (m)	15.0	0.0		25.0	20.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1636	1436	3433	1276	1683	3574
Flt Permitted	0.950				0.236	
Satd. Flow (perm)	1636	1436	3433	1276	418	3574
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		99		60		
Link Speed (k/h)	50		70			70
Link Distance (m)	186.9		633.8			289.9
Travel Time (s)	13.5		32.6			14.9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	5%	4%	8%	5%	1%
Adj. Flow (vph)	135	99	1053	99	22	936
Shared Lane Traffic (%)						
Lane Group Flow (vph)	135	99	1053	99	22	936
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.22	1.03	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right		Thru
Leading Detector (m)	9.0	9.0	10.0	2.0	20.0	10.0
Trailing Detector (m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Position(m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Size(m)	9.2	10.0	0.6	2.0	10.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	24.0	24.0	25.0	25.0	9.5	25.0
Total Split (s)	29.0	29.0	61.0	61.0	10.0	71.0
Total Split (%)	29.0%	29.0%	61.0%	61.0%	10.0%	71.0%
Maximum Green (s)	23.0	23.0	54.0	54.0	7.0	64.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	14.0	14.0	65.9	65.9	73.1	69.1
Actuated g/C Ratio	0.15	0.15	0.71	0.71	0.79	0.74
v/c Ratio	0.55	0.33	0.43	0.11	0.05	0.35
Control Delay	44.3	10.1	7.5	3.4	3.1	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.3	10.1	7.5	3.4	3.1	5.0
LOS	D	B	A	A	A	A
Approach Delay	29.8		7.1			4.9
Approach LOS	C		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 93.1	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.55	
Intersection Signal Delay: 8.5	Intersection LOS: A
Intersection Capacity Utilization 43.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Osprey Boulevard

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	135	99	1053	99	22	936
v/c Ratio	0.55	0.33	0.43	0.11	0.05	0.35
Control Delay	44.3	10.1	7.5	3.4	3.1	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.3	10.1	7.5	3.4	3.1	5.0
Queue Length 50th (m)	22.9	0.0	31.4	1.6	0.7	26.3
Queue Length 95th (m)	41.2	13.4	71.1	9.2	2.7	44.3
Internal Link Dist (m)	162.9		609.8			265.9
Turn Bay Length (m)	15.0			25.0	20.0	
Base Capacity (vph)	422	444	2429	920	450	2651
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.22	0.43	0.11	0.05	0.35

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	1465	405	116	635	175	187	722	170	100	853	114
Future Volume (vph)	167	1465	405	116	635	175	187	722	170	100	853	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		0.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98	1.00		
Frt		0.968				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3498	0	1733	3579	1439	1767	3544	1581	1608	3614	1581
Flt Permitted	0.338			0.051			0.098			0.200		
Satd. Flow (perm)	635	3498	0	93	3579	1439	182	3544	1557	338	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32				175			100			82
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	3%	2%	11%	1%	3%	1%	11%	1%	1%
Adj. Flow (vph)	167	1465	405	116	635	175	187	722	170	100	853	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	1870	0	116	635	175	187	722	170	100	853	114
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template		Thru		Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		8
Detector Phase	5	2		1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	13.7	87.3		11.1	84.7	84.7	16.1	51.2	51.2	10.4	45.5	45.5
Total Split (%)	8.6%	54.6%		6.9%	52.9%	52.9%	10.1%	32.0%	32.0%	6.5%	28.4%	28.4%
Maximum Green (s)	10.7	81.2		8.1	78.6	78.6	13.1	43.5	43.5	7.4	37.8	37.8
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0			11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	94.4	81.2		90.4	79.2	79.2	58.6	43.5	43.5	49.9	37.8	37.8
Actuated g/C Ratio	0.59	0.51		0.56	0.50	0.50	0.37	0.27	0.27	0.31	0.24	0.24
v/c Ratio	0.37	1.04		0.86	0.36	0.22	0.95	0.75	0.34	0.61	1.00	0.26
Control Delay	16.9	71.6		79.3	25.6	3.5	92.9	59.0	21.2	53.4	90.9	18.1
Queue Delay	0.0	23.1		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	94.7		79.3	25.6	3.5	92.9	59.0	21.2	53.4	90.9	18.1
LOS	B	F		E	C	A	F	E	C	D	F	B
Approach Delay		88.3			28.2			58.9			79.6	
Approach LOS		F			C			E			E	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Natural Cycle: 145
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 69.4 — Intersection LOS: E
Intersection Capacity Utilization 112.0% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 7: Ninth Line & Britannia Road

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	167	1870	116	635	175	187	722	170	100	853	114
v/c Ratio	0.37	1.04	0.86	0.36	0.22	0.95	0.75	0.34	0.61	1.00	0.26
Control Delay	16.9	71.6	79.3	25.6	3.5	92.9	59.0	21.2	53.4	90.9	18.1
Queue Delay	0.0	23.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	94.7	79.3	25.6	3.5	92.9	59.0	21.2	53.4	90.9	18.1
Queue Length 50th (m)	24.0	~353.1	22.2	68.0	0.0	44.9	117.2	18.0	22.6	151.7	8.4
Queue Length 95th (m)	36.3	#396.0	#61.5	83.5	13.3	#97.9	142.1	40.7	37.7	#199.3	26.4
Internal Link Dist (m)		192.6		220.1			171.1			609.8	
Turn Bay Length (m)	60.0		60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	453	1790	135	1772	800	196	964	496	164	853	436
Starvation Cap Reductn	0	305	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	1.26	0.86	0.36	0.22	0.95	0.75	0.34	0.61	1.00	0.26

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1766	0	0	769	23	246
Future Volume (vph)	1766	0	0	769	23	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3579	1608	1566
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3579	1608	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						31
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	2%	11%	2%
Adj. Flow (vph)	1766	0	0	769	23	246
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1766	0	0	769	23	246
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	113.0			113.0	47.0	47.0
Total Split (%)	70.6%			70.6%	29.4%	29.4%
Maximum Green (s)	107.0			107.0	40.0	40.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	107.2			107.2	25.5	25.5
Actuated g/C Ratio	0.74			0.74	0.18	0.18
v/c Ratio	0.66			0.29	0.08	0.82
Control Delay	12.4			7.4	49.4	72.2
Queue Delay	0.6			0.0	0.0	0.0
Total Delay	13.0			7.4	49.4	72.2
LOS	B			A	D	E
Approach Delay	13.0			7.4	70.3	
Approach LOS	B			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 145.7	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 17.0	Intersection LOS: B
Intersection Capacity Utilization 74.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1766	769	23	246
v/c Ratio	0.66	0.29	0.08	0.82
Control Delay	12.4	7.4	49.4	72.2
Queue Delay	0.6	0.0	0.0	0.0
Total Delay	13.0	7.4	49.4	72.2
Queue Length 50th (m)	131.0	37.2	5.9	64.1
Queue Length 95th (m)	201.2	60.1	14.4	96.6
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2659	2633	442	453
Starvation Cap Reductn	465	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.80	0.29	0.05	0.54

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1358	612	0	456	24
Future Volume (vph)	0	1358	612	0	456	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3579	0	1684	1210
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3579	0	1684	1210
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						19
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	2%	0%	6%	32%
Adj. Flow (vph)	0	1358	612	0	456	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1358	612	0	456	24
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		88.0	88.0		72.0	72.0
Total Split (%)		55.0%	55.0%		45.0%	45.0%
Maximum Green (s)		82.0	82.0		65.0	65.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		82.4	82.4		42.0	42.0
Actuated g/C Ratio		0.60	0.60		0.31	0.31
v/c Ratio		0.63	0.29		0.89	0.06
Control Delay		20.7	14.9		65.0	14.8
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		20.7	14.9		65.0	14.8
LOS		C	B		E	B
Approach Delay		20.7	14.9		62.5	
Approach LOS		C	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 137.5	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 27.5	Intersection LOS: C
Intersection Capacity Utilization 74.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	464	345	0	1599	1869	0
Future Volume (vph)	464	345	0	1599	1869	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.975	0.850				
Flt Protected	0.960					
Satd. Flow (prot)	3065	1411	0	4980	5079	0
Flt Permitted	0.960					
Satd. Flow (perm)	3065	1411	0	4980	5079	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	13	*171				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	13%	3%	0%	3%	1%	0%
Adj. Flow (vph)	478	356	0	1648	1927	0
Shared Lane Traffic (%)		27%				
Lane Group Flow (vph)	574	260	0	1648	1927	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	60.0	60.0		100.0	100.0	
Total Split (%)	37.5%	37.5%		62.5%	62.5%	
Maximum Green (s)	52.5	52.5		93.5	93.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	36.0	36.0		95.2	95.2	
Actuated g/C Ratio	0.25	0.25		0.67	0.67	
v/c Ratio	0.73	0.53		0.49	0.56	
Control Delay	52.5	19.2		12.4	13.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	52.5	19.2		12.4	13.6	
LOS	D	B		B	B	
Approach Delay	42.1			12.4	13.6	
Approach LOS	D			B	B	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 141.2	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 18.5	Intersection LOS: B
Intersection Capacity Utilization 78.3%	ICU Level of Service D
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	574	260	1648	1927
v/c Ratio	0.73	0.53	0.49	0.56
Control Delay	52.5	19.2	12.4	13.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	52.5	19.2	12.4	13.6
Queue Length 50th (m)	78.1	23.4	79.8	100.7
Queue Length 95th (m)	98.7	54.2	112.8	140.4
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1203	655	3356	3423
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.40	0.49	0.56

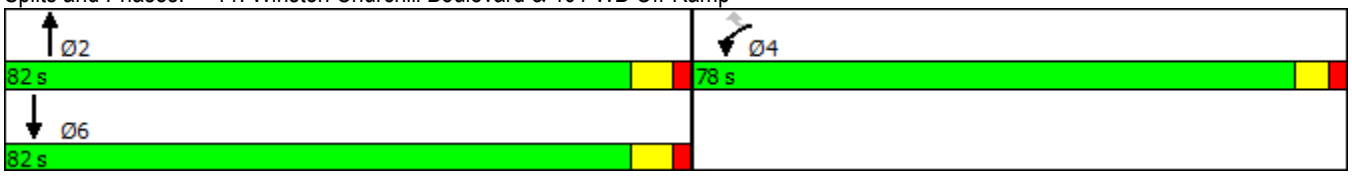
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	867	869	1764	0	0	1421
Future Volume (vph)	867	869	1764	0	0	1421
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.91
Frt	0.959	0.850				
Flt Protected	0.965					
Satd. Flow (prot)	3322	1411	4839	0	0	4932
Flt Permitted	0.965					
Satd. Flow (perm)	3322	1411	4839	0	0	4932
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	6	*419				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	3%	6%	0%	0%	4%
Adj. Flow (vph)	894	896	1819	0	0	1465
Shared Lane Traffic (%)		37%				
Lane Group Flow (vph)	1226	564	1819	0	0	1465
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	78.0	78.0	82.0			82.0
Total Split (%)	48.8%	48.8%	51.3%			51.3%
Maximum Green (s)	71.5	71.5	74.5			74.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	67.6	67.6	77.2			77.2
Actuated g/C Ratio	0.44	0.44	0.50			0.50
v/c Ratio	0.84	0.66	0.75			0.60
Control Delay	44.9	11.9	34.5			29.6
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	44.9	11.9	34.5			29.6
LOS	D	B	C			C
Approach Delay	34.5		34.5			29.6
Approach LOS	C		C			C

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 154.8	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 33.1	Intersection LOS: C
Intersection Capacity Utilization 78.3%	ICU Level of Service D
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	1226	564	1819	1465
v/c Ratio	0.84	0.66	0.75	0.60
Control Delay	44.9	11.9	34.5	29.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	44.9	11.9	34.5	29.6
Queue Length 50th (m)	179.3	37.4	182.6	130.6
Queue Length 95th (m)	209.9	85.0	202.5	146.9
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1573	887	2413	2459
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.78	0.64	0.75	0.60

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1138	0	0	2029	85	202
Future Volume (vph)	1138	0	0	2029	85	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3614	3362	1597
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3614	3362	1597
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						153
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	1%	3%	0%
Adj. Flow (vph)	1138	0	0	2029	85	202
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1138	0	0	2029	85	202
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	128.0			128.0	32.0	32.0
Total Split (%)	80.0%			80.0%	20.0%	20.0%
Maximum Green (s)	122.0			122.0	25.0	25.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	122.1			122.1	11.7	11.7
Actuated g/C Ratio	0.83			0.83	0.08	0.08
v/c Ratio	0.38			0.68	0.32	0.75
Control Delay	3.8			6.6	66.3	36.2
Queue Delay	0.0			1.3	0.0	0.0
Total Delay	3.8			8.0	66.3	36.2
LOS	A			A	E	D
Approach Delay	3.8			8.0	45.1	
Approach LOS	A			A	D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 146.8	
Natural Cycle: 75	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 9.7	Intersection LOS: A
Intersection Capacity Utilization 92.9%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1138	2029	85	202
v/c Ratio	0.38	0.68	0.32	0.75
Control Delay	3.8	6.6	66.3	36.2
Queue Delay	0.0	1.3	0.0	0.0
Total Delay	3.8	8.0	66.3	36.2
Queue Length 50th (m)	34.0	94.3	12.8	14.5
Queue Length 95th (m)	61.1	165.3	21.9	43.2
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2976	3005	573	399
Starvation Cap Reductn	0	707	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.88	0.15	0.51

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	974	1985	0	232	440
Future Volume (vph)	0	974	1985	0	232	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3510	3614	0	3429	1597
Flt Permitted					0.950	
Satd. Flow (perm)	0	3510	3614	0	3429	1597
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						12
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	4%	1%	0%	1%	0%
Adj. Flow (vph)	0	974	1985	0	232	440
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	974	1985	0	232	440
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		103.0	103.0		57.0	57.0
Total Split (%)		64.4%	64.4%		35.6%	35.6%
Maximum Green (s)		97.0	97.0		50.0	50.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		97.2	97.2		44.9	44.9
Actuated g/C Ratio		0.63	0.63		0.29	0.29
v/c Ratio		0.44	0.88		0.23	0.93
Control Delay		16.4	30.6		42.2	80.0
Queue Delay		0.0	7.8		0.0	0.0
Total Delay		16.4	38.4		42.2	80.0
LOS		B	D		D	E
Approach Delay		16.4	38.4		66.9	
Approach LOS		B	D		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 155.1	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 37.8	Intersection LOS: D
Intersection Capacity Utilization 92.9%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	974	1985	232	440
v/c Ratio	0.44	0.88	0.23	0.93
Control Delay	16.4	30.6	42.2	80.0
Queue Delay	0.0	7.8	0.0	0.0
Total Delay	16.4	38.4	42.2	80.0
Queue Length 50th (m)	88.7	290.3	29.6	136.3
Queue Length 95th (m)	106.3	334.4	41.4	#198.8
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2198	2263	1107	523
Starvation Cap Reductn	0	263	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	0.99	0.21	0.84

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	812	268	264	1613	143	125	670	208	245	892	347
Future Volume (vph)	195	812	268	264	1613	143	125	670	208	245	892	347
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		50.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt		0.963			0.988				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1767	3438	0	1767	3568	0	1767	3614	1581	1785	3614	1581
Flt Permitted	0.056			0.133			0.135			0.122		
Satd. Flow (perm)	104	3438	0	247	3568	0	251	3614	1556	229	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34			8				208			210
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			1301.8			145.2	
Travel Time (s)		14.1			11.0			66.9			7.5	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	3%	0%	1%	1%	2%	1%	1%	1%	0%	1%	1%
Adj. Flow (vph)	195	812	268	264	1613	143	125	670	208	245	892	347
Shared Lane Traffic (%)												
Lane Group Flow (vph)	195	1080	0	264	1756	0	125	670	208	245	892	347
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-0.2	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-0.2	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	8.2	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1		9.5	30.1		9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	20.0	71.4		29.6	81.0		11.4	36.0	36.0	23.0	47.6	47.6
Total Split (%)	12.5%	44.6%		18.5%	50.6%		7.1%	22.5%	22.5%	14.4%	29.8%	29.8%
Maximum Green (s)	17.0	65.3		26.6	74.9		8.4	29.6	29.6	20.0	41.2	41.2
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0			15.0			14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	89.8	71.3		95.2	74.9		41.5	29.7	29.7	55.5	40.7	40.7
Actuated g/C Ratio	0.57	0.45		0.60	0.47		0.26	0.19	0.19	0.35	0.26	0.26
v/c Ratio	0.88	0.69		0.80	1.03		0.86	0.99	0.45	0.90	0.96	0.62
Control Delay	79.8	37.0		39.9	71.6		84.3	94.4	9.9	77.6	78.5	25.0
Queue Delay	0.0	0.8		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.8	37.8		39.9	71.6		84.3	94.4	9.9	77.6	78.5	25.0
LOS	E	D		D	E		F	F	A	E	E	C
Approach Delay		44.3			67.5			75.6			65.8	
Approach LOS		D			E			E			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 157.9	
Natural Cycle: 120	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 63.4	Intersection LOS: E
Intersection Capacity Utilization 109.2%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 3: Ninth Line & Derry Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	195	1080	264	1756	125	670	208	245	892	347
v/c Ratio	0.88	0.69	0.80	1.03	0.86	0.99	0.45	0.90	0.96	0.62
Control Delay	79.8	37.0	39.9	71.6	84.3	94.4	9.9	77.6	78.5	25.0
Queue Delay	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.8	37.8	39.9	71.6	84.3	94.4	9.9	77.6	78.5	25.0
Queue Length 50th (m)	47.2	145.2	42.5	~334.9	29.3	~120.0	0.0	63.3	156.3	40.4
Queue Length 95th (m)	#94.1	185.9	75.5	#378.9	#63.7	#164.5	24.2	#115.8	#199.9	77.3
Internal Link Dist (m)		210.9		158.6		1277.8			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	238	1571	406	1697	146	679	461	277	943	568
Starvation Cap Reductn	0	224	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.80	0.65	1.03	0.86	0.99	0.45	0.88	0.95	0.61

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

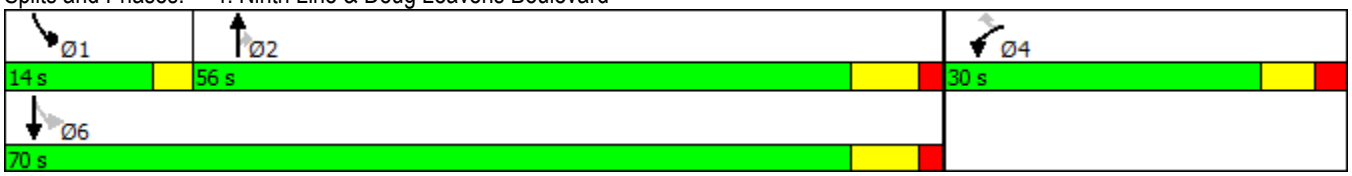
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	111	64	913	141	129	1269
Future Volume (vph)	111	64	913	141	129	1269
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.3	3.5	3.2	3.0	3.5
Storage Length (m)	0.0	0.0		25.0	80.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				80.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	1561	3535	1332	1649	3535
Flt Permitted	0.950				0.255	
Satd. Flow (perm)	1685	1561	3535	1298	442	3535
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		67		89		
Link Speed (k/h)	50		70			70
Link Distance (m)	218.3		577.9			1301.8
Travel Time (s)	15.7		29.7			66.9
Confl. Peds. (#/hr)				2	2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	116	67	951	147	134	1322
Shared Lane Traffic (%)						
Lane Group Flow (vph)	116	67	951	147	134	1322
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.04	1.01	1.28	1.12	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right	Left	Thru
Leading Detector (m)	7.0	7.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	10.0	10.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	25.5	25.5	26.0	26.0	9.5	26.0
Total Split (s)	30.0	30.0	56.0	56.0	14.0	70.0
Total Split (%)	30.0%	30.0%	56.0%	56.0%	14.0%	70.0%
Maximum Green (s)	23.5	23.5	49.0	49.0	11.0	63.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.5	2.5	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.5	-1.5	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	8.0	8.0	8.0	8.0		8.0
Flash Dont Walk (s)	8.0	8.0	10.0	10.0		10.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	13.3	13.3	57.2	57.2	71.6	67.6
Actuated g/C Ratio	0.15	0.15	0.63	0.63	0.79	0.74
v/c Ratio	0.47	0.24	0.43	0.17	0.28	0.50
Control Delay	41.1	10.6	9.9	4.2	4.2	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.1	10.6	9.9	4.2	4.2	5.9
LOS	D	B	A	A	A	A
Approach Delay	29.9		9.1			5.8
Approach LOS	C		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 90.9	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 8.7	Intersection LOS: A
Intersection Capacity Utilization 50.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Doug Leavens Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	116	67	951	147	134	1322
v/c Ratio	0.47	0.24	0.43	0.17	0.28	0.50
Control Delay	41.1	10.6	9.9	4.2	4.2	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.1	10.6	9.9	4.2	4.2	5.9
Queue Length 50th (m)	19.1	0.0	41.2	3.7	4.2	42.0
Queue Length 95th (m)	35.4	11.1	66.7	13.3	10.4	68.2
Internal Link Dist (m)	194.3		553.9			1277.8
Turn Bay Length (m)				25.0	80.0	
Base Capacity (vph)	464	478	2226	850	520	2628
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.14	0.43	0.17	0.26	0.50

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	23	18	1038	64	45	1338
Future Volume (vph)	23	18	1038	64	45	1338
Ideal Flow (vphpl)	1900	1900	1900	1900	1640	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.0	3.5
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				15.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	1507	3505	0	1426	3570
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1685	1507	3505	0	1426	3570
Link Speed (k/h)	50		70			70
Link Distance (m)	166.2		289.9			265.1
Travel Time (s)	12.0		14.9			13.6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	1%	0%	2%	0%
Adj. Flow (vph)	24	19	1081	67	47	1394
Shared Lane Traffic (%)						
Lane Group Flow (vph)	24	19	1148	0	47	1394
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.01	1.31	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	23	18	1038	64	45	1338
Future Volume (Veh/h)	23	18	1038	64	45	1338
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	24	19	1081	67	47	1394
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			290			
pX, platoon unblocked	0.86	0.86			0.86	
vC, conflicting volume	1906	574			1148	
vC1, stage 1 conf vol	1114					
vC2, stage 2 conf vol	791					
vCu, unblocked vol	1730	184			850	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	97			93	
cM capacity (veh/h)	258	718			675	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	24	19	721	427	47	697	697
Volume Left	24	0	0	0	47	0	0
Volume Right	0	19	0	67	0	0	0
cSH	258	718	1700	1700	675	1700	1700
Volume to Capacity	0.09	0.03	0.42	0.25	0.07	0.41	0.41
Queue Length 95th (m)	2.4	0.7	0.0	0.0	1.8	0.0	0.0
Control Delay (s)	20.4	10.2	0.0	0.0	10.7	0.0	0.0
Lane LOS	C	B			B		
Approach Delay (s)	15.9		0.0		0.3		
Approach LOS	C						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	73	31	1126	107	46	1314
Future Volume (vph)	73	31	1126	107	46	1314
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.6	3.6
Storage Length (m)	15.0	0.0		25.0	20.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.98	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1574	1463	3535	1351	1767	3610
Flt Permitted	0.950				0.206	
Satd. Flow (perm)	1574	1463	3535	1321	383	3610
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		32		65		
Link Speed (k/h)	50		70			70
Link Distance (m)	186.9		633.8			289.9
Travel Time (s)	13.5		32.6			14.9
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	3%	1%	2%	0%	0%
Adj. Flow (vph)	76	32	1173	111	48	1369
Shared Lane Traffic (%)						
Lane Group Flow (vph)	76	32	1173	111	48	1369
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.22	1.03	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right		Thru
Leading Detector (m)	9.0	9.0	10.0	2.0	20.0	10.0
Trailing Detector (m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Position(m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Size(m)	9.2	10.0	0.6	2.0	10.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	24.0	24.0	25.0	25.0	9.5	25.0
Total Split (s)	26.0	26.0	64.0	64.0	10.0	74.0
Total Split (%)	26.0%	26.0%	64.0%	64.0%	10.0%	74.0%
Maximum Green (s)	20.0	20.0	57.0	57.0	7.0	67.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	11.3	11.3	68.6	68.6	78.0	75.0
Actuated g/C Ratio	0.12	0.12	0.74	0.74	0.84	0.81
v/c Ratio	0.40	0.16	0.45	0.11	0.11	0.47
Control Delay	43.2	14.3	7.1	3.0	2.5	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	14.3	7.1	3.0	2.5	4.3
LOS	D	B	A	A	A	A
Approach Delay	34.6		6.7			4.3
Approach LOS	C		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 92.4	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.47	
Intersection Signal Delay: 6.6	Intersection LOS: A
Intersection Capacity Utilization 53.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Osprey Boulevard

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	76	32	1173	111	48	1369
v/c Ratio	0.40	0.16	0.45	0.11	0.11	0.47
Control Delay	43.2	14.3	7.1	3.0	2.5	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	14.3	7.1	3.0	2.5	4.3
Queue Length 50th (m)	13.0	0.0	46.7	2.4	1.2	38.0
Queue Length 95th (m)	26.7	8.2	70.7	8.7	3.8	61.2
Internal Link Dist (m)	162.9		609.8			265.9
Turn Bay Length (m)	15.0			25.0	20.0	
Base Capacity (vph)	358	357	2625	998	458	2931
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.09	0.45	0.11	0.10	0.47

Intersection Summary

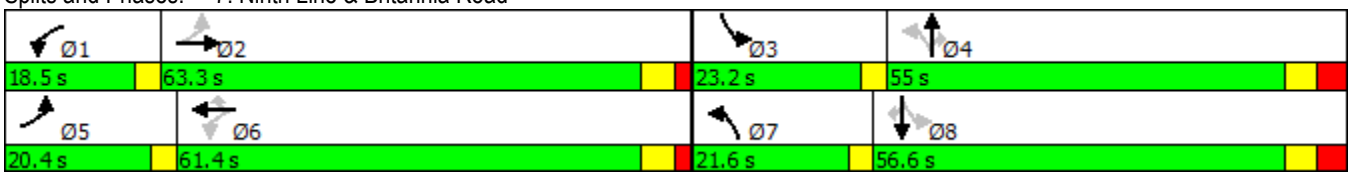
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	758	352	169	1094	190	206	952	138	214	967	179
Future Volume (vph)	195	758	352	169	1094	190	206	952	138	214	967	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		0.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt		0.952				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3451	0	1785	3614	1551	1767	3614	1597	1716	3614	1536
Flt Permitted	0.075			0.082			0.091			0.088		
Satd. Flow (perm)	141	3451	0	154	3614	1551	169	3614	1570	159	3614	1536
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		53				96			64			97
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	1%	1%	0%	4%	1%	4%
Adj. Flow (vph)	195	758	352	169	1094	190	206	952	138	214	967	179
Shared Lane Traffic (%)												
Lane Group Flow (vph)	195	1110	0	169	1094	190	206	952	138	214	967	179
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template		Thru		Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		8
Detector Phase	5	2		1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	20.4	63.3		18.5	61.4	61.4	21.6	55.0	55.0	23.2	56.6	56.6
Total Split (%)	12.8%	39.6%		11.6%	38.4%	38.4%	13.5%	34.4%	34.4%	14.5%	35.4%	35.4%
Maximum Green (s)	17.4	57.2		15.5	55.3	55.3	18.6	47.3	47.3	20.2	48.9	48.9
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0			11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	75.9	57.5		72.8	56.0	56.0	65.2	44.0	44.0	67.6	45.2	45.2
Actuated g/C Ratio	0.50	0.38		0.48	0.37	0.37	0.43	0.29	0.29	0.44	0.30	0.30
v/c Ratio	0.83	0.83		0.77	0.83	0.30	0.84	0.92	0.28	0.86	0.91	0.34
Control Delay	65.5	48.9		56.0	51.7	19.4	66.9	66.6	24.2	68.9	64.4	21.1
Queue Delay	0.0	1.8		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.5	50.7		56.0	51.7	19.4	66.9	66.6	24.2	68.9	64.4	21.1
LOS	E	D		E	D	B	E	E	C	E	E	C
Approach Delay		52.9			48.0			62.1			59.4	
Approach LOS		D			D			E			E	

Intersection Summary

Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 152.8	
Natural Cycle: 95	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 55.4	Intersection LOS: E
Intersection Capacity Utilization 97.9%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 7: Ninth Line & Britannia Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	195	1110	169	1094	190	206	952	138	214	967	179
v/c Ratio	0.83	0.83	0.77	0.83	0.30	0.84	0.92	0.28	0.86	0.91	0.34
Control Delay	65.5	48.9	56.0	51.7	19.4	66.9	66.6	24.2	68.9	64.4	21.1
Queue Delay	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.5	50.7	56.0	51.7	19.4	66.9	66.6	24.2	68.9	64.4	21.1
Queue Length 50th (m)	45.3	175.9	35.4	181.1	22.1	48.1	161.4	18.4	51.1	162.2	20.2
Queue Length 95th (m)	#85.6	207.2	#69.2	211.8	44.1	#88.8	#192.2	38.1	#92.3	191.6	42.7
Internal Link Dist (m)		192.6		220.1			171.1			609.8	
Turn Bay Length (m)	60.0		60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	259	1331	241	1324	628	269	1124	532	278	1162	559
Starvation Cap Reductn	0	101	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.90	0.70	0.83	0.30	0.77	0.85	0.26	0.77	0.83	0.32

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1148	0	0	1439	57	159
Future Volume (vph)	1148	0	0	1439	57	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3614	1750	1581
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3614	1750	1581
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						135
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Adj. Flow (vph)	1148	0	0	1439	57	159
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1148	0	0	1439	57	159
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	122.0			122.0	38.0	38.0
Total Split (%)	76.3%			76.3%	23.8%	23.8%
Maximum Green (s)	116.0			116.0	31.0	31.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	116.0			116.0	10.3	10.3
Actuated g/C Ratio	0.83			0.83	0.07	0.07
v/c Ratio	0.38			0.48	0.44	0.66
Control Delay	3.4			4.0	72.2	27.7
Queue Delay	0.0			0.5	0.0	0.0
Total Delay	3.4			4.6	72.2	27.7
LOS	A			A	E	C
Approach Delay	3.4			4.6	39.5	
Approach LOS	A			A	D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 139.4	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 6.8	Intersection LOS: A
Intersection Capacity Utilization 71.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1148	1439	57	159
v/c Ratio	0.38	0.48	0.44	0.66
Control Delay	3.4	4.0	72.2	27.7
Queue Delay	0.0	0.5	0.0	0.0
Total Delay	3.4	4.6	72.2	27.7
Queue Length 50th (m)	33.2	47.3	16.1	6.7
Queue Length 95th (m)	51.8	72.8	31.2	30.7
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	3008	3008	389	456
Starvation Cap Reductn	0	1016	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.72	0.15	0.35

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	754	1338	0	430	63
Future Volume (vph)	0	754	1338	0	430	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3614	0	1767	1536
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3614	0	1767	1536
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						36
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	1%	4%
Adj. Flow (vph)	0	754	1338	0	430	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	754	1338	0	430	63
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		91.0	91.0		69.0	69.0
Total Split (%)		56.9%	56.9%		43.1%	43.1%
Maximum Green (s)		85.0	85.0		62.0	62.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		85.3	85.3		38.0	38.0
Actuated g/C Ratio		0.63	0.63		0.28	0.28
v/c Ratio		0.33	0.59		0.87	0.14
Control Delay		13.6	17.7		65.7	18.3
Queue Delay		0.0	0.2		0.0	0.0
Total Delay		13.6	17.9		65.7	18.3
LOS		B	B		E	B
Approach Delay		13.6	17.9		59.6	
Approach LOS		B	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 136.4	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 24.6	Intersection LOS: C
Intersection Capacity Utilization 71.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	754	1338	430	63
v/c Ratio	0.33	0.59	0.87	0.14
Control Delay	13.6	17.7	65.7	18.3
Queue Delay	0.0	0.2	0.0	0.0
Total Delay	13.6	17.9	65.7	18.3
Queue Length 50th (m)	50.0	111.6	116.3	5.6
Queue Length 95th (m)	79.6	170.1	157.7	16.8
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2260	2260	806	720
Starvation Cap Reductn	0	272	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.67	0.53	0.09

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	464	345	0	1599	1869	0
Future Volume (vph)	464	345	0	1599	1869	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.975	0.850				
Flt Protected	0.960					
Satd. Flow (prot)	3065	1411	0	4980	5079	0
Flt Permitted	0.960					
Satd. Flow (perm)	3065	1411	0	4980	5079	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	13	*171				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	13%	3%	0%	3%	1%	0%
Adj. Flow (vph)	478	356	0	1648	1927	0
Shared Lane Traffic (%)		27%				
Lane Group Flow (vph)	574	260	0	1648	1927	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	60.0	60.0		100.0	100.0	
Total Split (%)	37.5%	37.5%		62.5%	62.5%	
Maximum Green (s)	52.5	52.5		93.5	93.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	36.0	36.0		95.2	95.2	
Actuated g/C Ratio	0.25	0.25		0.67	0.67	
v/c Ratio	0.73	0.53		0.49	0.56	
Control Delay	52.5	19.2		12.4	13.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	52.5	19.2		12.4	13.6	
LOS	D	B		B	B	
Approach Delay	42.1			12.4	13.6	
Approach LOS	D			B	B	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 141.2	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 18.5	Intersection LOS: B
Intersection Capacity Utilization 78.3%	ICU Level of Service D
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	574	260	1648	1927
v/c Ratio	0.73	0.53	0.49	0.56
Control Delay	52.5	19.2	12.4	13.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	52.5	19.2	12.4	13.6
Queue Length 50th (m)	78.1	23.4	79.8	100.7
Queue Length 95th (m)	98.7	54.2	112.8	140.4
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1203	655	3356	3423
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.40	0.49	0.56

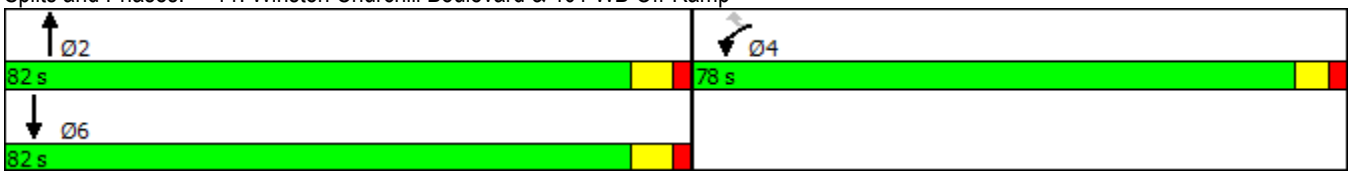
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	867	869	1764	0	0	1421
Future Volume (vph)	867	869	1764	0	0	1421
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.91
Frt	0.959	0.850				
Flt Protected	0.965					
Satd. Flow (prot)	3322	1411	4839	0	0	4932
Flt Permitted	0.965					
Satd. Flow (perm)	3322	1411	4839	0	0	4932
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	6	*419				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	3%	6%	0%	0%	4%
Adj. Flow (vph)	894	896	1819	0	0	1465
Shared Lane Traffic (%)		37%				
Lane Group Flow (vph)	1226	564	1819	0	0	1465
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	78.0	78.0	82.0			82.0
Total Split (%)	48.8%	48.8%	51.3%			51.3%
Maximum Green (s)	71.5	71.5	74.5			74.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	67.6	67.6	77.2			77.2
Actuated g/C Ratio	0.44	0.44	0.50			0.50
v/c Ratio	0.84	0.66	0.75			0.60
Control Delay	44.9	11.9	34.5			29.6
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	44.9	11.9	34.5			29.6
LOS	D	B	C			C
Approach Delay	34.5		34.5			29.6
Approach LOS	C		C			C

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 154.8	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 33.1	Intersection LOS: C
Intersection Capacity Utilization 78.3%	ICU Level of Service D
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	1226	564	1819	1465
v/c Ratio	0.84	0.66	0.75	0.60
Control Delay	44.9	11.9	34.5	29.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	44.9	11.9	34.5	29.6
Queue Length 50th (m)	179.3	37.4	182.6	130.6
Queue Length 95th (m)	209.9	85.0	202.5	146.9
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1573	887	2413	2459
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.78	0.64	0.75	0.60

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1953	0	0	1149	15	197
Future Volume (vph)	1953	0	0	1149	15	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3510	2935	1507
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3510	2935	1507
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						27
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	4%	18%	6%
Adj. Flow (vph)	1953	0	0	1149	15	197
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1953	0	0	1149	15	197
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	121.0			121.0	39.0	39.0
Total Split (%)	75.6%			75.6%	24.4%	24.4%
Maximum Green (s)	115.0			115.0	32.0	32.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	115.2			115.2	22.4	22.4
Actuated g/C Ratio	0.76			0.76	0.15	0.15
v/c Ratio	0.71			0.43	0.03	0.80
Control Delay	11.9			7.3	53.2	76.2
Queue Delay	0.8			0.4	0.0	0.0
Total Delay	12.8			7.7	53.2	76.2
LOS	B			A	D	E
Approach Delay	12.8			7.7	74.5	
Approach LOS	B			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 150.6	
Natural Cycle: 70	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 15.0	Intersection LOS: B
Intersection Capacity Utilization 87.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1953	1149	15	197
v/c Ratio	0.71	0.43	0.03	0.80
Control Delay	11.9	7.3	53.2	76.2
Queue Delay	0.8	0.4	0.0	0.0
Total Delay	12.8	7.7	53.2	76.2
Queue Length 50th (m)	148.5	58.9	2.1	52.6
Queue Length 95th (m)	223.3	91.0	5.8	82.2
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2737	2684	624	342
Starvation Cap Reductn	447	921	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.85	0.65	0.02	0.58

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2557	853	0	44	64
Future Volume (vph)	0	2557	853	0	44	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3510	0	3148	1309
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3510	0	3148	1309
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						64
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	10%	22%
Adj. Flow (vph)	0	2557	853	0	44	64
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2557	853	0	44	64
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		135.0	135.0		25.0	25.0
Total Split (%)		84.4%	84.4%		15.6%	15.6%
Maximum Green (s)		129.0	129.0		18.0	18.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		129.0	129.0		8.3	8.3
Actuated g/C Ratio		0.86	0.86		0.06	0.06
v/c Ratio		0.82	0.28		0.25	0.48
Control Delay		8.4	2.3		71.5	27.3
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		8.4	2.3		71.5	27.3
LOS		A	A		E	C
Approach Delay		8.4	2.3		45.3	
Approach LOS		A	A		D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 150.3	
Natural Cycle: 100	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 8.0	Intersection LOS: A
Intersection Capacity Utilization 87.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2557	853	44	64
v/c Ratio	0.82	0.28	0.25	0.48
Control Delay	8.4	2.3	71.5	27.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.4	2.3	71.5	27.3
Queue Length 50th (m)	150.0	19.3	6.9	0.0
Queue Length 95th (m)	219.8	29.3	13.9	16.0
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3102	3012	377	213
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.82	0.28	0.12	0.30

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	404	1607	140	178	763	376	258	750	264	106	551	286
Future Volume (vph)	404	1607	140	178	763	376	258	750	264	106	551	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		50.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00										
Frt		0.988			0.950				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	3569	0	1733	3356	0	1750	3614	1566	1716	3614	1581
Flt Permitted	0.065			0.067			0.138			0.163		
Satd. Flow (perm)	115	3569	0	122	3356	0	254	3614	1566	294	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			60				177			259
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			1301.8			145.2	
Travel Time (s)		14.1			11.0			66.9			7.5	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	1%	0%	3%	4%	2%	2%	1%	2%	4%	1%	1%
Adj. Flow (vph)	404	1607	140	178	763	376	258	750	264	106	551	286
Shared Lane Traffic (%)												
Lane Group Flow (vph)	404	1747	0	178	1139	0	258	750	264	106	551	286
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-0.2	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-0.2	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	8.2	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1		9.5	30.1		9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	39.0	87.4		17.0	65.4		23.0	45.6	45.6	10.0	32.6	32.6
Total Split (%)	24.4%	54.6%		10.6%	40.9%		14.4%	28.5%	28.5%	6.3%	20.4%	20.4%
Maximum Green (s)	36.0	81.3		14.0	59.3		20.0	39.2	39.2	7.0	26.2	26.2
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0			15.0			14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	100.8	81.3		76.2	59.8		52.3	38.9	38.9	36.3	25.9	25.9
Actuated g/C Ratio	0.63	0.51		0.48	0.38		0.33	0.24	0.24	0.23	0.16	0.16
v/c Ratio	0.97	0.96		0.92	0.88		0.95	0.85	0.51	0.82	0.94	0.60
Control Delay	85.0	50.0		91.7	52.9		87.6	67.6	20.7	85.6	90.0	15.2
Queue Delay	0.0	43.5		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.0	93.6		91.7	52.9		87.6	67.6	20.7	85.6	90.0	15.2
LOS	F	F		F	D		F	E	C	F	F	B
Approach Delay		92.0			58.1			61.9			66.8	
Approach LOS		F			E			E			E	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 159.1
Natural Cycle: 130
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 73.2 — Intersection LOS: E
Intersection Capacity Utilization 105.4% — ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 3: Ninth Line & Derry Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	404	1747	178	1139	258	750	264	106	551	286
v/c Ratio	0.97	0.96	0.92	0.88	0.95	0.85	0.51	0.82	0.94	0.60
Control Delay	85.0	50.0	91.7	52.9	87.6	67.6	20.7	85.6	90.0	15.2
Queue Delay	0.0	43.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.0	93.6	91.7	52.9	87.6	67.6	20.7	85.6	90.0	15.2
Queue Length 50th (m)	117.4	289.7	42.9	180.4	68.5	127.1	23.9	25.5	97.1	7.8
Queue Length 95th (m)	#186.5	#348.9	#90.6	212.7	#127.7	153.3	54.6	#51.6	#133.2	39.0
Internal Link Dist (m)		210.9		158.6		1277.8			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	427	1828	200	1297	271	890	519	129	595	476
Starvation Cap Reductn	0	312	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	1.15	0.89	0.88	0.95	0.84	0.51	0.82	0.93	0.60

Intersection Summary

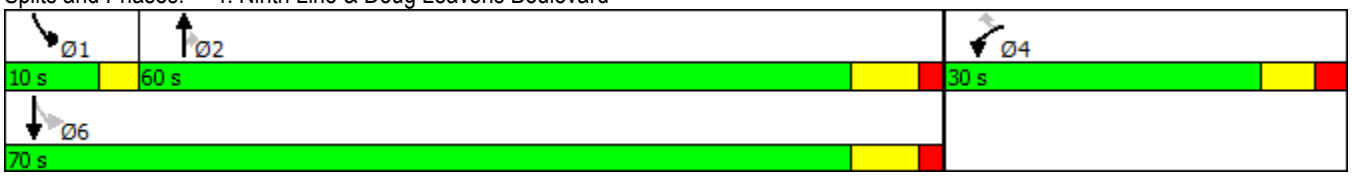
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	151	182	1096	108	74	739
Future Volume (vph)	151	182	1096	108	74	739
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.3	3.5	3.2	3.0	3.5
Storage Length (m)	0.0	0.0		25.0	80.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				80.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.98		
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1636	1531	3500	1222	1649	3535
Flt Permitted	0.950				0.179	
Satd. Flow (perm)	1636	1531	3500	1194	311	3535
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		180		62		
Link Speed (k/h)	50		70			70
Link Distance (m)	218.3		577.9			1301.8
Travel Time (s)	15.7		29.7			66.9
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	2%	9%	0%	1%
Adj. Flow (vph)	164	198	1191	117	80	803
Shared Lane Traffic (%)						
Lane Group Flow (vph)	164	198	1191	117	80	803
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.04	1.01	1.28	1.12	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right	Left	Thru
Leading Detector (m)	7.0	7.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	10.0	10.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	25.5	25.5	26.0	26.0	9.5	26.0
Total Split (s)	30.0	30.0	60.0	60.0	10.0	70.0
Total Split (%)	30.0%	30.0%	60.0%	60.0%	10.0%	70.0%
Maximum Green (s)	23.5	23.5	53.0	53.0	7.0	63.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.5	2.5	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.5	-1.5	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	8.0	8.0	8.0	8.0		8.0
Flash Dont Walk (s)	8.0	8.0	10.0	10.0		10.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	16.0	16.0	57.6	57.6	69.2	65.2
Actuated g/C Ratio	0.18	0.18	0.63	0.63	0.76	0.71
v/c Ratio	0.57	0.48	0.54	0.15	0.22	0.32
Control Delay	42.5	10.6	11.8	5.2	5.0	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.5	10.6	11.8	5.2	5.0	5.6
LOS	D	B	B	A	A	A
Approach Delay	25.1		11.2			5.6
Approach LOS	C		B			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 91.2	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 11.2	Intersection LOS: B
Intersection Capacity Utilization 54.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Doug Leavens Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	164	198	1191	117	80	803
v/c Ratio	0.57	0.48	0.54	0.15	0.22	0.32
Control Delay	42.5	10.6	11.8	5.2	5.0	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.5	10.6	11.8	5.2	5.0	5.6
Queue Length 50th (m)	27.9	2.8	62.4	3.8	3.0	24.3
Queue Length 95th (m)	48.1	20.9	97.0	12.9	8.3	41.5
Internal Link Dist (m)	194.3		553.9			1277.8
Turn Bay Length (m)				25.0	80.0	
Base Capacity (vph)	449	551	2209	776	368	2527
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.36	0.54	0.15	0.22	0.32

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	50	73	1147	38	33	900
Future Volume (vph)	50	73	1147	38	33	900
Ideal Flow (vphpl)	1900	1900	1900	1900	1640	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.0	3.5
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				15.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.995			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	1507	3442	0	1412	3500
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1685	1507	3442	0	1412	3500
Link Speed (k/h)	50		70			70
Link Distance (m)	166.2		289.9			265.1
Travel Time (s)	12.0		14.9			13.6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	3%	9%	3%	2%
Adj. Flow (vph)	52	76	1195	40	34	938
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	76	1235	0	34	938
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.01	1.31	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	50	73	1147	38	33	900
Future Volume (Veh/h)	50	73	1147	38	33	900
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	52	76	1195	40	34	938
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			290			
pX, platoon unblocked	0.86	0.86			0.86	
vC, conflicting volume	1752	618			1235	
vC1, stage 1 conf vol	1215					
vC2, stage 2 conf vol	537					
vCu, unblocked vol	1543	218			939	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	81	89			94	
cM capacity (veh/h)	267	679			616	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	52	76	797	438	34	469	469
Volume Left	52	0	0	0	34	0	0
Volume Right	0	76	0	40	0	0	0
cSH	267	679	1700	1700	616	1700	1700
Volume to Capacity	0.19	0.11	0.47	0.26	0.06	0.28	0.28
Queue Length 95th (m)	5.7	3.0	0.0	0.0	1.4	0.0	0.0
Control Delay (s)	21.7	11.0	0.0	0.0	11.2	0.0	0.0
Lane LOS	C	B			B		
Approach Delay (s)	15.3		0.0		0.4		
Approach LOS	C						

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	134	97	1059	99	22	927
Future Volume (vph)	134	97	1059	99	22	927
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.6	3.6
Storage Length (m)	15.0	0.0		25.0	20.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1636	1436	3433	1276	1683	3574
Flt Permitted	0.950				0.224	
Satd. Flow (perm)	1636	1436	3433	1276	397	3574
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		100		60		
Link Speed (k/h)	50		70			70
Link Distance (m)	186.9		633.8			289.9
Travel Time (s)	13.5		32.6			14.9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	5%	4%	8%	5%	1%
Adj. Flow (vph)	138	100	1092	102	23	956
Shared Lane Traffic (%)						
Lane Group Flow (vph)	138	100	1092	102	23	956
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.22	1.03	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right		Thru
Leading Detector (m)	9.0	9.0	10.0	2.0	20.0	10.0
Trailing Detector (m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Position(m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Size(m)	9.2	10.0	0.6	2.0	10.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	24.0	24.0	25.0	25.0	9.5	25.0
Total Split (s)	29.0	29.0	61.0	61.0	10.0	71.0
Total Split (%)	29.0%	29.0%	61.0%	61.0%	10.0%	71.0%
Maximum Green (s)	23.0	23.0	54.0	54.0	7.0	64.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	14.2	14.2	65.8	65.8	73.0	69.0
Actuated g/C Ratio	0.15	0.15	0.71	0.71	0.78	0.74
v/c Ratio	0.56	0.33	0.45	0.11	0.06	0.36
Control Delay	44.4	10.1	7.7	3.5	3.2	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	10.1	7.7	3.5	3.2	5.1
LOS	D	B	A	A	A	A
Approach Delay	30.0		7.4			5.1
Approach LOS	C		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 93.2	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay: 8.7	Intersection LOS: A
Intersection Capacity Utilization 45.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Osprey Boulevard

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	138	100	1092	102	23	956
v/c Ratio	0.56	0.33	0.45	0.11	0.06	0.36
Control Delay	44.4	10.1	7.7	3.5	3.2	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	10.1	7.7	3.5	3.2	5.1
Queue Length 50th (m)	23.5	0.0	33.6	1.7	0.7	27.4
Queue Length 95th (m)	41.8	13.4	75.2	9.6	2.9	45.8
Internal Link Dist (m)	162.9		609.8			265.9
Turn Bay Length (m)	15.0			25.0	20.0	
Base Capacity (vph)	422	444	2425	919	435	2646
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.23	0.45	0.11	0.05	0.36

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	1641	438	83	702	186	199	751	177	102	872	117
Future Volume (vph)	186	1641	438	83	702	186	199	751	177	102	872	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		0.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98	1.00		
Frt		0.968				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3498	0	1733	3579	1439	1767	3544	1581	1608	3614	1581
Flt Permitted	0.299			0.051			0.104			0.174		
Satd. Flow (perm)	562	3498	0	93	3579	1439	193	3544	1557	294	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31				185			99			103
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	3%	2%	11%	1%	3%	1%	11%	1%	1%
Adj. Flow (vph)	186	1641	438	83	702	186	199	751	177	102	872	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	186	2079	0	83	702	186	199	751	177	102	872	117
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template		Thru		Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		8
Detector Phase	5	2		1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	16.2	89.0		10.0	82.8	82.8	18.0	49.8	49.8	11.2	43.0	43.0
Total Split (%)	10.1%	55.6%		6.3%	51.8%	51.8%	11.3%	31.1%	31.1%	7.0%	26.9%	26.9%
Maximum Green (s)	13.2	82.9		7.0	76.7	76.7	15.0	42.1	42.1	8.2	35.3	35.3
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0			11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	95.8	82.9		88.3	78.2	78.2	58.0	42.2	42.2	48.1	35.3	35.3
Actuated g/C Ratio	0.60	0.52		0.55	0.49	0.49	0.36	0.26	0.26	0.30	0.22	0.22
v/c Ratio	0.44	1.14		0.68	0.40	0.23	0.92	0.80	0.37	0.66	1.09	0.27
Control Delay	17.7	104.9		52.4	27.1	3.6	83.2	62.7	23.1	58.1	117.1	13.3
Queue Delay	0.0	0.5		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	105.4		52.4	27.1	3.6	83.2	62.7	23.1	58.1	117.1	13.3
LOS	B	F		D	C	A	F	E	C	E	F	B
Approach Delay		98.2			24.7			60.1			100.4	
Approach LOS		F			C			E			F	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Natural Cycle: 145
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.14
Intersection Signal Delay: 77.7 — Intersection LOS: E
Intersection Capacity Utilization 117.2% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 7: Ninth Line & Britannia Road

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	186	2079	83	702	186	199	751	177	102	872	117
v/c Ratio	0.44	1.14	0.68	0.40	0.23	0.92	0.80	0.37	0.66	1.09	0.27
Control Delay	17.7	104.9	52.4	27.1	3.6	83.2	62.7	23.1	58.1	117.1	13.3
Queue Delay	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	105.4	52.4	27.1	3.6	83.2	62.7	23.1	58.1	117.1	13.3
Queue Length 50th (m)	26.8	~423.7	11.3	78.0	0.2	48.5	124.7	20.4	23.3	~172.7	3.7
Queue Length 95th (m)	39.8	#465.5	#37.7	95.8	14.2	#99.5	150.7	44.2	#41.4	#216.5	21.7
Internal Link Dist (m)		192.6		220.1			171.1			609.8	
Turn Bay Length (m)	60.0		60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	438	1827	123	1749	798	217	935	483	155	797	429
Starvation Cap Reductn	0	277	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	1.34	0.67	0.40	0.23	0.92	0.80	0.37	0.66	1.09	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1956	0	0	848	25	271
Future Volume (vph)	1956	0	0	848	25	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3579	1608	1566
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3579	1608	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						21
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	2%	11%	2%
Adj. Flow (vph)	1956	0	0	848	25	271
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1956	0	0	848	25	271
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	114.0			114.0	46.0	46.0
Total Split (%)	71.3%			71.3%	28.8%	28.8%
Maximum Green (s)	108.0			108.0	39.0	39.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	108.3			108.3	28.9	28.9
Actuated g/C Ratio	0.72			0.72	0.19	0.19
v/c Ratio	0.75			0.33	0.08	0.85
Control Delay	16.2			8.7	48.8	77.9
Queue Delay	1.3			0.0	0.0	0.0
Total Delay	17.6			8.7	48.8	77.9
LOS	B			A	D	E
Approach Delay	17.6			8.7	75.4	
Approach LOS	B			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 150.2	
Natural Cycle: 70	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 20.7	Intersection LOS: C
Intersection Capacity Utilization 81.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1956	848	25	271
v/c Ratio	0.75	0.33	0.08	0.85
Control Delay	16.2	8.7	48.8	77.9
Queue Delay	1.3	0.0	0.0	0.0
Total Delay	17.6	8.7	48.8	77.9
Queue Length 50th (m)	181.3	47.2	6.5	77.0
Queue Length 95th (m)	261.0	71.3	15.4	111.7
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2604	2579	418	423
Starvation Cap Reductn	413	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.89	0.33	0.06	0.64

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1547	676	0	462	27
Future Volume (vph)	0	1547	676	0	462	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3579	0	1684	1210
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3579	0	1684	1210
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						21
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	2%	0%	6%	32%
Adj. Flow (vph)	0	1547	676	0	462	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1547	676	0	462	27
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		91.0	91.0		69.0	69.0
Total Split (%)		56.9%	56.9%		43.1%	43.1%
Maximum Green (s)		85.0	85.0		62.0	62.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		85.5	85.5		43.8	43.8
Actuated g/C Ratio		0.60	0.60		0.31	0.31
v/c Ratio		0.71	0.31		0.89	0.07
Control Delay		23.8	15.7		67.1	14.9
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		23.8	15.7		67.1	14.9
LOS		C	B		E	B
Approach Delay		23.8	15.7		64.2	
Approach LOS		C	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 142.3	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 29.1	Intersection LOS: C
Intersection Capacity Utilization 81.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1547	676	462	27
v/c Ratio	0.71	0.31	0.89	0.07
Control Delay	23.8	15.7	67.1	14.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.8	15.7	67.1	14.9
Queue Length 50th (m)	159.8	49.2	130.1	1.2
Queue Length 95th (m)	244.0	80.0	175.3	8.5
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2170	2148	737	541
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.31	0.63	0.05

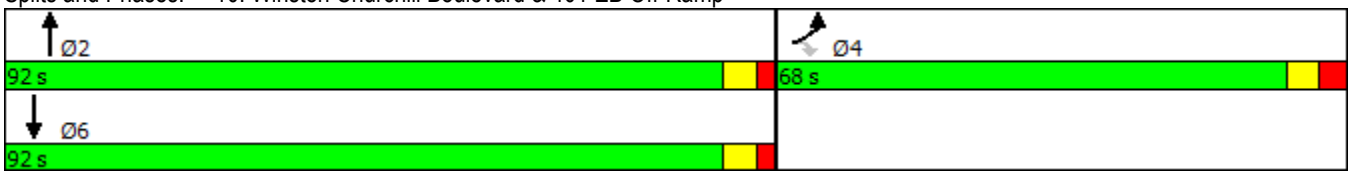
Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	427	356	0	1211	1311	0
Future Volume (vph)	427	356	0	1211	1311	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.969	0.850				
Flt Protected	0.962					
Satd. Flow (prot)	3280	1425	0	4980	4885	0
Flt Permitted	0.962					
Satd. Flow (perm)	3280	1425	0	4980	4885	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	25	36				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	0%	3%	5%	0%
Adj. Flow (vph)	449	375	0	1275	1380	0
Shared Lane Traffic (%)		31%				
Lane Group Flow (vph)	565	259	0	1275	1380	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	68.0	68.0		92.0	92.0	
Total Split (%)	42.5%	42.5%		57.5%	57.5%	
Maximum Green (s)	60.5	60.5		85.5	85.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	32.3	32.3		87.2	87.2	
Actuated g/C Ratio	0.25	0.25		0.67	0.67	
v/c Ratio	0.68	0.68		0.38	0.42	
Control Delay	45.9	46.8		10.3	10.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	45.9	46.8		10.3	10.8	
LOS	D	D		B	B	
Approach Delay	46.2			10.3	10.8	
Approach LOS	D			B	B	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 129.5	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 19.0	Intersection LOS: B
Intersection Capacity Utilization 54.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	565	259	1275	1380
v/c Ratio	0.68	0.68	0.38	0.42
Control Delay	45.9	46.8	10.3	10.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	45.9	46.8	10.3	10.8
Queue Length 50th (m)	67.8	60.0	49.3	55.3
Queue Length 95th (m)	87.0	93.4	76.7	85.6
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1612	713	3353	3289
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.35	0.36	0.38	0.42

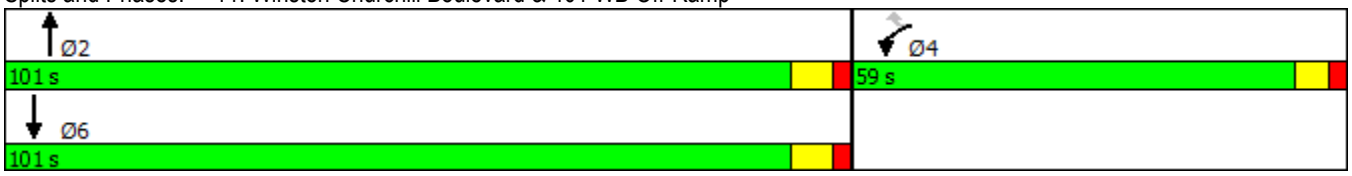
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	262	475	1323	0	0	1762
Future Volume (vph)	262	475	1323	0	0	1762
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.91
Frt	0.929	0.850				
Flt Protected	0.974					
Satd. Flow (prot)	2973	1298	4980	0	0	4839
Flt Permitted	0.974					
Satd. Flow (perm)	2973	1298	4980	0	0	4839
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	48	48				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	10%	12%	3%	0%	0%	6%
Adj. Flow (vph)	276	500	1393	0	0	1855
Shared Lane Traffic (%)		50%				
Lane Group Flow (vph)	526	250	1393	0	0	1855
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	59.0	59.0	101.0			101.0
Total Split (%)	36.9%	36.9%	63.1%			63.1%
Maximum Green (s)	52.5	52.5	93.5			93.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	32.5	32.5	96.3			96.3
Actuated g/C Ratio	0.23	0.23	0.69			0.69
v/c Ratio	0.72	0.74	0.40			0.55
Control Delay	49.9	52.5	10.1			12.1
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	49.9	52.5	10.1			12.1
LOS	D	D	B			B
Approach Delay	50.7		10.1			12.1
Approach LOS	D		B			B

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 138.8	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 18.9	Intersection LOS: B
Intersection Capacity Utilization 54.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	526	250	1393	1855
v/c Ratio	0.72	0.74	0.40	0.55
Control Delay	49.9	52.5	10.1	12.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	49.9	52.5	10.1	12.1
Queue Length 50th (m)	66.1	60.2	55.7	86.7
Queue Length 95th (m)	85.8	95.2	88.3	134.8
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1189	535	3455	3357
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	0.47	0.40	0.55

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1230	0	0	2172	94	223
Future Volume (vph)	1230	0	0	2172	94	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3614	3362	1597
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3614	3362	1597
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						125
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	1%	3%	0%
Adj. Flow (vph)	1230	0	0	2172	94	223
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1230	0	0	2172	94	223
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	126.0			126.0	34.0	34.0
Total Split (%)	78.8%			78.8%	21.3%	21.3%
Maximum Green (s)	120.0			120.0	27.0	27.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	120.3			120.3	15.4	15.4
Actuated g/C Ratio	0.81			0.81	0.10	0.10
v/c Ratio	0.43			0.74	0.27	0.81
Control Delay	5.2			9.8	62.3	49.4
Queue Delay	0.0			2.7	0.0	0.0
Total Delay	5.2			12.5	62.3	49.4
LOS	A			B	E	D
Approach Delay	5.2			12.5	53.3	
Approach LOS	A			B	D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 148.7	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 13.5	Intersection LOS: B
Intersection Capacity Utilization 99.7%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1230	2172	94	223
v/c Ratio	0.43	0.74	0.27	0.81
Control Delay	5.2	9.8	62.3	49.4
Queue Delay	0.0	2.7	0.0	0.0
Total Delay	5.2	12.5	62.3	49.4
Queue Length 50th (m)	48.6	141.3	14.0	30.2
Queue Length 95th (m)	82.9	235.8	23.2	61.2
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2894	2922	611	392
Starvation Cap Reductn	0	608	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.94	0.15	0.57

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1053	2125	0	256	486
Future Volume (vph)	0	1053	2125	0	256	486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3510	3614	0	3429	1597
Flt Permitted					0.950	
Satd. Flow (perm)	0	3510	3614	0	3429	1597
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						9
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	4%	1%	0%	1%	0%
Adj. Flow (vph)	0	1053	2125	0	256	486
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1053	2125	0	256	486
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		104.0	104.0		56.0	56.0
Total Split (%)		65.0%	65.0%		35.0%	35.0%
Maximum Green (s)		98.0	98.0		49.0	49.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		98.0	98.0		49.0	49.0
Actuated g/C Ratio		0.61	0.61		0.31	0.31
v/c Ratio		0.49	0.96		0.24	0.98
Control Delay		18.1	41.2		42.4	89.4
Queue Delay		0.0	35.1		0.0	0.0
Total Delay		18.1	76.3		42.4	89.4
LOS		B	E		D	F
Approach Delay		18.1	76.3		73.2	
Approach LOS		B	E		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 160	
Natural Cycle: 100	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 60.1	Intersection LOS: E
Intersection Capacity Utilization 99.7%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1053	2125	256	486
v/c Ratio	0.49	0.96	0.24	0.98
Control Delay	18.1	41.2	42.4	89.4
Queue Delay	0.0	35.1	0.0	0.0
Total Delay	18.1	76.3	42.4	89.4
Queue Length 50th (m)	98.4	337.8	33.2	159.8
Queue Length 95th (m)	115.6	#395.8	45.8	#237.5
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2149	2213	1050	495
Starvation Cap Reductn	0	247	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	1.08	0.24	0.98

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	213	883	287	279	1733	147	128	683	211	249	915	361
Future Volume (vph)	213	883	287	279	1733	147	128	683	211	249	915	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		50.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt		0.963			0.988				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1767	3437	0	1767	3568	0	1767	3614	1581	1785	3614	1581
Flt Permitted	0.055			0.108			0.140			0.127		
Satd. Flow (perm)	102	3437	0	201	3568	0	260	3614	1556	239	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			8				211			204
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			1301.8			145.2	
Travel Time (s)		14.1			11.0			66.9			7.5	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	3%	0%	1%	1%	2%	1%	1%	1%	0%	1%	1%
Adj. Flow (vph)	213	883	287	279	1733	147	128	683	211	249	915	361
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	1170	0	279	1880	0	128	683	211	249	915	361
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-0.2	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-0.2	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	8.2	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1		9.5	30.1		9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	20.0	75.2		27.8	83.0		11.0	35.0	35.0	22.0	46.0	46.0
Total Split (%)	12.5%	47.0%		17.4%	51.9%		6.9%	21.9%	21.9%	13.8%	28.8%	28.8%
Maximum Green (s)	17.0	69.1		24.8	76.9		8.0	28.6	28.6	19.0	39.6	39.6
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0			15.0			14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	92.0	72.6		98.2	76.9		40.0	28.6	28.6	54.0	39.6	39.6
Actuated g/C Ratio	0.58	0.46		0.62	0.48		0.25	0.18	0.18	0.34	0.25	0.25
v/c Ratio	0.93	0.74		0.86	1.09		0.91	1.05	0.47	0.94	1.02	0.66
Control Delay	89.8	38.5		54.1	89.0		97.6	111.1	10.1	84.9	92.8	29.2
Queue Delay	0.0	1.4		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.8	39.9		54.1	89.0		97.6	111.1	10.1	84.9	92.8	29.2
LOS	F	D		D	F		F	F	B	F	F	C
Approach Delay		47.6			84.5			88.6			76.5	
Approach LOS		D			F			F			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 159.3	
Natural Cycle: 120	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.09	
Intersection Signal Delay: 74.8	Intersection LOS: E
Intersection Capacity Utilization 114.2%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 3: Ninth Line & Derry Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	213	1170	279	1880	128	683	211	249	915	361
v/c Ratio	0.93	0.74	0.86	1.09	0.91	1.05	0.47	0.94	1.02	0.66
Control Delay	89.8	38.5	54.1	89.0	97.6	111.1	10.1	84.9	92.8	29.2
Queue Delay	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.8	39.9	54.1	89.0	97.6	111.1	10.1	84.9	92.8	29.2
Queue Length 50th (m)	54.5	165.3	55.8	~372.4	30.7	~131.4	0.0	65.2	~170.7	48.2
Queue Length 95th (m)	#107.0	199.8	91.0	#415.3	#67.2	#173.3	24.3	#122.7	#214.8	87.2
Internal Link Dist (m)		210.9		158.6		1277.8			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	236	1586	369	1727	141	649	452	265	898	546
Starvation Cap Reductn	0	224	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.86	0.76	1.09	0.91	1.05	0.47	0.94	1.02	0.66

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

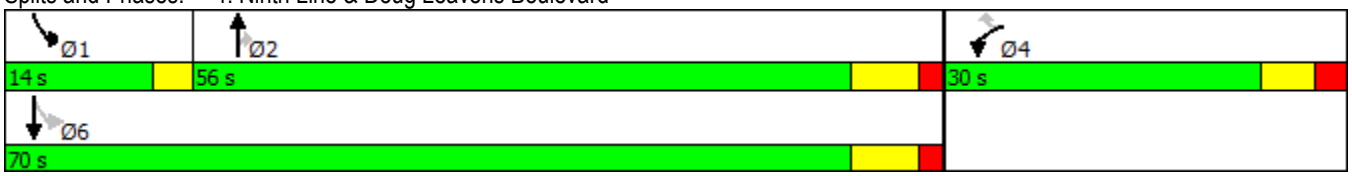
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	114	66	931	144	132	1311
Future Volume (vph)	114	66	931	144	132	1311
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.3	3.5	3.2	3.0	3.5
Storage Length (m)	0.0	0.0		25.0	80.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	7.5				80.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	1561	3535	1332	1649	3535
Flt Permitted	0.950				0.247	
Satd. Flow (perm)	1685	1561	3535	1298	428	3535
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		69		89		
Link Speed (k/h)	50		70			70
Link Distance (m)	218.3		577.9			1301.8
Travel Time (s)	15.7		29.7			66.9
Confl. Peds. (#/hr)				2	2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	119	69	970	150	138	1366
Shared Lane Traffic (%)						
Lane Group Flow (vph)	119	69	970	150	138	1366
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.04	1.01	1.28	1.12	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right	Left	Thru
Leading Detector (m)	7.0	7.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	-3.0	-3.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	10.0	10.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	25.5	25.5	26.0	26.0	9.5	26.0
Total Split (s)	30.0	30.0	56.0	56.0	14.0	70.0
Total Split (%)	30.0%	30.0%	56.0%	56.0%	14.0%	70.0%
Maximum Green (s)	23.5	23.5	49.0	49.0	11.0	63.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.5	2.5	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.5	-1.5	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	8.0	8.0	8.0	8.0		8.0
Flash Dont Walk (s)	8.0	8.0	10.0	10.0		10.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	13.4	13.4	56.9	56.9	71.3	67.3
Actuated g/C Ratio	0.15	0.15	0.63	0.63	0.79	0.74
v/c Ratio	0.48	0.24	0.44	0.18	0.30	0.52
Control Delay	41.1	10.5	10.1	4.3	4.4	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.1	10.5	10.1	4.3	4.4	6.2
LOS	D	B	B	A	A	A
Approach Delay	29.9		9.3			6.0
Approach LOS	C		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 90.7	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.52	
Intersection Signal Delay: 8.9	Intersection LOS: A
Intersection Capacity Utilization 51.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Doug Leavens Boulevard



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	119	69	970	150	138	1366
v/c Ratio	0.48	0.24	0.44	0.18	0.30	0.52
Control Delay	41.1	10.5	10.1	4.3	4.4	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.1	10.5	10.1	4.3	4.4	6.2
Queue Length 50th (m)	19.6	0.0	42.8	3.9	4.5	45.0
Queue Length 95th (m)	36.4	11.2	69.2	13.8	10.8	72.7
Internal Link Dist (m)	194.3		553.9			1277.8
Turn Bay Length (m)				25.0	80.0	
Base Capacity (vph)	465	481	2216	847	511	2621
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.14	0.44	0.18	0.27	0.52

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	24	19	1058	65	46	1384
Future Volume (vph)	24	19	1058	65	46	1384
Ideal Flow (vphpl)	1900	1900	1900	1900	1640	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.0	3.5
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	7.5				15.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	1507	3505	0	1426	3570
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1685	1507	3505	0	1426	3570
Link Speed (k/h)	50		70			70
Link Distance (m)	166.2		289.9			265.1
Travel Time (s)	12.0		14.9			13.6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	1%	0%	2%	0%
Adj. Flow (vph)	25	20	1102	68	48	1442
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	20	1170	0	48	1442
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.01	1.31	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	24	19	1058	65	46	1384
Future Volume (Veh/h)	24	19	1058	65	46	1384
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	25	20	1102	68	48	1442
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			290			
pX, platoon unblocked	0.86	0.86			0.86	
vC, conflicting volume	1953	585			1170	
vC1, stage 1 conf vol	1136					
vC2, stage 2 conf vol	817					
vCu, unblocked vol	1777	178			862	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	97			93	
cM capacity (veh/h)	250	719			664	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	25	20	735	435	48	721	721
Volume Left	25	0	0	0	48	0	0
Volume Right	0	20	0	68	0	0	0
cSH	250	719	1700	1700	664	1700	1700
Volume to Capacity	0.10	0.03	0.43	0.26	0.07	0.42	0.42
Queue Length 95th (m)	2.6	0.7	0.0	0.0	1.9	0.0	0.0
Control Delay (s)	21.0	10.1	0.0	0.0	10.8	0.0	0.0
Lane LOS	C	B			B		
Approach Delay (s)	16.2		0.0		0.3		
Approach LOS	C						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	32	1148	110	47	1357
Future Volume (vph)	75	32	1148	110	47	1357
Ideal Flow (vphpl)	1900	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.6	3.6
Storage Length (m)	15.0	0.0		25.0	20.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.98		
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1574	1463	3535	1351	1767	3610
Flt Permitted	0.950				0.200	
Satd. Flow (perm)	1574	1463	3535	1321	372	3610
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		33		66		
Link Speed (k/h)	50		70			70
Link Distance (m)	186.9		633.8			289.9
Travel Time (s)	13.5		32.6			14.9
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	3%	1%	2%	0%	0%
Adj. Flow (vph)	78	33	1196	115	49	1414
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	33	1196	115	49	1414
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.09	1.09	1.01	1.22	1.03	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right		Thru
Leading Detector (m)	9.0	9.0	10.0	2.0	20.0	10.0
Trailing Detector (m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Position(m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Size(m)	9.2	10.0	0.6	2.0	10.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	8.0
Minimum Split (s)	24.0	24.0	25.0	25.0	9.5	25.0
Total Split (s)	26.0	26.0	64.0	64.0	10.0	74.0
Total Split (%)	26.0%	26.0%	64.0%	64.0%	10.0%	74.0%
Maximum Green (s)	20.0	20.0	57.0	57.0	7.0	67.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	11.4	11.4	68.5	68.5	77.8	74.8
Actuated g/C Ratio	0.12	0.12	0.74	0.74	0.84	0.81
v/c Ratio	0.40	0.16	0.46	0.12	0.12	0.48
Control Delay	43.2	14.1	7.2	3.1	2.6	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	14.1	7.2	3.1	2.6	4.5
LOS	D	B	A	A	A	A
Approach Delay	34.6		6.9			4.4
Approach LOS	C		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 92.3	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.48	
Intersection Signal Delay: 6.7	Intersection LOS: A
Intersection Capacity Utilization 54.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Osprey Boulevard

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	78	33	1196	115	49	1414
v/c Ratio	0.40	0.16	0.46	0.12	0.12	0.48
Control Delay	43.2	14.1	7.2	3.1	2.6	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	14.1	7.2	3.1	2.6	4.5
Queue Length 50th (m)	13.3	0.0	48.4	2.6	1.2	40.6
Queue Length 95th (m)	27.1	8.2	73.2	9.2	3.8	65.1
Internal Link Dist (m)	162.9		609.8			265.9
Turn Bay Length (m)	15.0			25.0	20.0	
Base Capacity (vph)	358	358	2621	996	449	2927
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.09	0.46	0.12	0.11	0.48

Intersection Summary

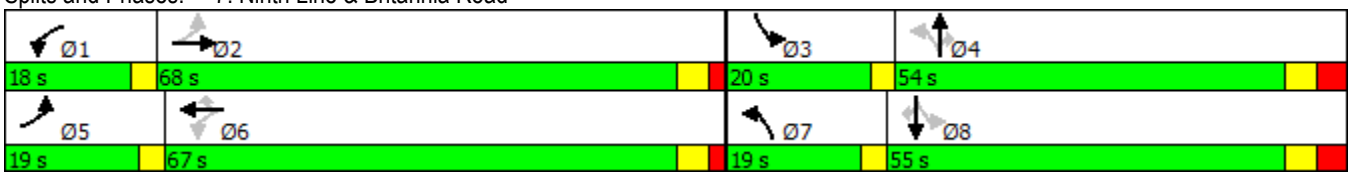
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	819	376	186	1231	206	211	971	141	219	1003	183
Future Volume (vph)	209	819	376	186	1231	206	211	971	141	219	1003	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		0.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt		0.953				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3455	0	1785	3614	1551	1767	3614	1597	1716	3614	1536
Flt Permitted	0.064			0.066			0.088			0.087		
Satd. Flow (perm)	120	3455	0	124	3614	1551	164	3614	1570	157	3614	1536
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55				98			63			94
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	1%	1%	0%	4%	1%	4%
Adj. Flow (vph)	209	819	376	186	1231	206	211	971	141	219	1003	183
Shared Lane Traffic (%)												
Lane Group Flow (vph)	209	1195	0	186	1231	206	211	971	141	219	1003	183
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template		Thru		Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		8
Detector Phase	5	2		1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	19.0	68.0		18.0	67.0	67.0	19.0	54.0	54.0	20.0	55.0	55.0
Total Split (%)	11.9%	42.5%		11.3%	41.9%	41.9%	11.9%	33.8%	33.8%	12.5%	34.4%	34.4%
Maximum Green (s)	16.0	61.9		15.0	60.9	60.9	16.0	46.3	46.3	17.0	47.3	47.3
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0			11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	80.7	62.1		78.4	60.9	60.9	65.6	45.1	45.1	67.7	46.2	46.2
Actuated g/C Ratio	0.51	0.39		0.50	0.38	0.38	0.41	0.29	0.29	0.43	0.29	0.29
v/c Ratio	0.93	0.86		0.88	0.88	0.31	0.93	0.94	0.29	0.94	0.95	0.36
Control Delay	87.4	49.7		78.0	54.4	19.0	84.9	72.4	25.5	87.4	72.9	23.0
Queue Delay	0.0	6.8		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.4	56.5		78.0	54.4	19.0	84.9	72.4	25.5	87.4	72.9	23.0
LOS	F	E		E	D	B	F	E	C	F	E	C
Approach Delay		61.1			52.6			69.4			68.7	
Approach LOS		E			D			E			E	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 158.2
Natural Cycle: 105
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 62.5 — Intersection LOS: E
Intersection Capacity Utilization 103.2% — ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 7: Ninth Line & Britannia Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	209	1195	186	1231	206	211	971	141	219	1003	183
v/c Ratio	0.93	0.86	0.88	0.88	0.31	0.93	0.94	0.29	0.94	0.95	0.36
Control Delay	87.4	49.7	78.0	54.4	19.0	84.9	72.4	25.5	87.4	72.9	23.0
Queue Delay	0.0	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.4	56.5	78.0	54.4	19.0	84.9	72.4	25.5	87.4	72.9	23.0
Queue Length 50th (m)	53.0	187.2	44.5	203.2	24.3	52.4	167.2	19.6	55.6	173.2	22.6
Queue Length 95th (m)	#105.6	219.7	#90.0	236.0	46.1	#105.1	#208.1	40.0	#110.3	#215.6	45.9
Internal Link Dist (m)		192.6		220.1			171.1			609.8	
Turn Bay Length (m)	60.0		60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	230	1390	219	1392	658	230	1058	504	235	1081	525
Starvation Cap Reductn	0	162	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.97	0.85	0.88	0.31	0.92	0.92	0.28	0.93	0.93	0.35

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1233	0	0	1607	63	174
Future Volume (vph)	1233	0	0	1607	63	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3614	1750	1581
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3614	1750	1581
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						117
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Adj. Flow (vph)	1233	0	0	1607	63	174
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1233	0	0	1607	63	174
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	123.0			123.0	37.0	37.0
Total Split (%)	76.9%			76.9%	23.1%	23.1%
Maximum Green (s)	117.0			117.0	30.0	30.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	117.1			117.1	11.8	11.8
Actuated g/C Ratio	0.82			0.82	0.08	0.08
v/c Ratio	0.41			0.54	0.43	0.73
Control Delay	4.1			5.0	70.6	40.2
Queue Delay	0.0			0.7	0.0	0.0
Total Delay	4.1			5.8	70.6	40.2
LOS	A			A	E	D
Approach Delay	4.1			5.8	48.3	
Approach LOS	A			A	D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 142	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 8.4	Intersection LOS: A
Intersection Capacity Utilization 77.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1233	1607	63	174
v/c Ratio	0.41	0.54	0.43	0.73
Control Delay	4.1	5.0	70.6	40.2
Queue Delay	0.0	0.7	0.0	0.0
Total Delay	4.1	5.8	70.6	40.2
Queue Length 50th (m)	39.0	60.2	18.0	16.3
Queue Length 95th (m)	67.0	102.3	33.6	42.8
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2981	2981	370	426
Starvation Cap Reductn	0	929	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.41	0.78	0.17	0.41

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	823	1493	0	452	70
Future Volume (vph)	0	823	1493	0	452	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3614	0	1767	1536
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3614	0	1767	1536
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						26
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	1%	4%
Adj. Flow (vph)	0	823	1493	0	452	70
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	823	1493	0	452	70
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		93.0	93.0		67.0	67.0
Total Split (%)		58.1%	58.1%		41.9%	41.9%
Maximum Green (s)		87.0	87.0		60.0	60.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		87.4	87.4		41.2	41.2
Actuated g/C Ratio		0.62	0.62		0.29	0.29
v/c Ratio		0.37	0.67		0.88	0.15
Control Delay		15.1	21.0		66.7	24.0
Queue Delay		0.0	0.4		0.0	0.0
Total Delay		15.1	21.4		66.7	24.0
LOS		B	C		E	C
Approach Delay		15.1	21.4		61.0	
Approach LOS		B	C		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 141.6	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 26.9	Intersection LOS: C
Intersection Capacity Utilization 77.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	823	1493	452	70
v/c Ratio	0.37	0.67	0.88	0.15
Control Delay	15.1	21.0	66.7	24.0
Queue Delay	0.0	0.4	0.0	0.0
Total Delay	15.1	21.4	66.7	24.0
Queue Length 50th (m)	59.6	142.2	126.9	9.5
Queue Length 95th (m)	95.3	218.6	170.5	21.4
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2230	2230	752	668
Starvation Cap Reductn	0	271	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.37	0.76	0.60	0.10

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	512	381	0	1887	1991	0
Future Volume (vph)	512	381	0	1887	1991	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.975	0.850				
Flt Protected	0.960					
Satd. Flow (prot)	3065	1411	0	4980	5079	0
Flt Permitted	0.960					
Satd. Flow (perm)	3065	1411	0	4980	5079	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	9	*171				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	13%	3%	0%	3%	1%	0%
Adj. Flow (vph)	528	393	0	1945	2053	0
Shared Lane Traffic (%)		27%				
Lane Group Flow (vph)	634	287	0	1945	2053	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	60.0	60.0		100.0	100.0	
Total Split (%)	37.5%	37.5%		62.5%	62.5%	
Maximum Green (s)	52.5	52.5		93.5	93.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	40.1	40.1		95.3	95.3	
Actuated g/C Ratio	0.28	0.28		0.66	0.66	
v/c Ratio	0.75	0.56		0.60	0.62	
Control Delay	52.9	21.3		15.9	16.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	52.9	21.3		15.9	16.3	
LOS	D	C		B	B	
Approach Delay	43.0			15.9	16.3	
Approach LOS	D			B	B	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 145.4	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 21.2	Intersection LOS: C
Intersection Capacity Utilization 88.1%	ICU Level of Service E
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	634	287	1945	2053
v/c Ratio	0.75	0.56	0.60	0.62
Control Delay	52.9	21.3	15.9	16.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	52.9	21.3	15.9	16.3
Queue Length 50th (m)	89.2	32.0	115.1	124.2
Queue Length 95th (m)	111.2	65.3	159.7	171.5
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1168	641	3263	3327
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.45	0.60	0.62

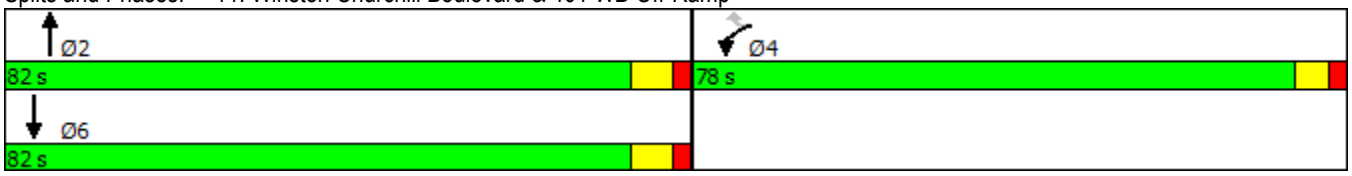
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	953	959	2082	0	0	1516
Future Volume (vph)	953	959	2082	0	0	1516
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.91
Frt	0.959	0.850				
Flt Protected	0.965					
Satd. Flow (prot)	3322	1411	4839	0	0	4932
Flt Permitted	0.965					
Satd. Flow (perm)	3322	1411	4839	0	0	4932
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	2	*419				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	3%	6%	0%	0%	4%
Adj. Flow (vph)	982	989	2146	0	0	1563
Shared Lane Traffic (%)		37%				
Lane Group Flow (vph)	1348	623	2146	0	0	1563
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	78.0	78.0	82.0			82.0
Total Split (%)	48.8%	48.8%	51.3%			51.3%
Maximum Green (s)	71.5	71.5	74.5			74.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	71.5	71.5	77.0			77.0
Actuated g/C Ratio	0.45	0.45	0.49			0.49
v/c Ratio	0.90	0.72	0.91			0.65
Control Delay	49.4	15.7	44.9			32.5
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	49.4	15.7	44.9			32.5
LOS	D	B	D			C
Approach Delay	38.7		44.9			32.5
Approach LOS	D		D			C

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 158.5	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 39.4	Intersection LOS: D
Intersection Capacity Utilization 88.1%	ICU Level of Service E
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	1348	623	2146	1563
v/c Ratio	0.90	0.72	0.91	0.65
Control Delay	49.4	15.7	44.9	32.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	49.4	15.7	44.9	32.5
Queue Length 50th (m)	210.3	61.4	241.6	143.4
Queue Length 95th (m)	244.5	118.4	264.9	160.3
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1531	875	2351	2396
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.88	0.71	0.91	0.65

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1953	0	0	1149	15	197
Future Volume (vph)	1953	0	0	1149	15	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	5142	0	0	5043	2935	1507
Flt Permitted					0.950	
Satd. Flow (perm)	5142	0	0	5043	2935	1507
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						17
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	4%	18%	6%
Adj. Flow (vph)	1953	0	0	1149	15	197
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1953	0	0	1149	15	197
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	108.0			108.0	52.0	52.0
Total Split (%)	67.5%			67.5%	32.5%	32.5%
Maximum Green (s)	102.0			102.0	45.0	45.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	102.2			102.2	21.8	21.8
Actuated g/C Ratio	0.75			0.75	0.16	0.16
v/c Ratio	0.51			0.31	0.03	0.78
Control Delay	8.2			6.4	47.1	70.9
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	8.2			6.4	47.1	70.9
LOS	A			A	D	E
Approach Delay	8.2			6.4	69.2	
Approach LOS	A			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 137	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 11.5	Intersection LOS: B
Intersection Capacity Utilization 66.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1953	1149	15	197
v/c Ratio	0.51	0.31	0.03	0.78
Control Delay	8.2	6.4	47.1	70.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.2	6.4	47.1	70.9
Queue Length 50th (m)	73.5	34.8	1.9	49.9
Queue Length 95th (m)	108.4	53.3	5.3	78.3
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3836	3762	966	507
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.51	0.31	0.02	0.39

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2557	853	0	44	64
Future Volume (vph)	0	2557	853	0	44	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	5193	5043	0	3148	1309
Flt Permitted					0.950	
Satd. Flow (perm)	0	5193	5043	0	3148	1309
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						64
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	10%	22%
Adj. Flow (vph)	0	2557	853	0	44	64
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2557	853	0	44	64
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		131.0	131.0		29.0	29.0
Total Split (%)		81.9%	81.9%		18.1%	18.1%
Maximum Green (s)		125.0	125.0		22.0	22.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		125.0	125.0		8.2	8.2
Actuated g/C Ratio		0.85	0.85		0.06	0.06
v/c Ratio		0.58	0.20		0.25	0.48
Control Delay		3.7	2.0		69.4	26.6
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		3.7	2.0		69.4	26.6
LOS		A	A		E	C
Approach Delay		3.7	2.0		44.0	
Approach LOS		A	A		D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 146.2	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 4.5	Intersection LOS: A
Intersection Capacity Utilization 66.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2557	853	44	64
v/c Ratio	0.58	0.20	0.25	0.48
Control Delay	3.7	2.0	69.4	26.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.7	2.0	69.4	26.6
Queue Length 50th (m)	59.6	12.1	6.7	0.0
Queue Length 95th (m)	81.7	18.1	13.6	15.9
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	4439	4311	473	251
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.58	0.20	0.09	0.25

Intersection Summary

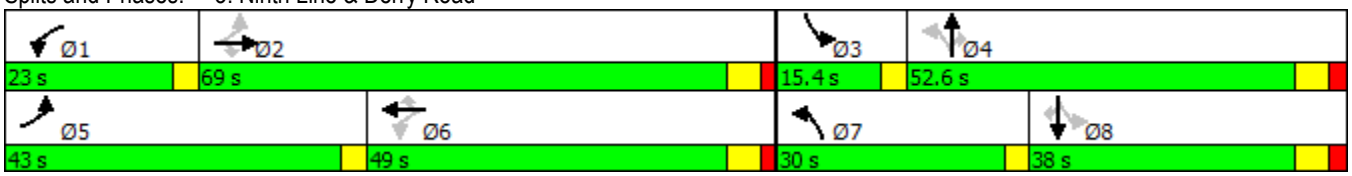
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	404	1607	140	178	763	376	258	750	264	106	551	286
Future Volume (vph)	404	1607	140	178	763	376	258	750	264	106	551	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		80.0	110.0		110.0	60.0		70.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00								
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	5193	1597	1733	5043	1566	1750	3614	1566	1716	3614	1581
Flt Permitted	0.259			0.087			0.162			0.191		
Satd. Flow (perm)	459	5193	1575	159	5043	1566	298	3614	1566	345	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			85			251			264			270
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			3067.1			145.2	
Travel Time (s)		14.1			11.0			157.7			7.5	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	1%	0%	3%	4%	2%	2%	1%	2%	4%	1%	1%
Adj. Flow (vph)	404	1607	140	178	763	376	258	750	264	106	551	286
Shared Lane Traffic (%)												
Lane Group Flow (vph)	404	1607	140	178	763	376	258	750	264	106	551	286
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template		Thru	Right		Thru	Right						
Leading Detector (m)	25.0	10.0	2.0	25.0	10.0	2.0	8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0	0.0	15.0	0.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0	0.0	15.0	0.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6	2.0	10.0	0.6	2.0	10.0	10.0	10.0	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1	30.1	9.5	30.1	30.1	9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	43.0	69.0	69.0	23.0	49.0	49.0	30.0	52.6	52.6	15.4	38.0	38.0
Total Split (%)	26.9%	43.1%	43.1%	14.4%	30.6%	30.6%	18.8%	32.9%	32.9%	9.6%	23.8%	23.8%
Maximum Green (s)	40.0	62.9	62.9	20.0	42.9	42.9	27.0	46.2	46.2	12.4	31.6	31.6
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1	2.1	0.0	2.1	2.1	0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1	6.1	3.0	6.1	6.1	3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		9.0	9.0		9.0	9.0		9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0	15.0		15.0	15.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	83.4	63.5	63.5	67.6	50.7	50.7	54.5	37.4	37.4	40.9	26.9	26.9
Actuated g/C Ratio	0.58	0.44	0.44	0.47	0.35	0.35	0.38	0.26	0.26	0.28	0.19	0.19
v/c Ratio	0.82	0.70	0.19	0.79	0.43	0.53	0.79	0.80	0.44	0.53	0.82	0.56
Control Delay	34.0	36.5	12.8	60.8	39.5	17.1	52.1	57.1	6.9	41.0	67.7	11.8
Queue Delay	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	36.8	12.8	60.8	39.5	17.1	52.1	57.1	6.9	41.0	67.7	11.8
LOS	C	D	B	E	D	B	D	E	A	D	E	B
Approach Delay		34.7			36.0			45.7			47.8	
Approach LOS		C			D			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 144
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 39.6 — Intersection LOS: D
Intersection Capacity Utilization 87.5% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 3: Ninth Line & Derry Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	404	1607	140	178	763	376	258	750	264	106	551	286
v/c Ratio	0.82	0.70	0.19	0.79	0.43	0.53	0.79	0.80	0.44	0.53	0.82	0.56
Control Delay	34.0	36.5	12.8	60.8	39.5	17.1	52.1	57.1	6.9	41.0	67.7	11.8
Queue Delay	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	36.8	12.8	60.8	39.5	17.1	52.1	57.1	6.9	41.0	67.7	11.8
Queue Length 50th (m)	66.8	145.5	9.7	34.2	65.2	28.2	56.0	111.8	0.0	20.9	84.7	4.0
Queue Length 95th (m)	111.4	192.0	27.7	69.6	96.5	74.2	89.9	144.0	22.7	36.6	115.8	33.0
Internal Link Dist (m)		210.9			158.6			3043.1			121.2	
Turn Bay Length (m)	75.0		50.0	80.0		80.0	110.0		110.0	60.0		70.0
Base Capacity (vph)	609	2290	742	302	1776	714	387	1170	685	221	800	560
Starvation Cap Reductn	0	205	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.77	0.19	0.59	0.43	0.53	0.67	0.64	0.39	0.48	0.69	0.51

Intersection Summary

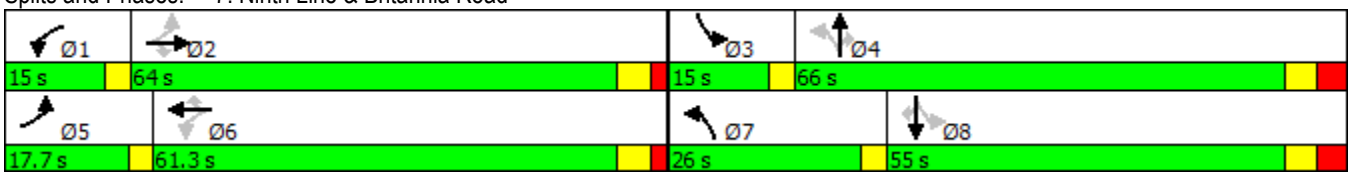
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	1641	438	127	702	186	243	751	177	102	872	117
Future Volume (vph)	186	1641	438	127	702	186	243	751	177	102	872	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		120.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	5193	1581	1733	5142	1439	1767	3544	1581	1608	3614	1581
Flt Permitted	0.302			0.071			0.091			0.276		
Satd. Flow (perm)	567	5193	1581	130	5142	1439	169	3544	1557	467	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			319			186			115			82
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			3067.1	
Travel Time (s)		9.7			11.0			10.0			157.7	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	3%	2%	11%	1%	3%	1%	11%	1%	1%
Adj. Flow (vph)	186	1641	438	127	702	186	243	751	177	102	872	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	186	1641	438	127	702	186	243	751	177	102	872	117
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template		Thru	Right	Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0	2.0	2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0	0.0	0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0	0.0	0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6	2.0	2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1	24.1	9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	17.7	64.0	64.0	15.0	61.3	61.3	26.0	66.0	66.0	15.0	55.0	55.0
Total Split (%)	11.1%	40.0%	40.0%	9.4%	38.3%	38.3%	16.3%	41.3%	41.3%	9.4%	34.4%	34.4%
Maximum Green (s)	14.7	57.9	57.9	12.0	55.2	55.2	23.0	58.3	58.3	12.0	47.3	47.3
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1	2.1	0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1	6.1	3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	73.9	58.3	58.3	70.4	56.5	56.5	68.4	50.8	50.8	55.3	40.8	40.8
Actuated g/C Ratio	0.49	0.39	0.39	0.47	0.38	0.38	0.46	0.34	0.34	0.37	0.27	0.27
v/c Ratio	0.49	0.81	0.54	0.72	0.36	0.28	0.84	0.62	0.29	0.41	0.88	0.24
Control Delay	26.9	46.1	12.8	54.2	35.7	5.7	63.8	43.8	14.2	29.1	63.8	16.0
Queue Delay	0.0	1.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.9	47.2	12.8	54.2	35.7	5.7	63.8	43.8	14.2	29.1	63.8	16.0
LOS	C	D	B	D	D	A	E	D	B	C	E	B
Approach Delay		38.9			32.5			43.5			55.4	
Approach LOS		D			C			D			E	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 149.6
Natural Cycle: 95
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 42.0 — Intersection LOS: D
Intersection Capacity Utilization 94.5% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 7: Ninth Line & Britannia Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	186	1641	438	127	702	186	243	751	177	102	872	117
v/c Ratio	0.49	0.81	0.54	0.72	0.36	0.28	0.84	0.62	0.29	0.41	0.88	0.24
Control Delay	26.9	46.1	12.8	54.2	35.7	5.7	63.8	43.8	14.2	29.1	63.8	16.0
Queue Delay	0.0	1.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.9	47.2	12.8	54.2	35.7	5.7	63.8	43.8	14.2	29.1	63.8	16.0
Queue Length 50th (m)	33.8	178.3	27.5	23.3	61.6	0.0	57.3	104.6	13.5	18.4	142.3	8.4
Queue Length 95th (m)	53.5	208.4	65.6	#56.4	78.2	17.9	#99.5	128.9	33.2	30.6	170.7	25.3
Internal Link Dist (m)		192.6			220.1			171.1			3043.1	
Turn Bay Length (m)	60.0		120.0	60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	404	2023	810	191	1942	659	324	1391	681	272	1150	559
Starvation Cap Reductn	0	177	23	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.89	0.56	0.66	0.36	0.28	0.75	0.54	0.26	0.38	0.76	0.21

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1956	0	0	848	25	271
Future Volume (vph)	1956	0	0	848	25	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	5193	0	0	5142	1608	1566
Flt Permitted					0.950	
Satd. Flow (perm)	5193	0	0	5142	1608	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						12
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	2%	11%	2%
Adj. Flow (vph)	1956	0	0	848	25	271
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1956	0	0	848	25	271
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	101.0			101.0	59.0	59.0
Total Split (%)	63.1%			63.1%	36.9%	36.9%
Maximum Green (s)	95.0			95.0	52.0	52.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	95.2			95.2	27.6	27.6
Actuated g/C Ratio	0.70			0.70	0.20	0.20
v/c Ratio	0.54			0.24	0.08	0.83
Control Delay	11.2			8.1	42.8	70.1
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	11.2			8.1	42.8	70.1
LOS	B			A	D	E
Approach Delay	11.2			8.1	67.8	
Approach LOS	B			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 135.9	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 15.7	Intersection LOS: B
Intersection Capacity Utilization 66.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1956	848	25	271
v/c Ratio	0.54	0.24	0.08	0.83
Control Delay	11.2	8.1	42.8	70.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.2	8.1	42.8	70.1
Queue Length 50th (m)	88.4	28.6	5.8	70.9
Queue Length 95th (m)	129.4	44.7	13.9	104.2
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	3639	3603	616	608
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.24	0.04	0.45

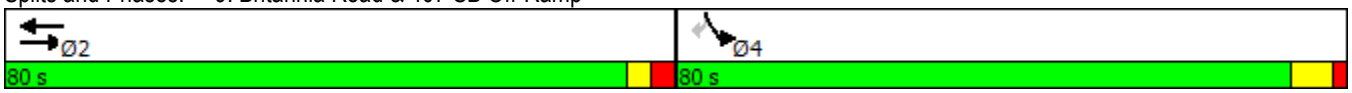
Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1547	676	0	462	27
Future Volume (vph)	0	1547	676	0	462	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	5193	5142	0	1684	1210
Flt Permitted					0.950	
Satd. Flow (perm)	0	5193	5142	0	1684	1210
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						24
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	2%	0%	6%	32%
Adj. Flow (vph)	0	1547	676	0	462	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1547	676	0	462	27
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		80.0	80.0		80.0	80.0
Total Split (%)		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)		74.0	74.0		73.0	73.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		74.4	74.4		39.6	39.6
Actuated g/C Ratio		0.59	0.59		0.31	0.31
v/c Ratio		0.51	0.22		0.88	0.07
Control Delay		17.4	13.8		60.0	11.7
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		17.4	13.8		60.0	11.7
LOS		B	B		E	B
Approach Delay		17.4	13.8		57.4	
Approach LOS		B	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 127.1	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 23.7	Intersection LOS: C
Intersection Capacity Utilization 66.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1547	676	462	27
v/c Ratio	0.51	0.22	0.88	0.07
Control Delay	17.4	13.8	60.0	11.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.4	13.8	60.0	11.7
Queue Length 50th (m)	83.2	29.4	114.5	0.5
Queue Length 95th (m)	124.6	47.4	158.0	7.3
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	3040	3010	972	708
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.51	0.22	0.48	0.04

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1230	0	0	2172	94	223
Future Volume (vph)	1230	0	0	2172	94	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	5142	0	0	5193	3362	1597
Flt Permitted					0.950	
Satd. Flow (perm)	5142	0	0	5193	3362	1597
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						95
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	1%	3%	0%
Adj. Flow (vph)	1230	0	0	2172	94	223
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1230	0	0	2172	94	223
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	113.0			113.0	47.0	47.0
Total Split (%)	70.6%			70.6%	29.4%	29.4%
Maximum Green (s)	107.0			107.0	40.0	40.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	107.2			107.2	17.0	17.0
Actuated g/C Ratio	0.78			0.78	0.12	0.12
v/c Ratio	0.31			0.54	0.23	0.79
Control Delay	5.0			6.8	54.5	53.2
Queue Delay	0.0			0.4	0.0	0.0
Total Delay	5.0			7.1	54.5	53.2
LOS	A			A	D	D
Approach Delay	5.0			7.1	53.6	
Approach LOS	A			A	D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 137.3	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 10.4	Intersection LOS: B
Intersection Capacity Utilization 82.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1230	2172	94	223
v/c Ratio	0.31	0.54	0.23	0.79
Control Delay	5.0	6.8	54.5	53.2
Queue Delay	0.0	0.4	0.0	0.0
Total Delay	5.0	7.1	54.5	53.2
Queue Length 50th (m)	31.5	72.9	12.6	36.2
Queue Length 95th (m)	50.6	112.4	21.3	66.4
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	4016	4056	981	533
Starvation Cap Reductn	0	1106	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.31	0.74	0.10	0.42

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1053	2125	0	256	486
Future Volume (vph)	0	1053	2125	0	256	486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	5043	5193	0	3429	1597
Flt Permitted					0.950	
Satd. Flow (perm)	0	5043	5193	0	3429	1597
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						3
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	4%	1%	0%	1%	0%
Adj. Flow (vph)	0	1053	2125	0	256	486
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1053	2125	0	256	486
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		88.0	88.0		72.0	72.0
Total Split (%)		55.0%	55.0%		45.0%	45.0%
Maximum Green (s)		82.0	82.0		65.0	65.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		82.5	82.5		48.3	48.3
Actuated g/C Ratio		0.57	0.57		0.34	0.34
v/c Ratio		0.36	0.71		0.22	0.91
Control Delay		18.2	25.4		33.9	66.2
Queue Delay		0.0	0.2		0.0	0.0
Total Delay		18.2	25.6		33.9	66.2
LOS		B	C		C	E
Approach Delay		18.2	25.6		55.0	
Approach LOS		B	C		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 143.9	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 29.2	Intersection LOS: C
Intersection Capacity Utilization 82.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1053	2125	256	486
v/c Ratio	0.36	0.71	0.22	0.91
Control Delay	18.2	25.4	33.9	66.2
Queue Delay	0.0	0.2	0.0	0.0
Total Delay	18.2	25.6	33.9	66.2
Queue Length 50th (m)	60.5	163.7	28.1	137.3
Queue Length 95th (m)	89.7	230.4	38.8	185.1
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2891	2978	1558	727
Starvation Cap Reductn	0	184	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.76	0.16	0.67

Intersection Summary

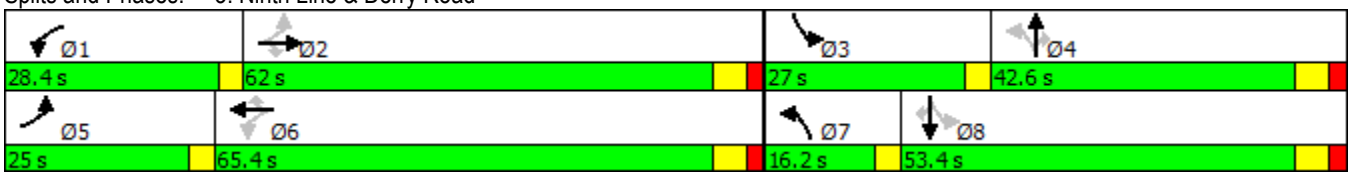
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	257	883	287	279	1733	147	128	683	211	293	915	361
Future Volume (vph)	257	883	287	279	1733	147	128	683	211	293	915	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		80.0	110.0		110.0	60.0		70.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1767	5092	1597	1767	5193	1566	1767	3614	1581	1785	3614	1581
Flt Permitted	0.065			0.248			0.120			0.110		
Satd. Flow (perm)	121	5092	1597	461	5193	1566	223	3614	1556	207	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			223			91			211			233
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			3067.1			145.2	
Travel Time (s)		14.1			11.0			157.7			7.5	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	3%	0%	1%	1%	2%	1%	1%	1%	0%	1%	1%
Adj. Flow (vph)	257	883	287	279	1733	147	128	683	211	293	915	361
Shared Lane Traffic (%)												
Lane Group Flow (vph)	257	883	287	279	1733	147	128	683	211	293	915	361
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template		Thru	Right		Thru	Right						
Leading Detector (m)	25.0	10.0	2.0	25.0	10.0	2.0	8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0	0.0	15.0	0.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0	0.0	15.0	0.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6	2.0	10.0	0.6	2.0	10.0	10.0	10.0	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1	30.1	9.5	30.1	30.1	9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	25.0	62.0	62.0	28.4	65.4	65.4	16.2	42.6	42.6	27.0	53.4	53.4
Total Split (%)	15.6%	38.8%	38.8%	17.8%	40.9%	40.9%	10.1%	26.6%	26.6%	16.9%	33.4%	33.4%
Maximum Green (s)	22.0	55.9	55.9	25.4	59.3	59.3	13.2	36.2	36.2	24.0	47.0	47.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1	2.1	0.0	2.1	2.1	0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1	6.1	3.0	6.1	6.1	3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		9.0	9.0		9.0	9.0		9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0	15.0		15.0	15.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	84.3	61.8	61.8	80.5	59.5	59.5	48.4	33.2	33.2	62.4	44.3	44.3
Actuated g/C Ratio	0.55	0.40	0.40	0.52	0.39	0.39	0.31	0.22	0.22	0.40	0.29	0.29
v/c Ratio	0.91	0.43	0.37	0.71	0.87	0.22	0.68	0.88	0.42	0.93	0.88	0.58
Control Delay	80.3	35.7	10.1	29.7	50.1	14.5	52.1	72.4	8.6	77.8	63.7	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.3	35.7	10.1	29.7	50.1	14.5	52.1	72.4	8.6	77.8	63.7	20.1
LOS	F	D	B	C	D	B	D	E	A	E	E	C
Approach Delay		38.6			45.1			56.7			56.3	
Approach LOS		D			D			E			E	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 154.3
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 48.4 — Intersection LOS: D
Intersection Capacity Utilization 99.9% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 3: Ninth Line & Derry Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	257	883	287	279	1733	147	128	683	211	293	915	361
v/c Ratio	0.91	0.43	0.37	0.71	0.87	0.22	0.68	0.88	0.42	0.93	0.88	0.58
Control Delay	80.3	35.7	10.1	29.7	50.1	14.5	52.1	72.4	8.6	77.8	63.7	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.3	35.7	10.1	29.7	50.1	14.5	52.1	72.4	8.6	77.8	63.7	20.1
Queue Length 50th (m)	67.7	79.0	13.5	49.1	200.5	12.2	26.8	116.0	0.0	77.8	153.0	35.4
Queue Length 95th (m)	#123.3	99.5	40.0	68.8	221.9	29.6	45.9	141.0	22.7	#135.3	181.7	71.0
Internal Link Dist (m)		210.9			158.6			3043.1			121.2	
Turn Bay Length (m)	75.0		50.0	80.0		80.0	110.0		110.0	60.0		70.0
Base Capacity (vph)	301	2039	773	472	2003	660	204	851	527	329	1106	645
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.43	0.37	0.59	0.87	0.22	0.63	0.80	0.40	0.89	0.83	0.56

Intersection Summary

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

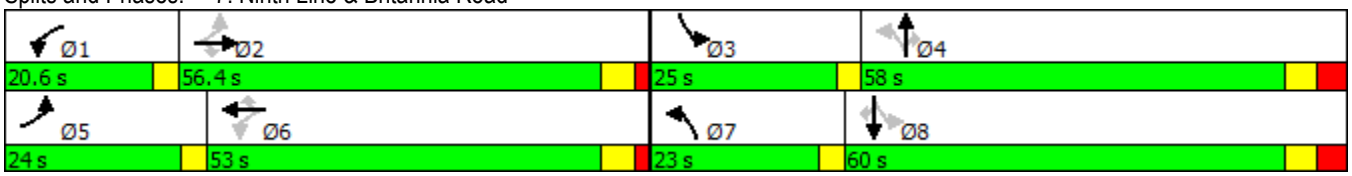
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	819	376	186	1231	206	211	971	141	219	1003	183
Future Volume (vph)	209	819	376	186	1231	206	211	971	141	219	1003	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		120.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	5193	1597	1785	5193	1551	1767	3614	1597	1716	3614	1536
Flt Permitted	0.090			0.257			0.089			0.087		
Satd. Flow (perm)	169	5193	1597	483	5193	1551	166	3614	1570	157	3614	1536
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			321			124			82			98
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			3067.1	
Travel Time (s)		9.7			11.0			10.0			157.7	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	1%	1%	0%	4%	1%	4%
Adj. Flow (vph)	209	819	376	186	1231	206	211	971	141	219	1003	183
Shared Lane Traffic (%)												
Lane Group Flow (vph)	209	819	376	186	1231	206	211	971	141	219	1003	183
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template		Thru	Right	Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0	2.0	2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0	0.0	0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0	0.0	0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6	2.0	2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1	24.1	9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	24.0	56.4	56.4	20.6	53.0	53.0	23.0	58.0	58.0	25.0	60.0	60.0
Total Split (%)	15.0%	35.3%	35.3%	12.9%	33.1%	33.1%	14.4%	36.3%	36.3%	15.6%	37.5%	37.5%
Maximum Green (s)	21.0	50.3	50.3	17.6	46.9	46.9	20.0	50.3	50.3	22.0	52.3	52.3
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1	2.1	0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1	6.1	3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	70.4	50.8	50.8	65.6	48.3	48.3	66.4	44.8	44.8	68.6	46.0	46.0
Actuated g/C Ratio	0.48	0.34	0.34	0.44	0.33	0.33	0.45	0.30	0.30	0.46	0.31	0.31
v/c Ratio	0.79	0.46	0.50	0.55	0.72	0.35	0.82	0.89	0.26	0.84	0.89	0.34
Control Delay	56.1	40.4	9.7	30.4	48.8	18.8	62.4	60.1	18.7	64.1	59.8	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.1	40.4	9.7	30.4	48.8	18.8	62.4	60.1	18.7	64.1	59.8	19.9
LOS	E	D	A	C	D	B	E	E	B	E	E	B
Approach Delay		34.5			42.9			56.0			55.3	
Approach LOS		C			D			E			E	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 147.7
Natural Cycle: 85
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 46.9 — Intersection LOS: D
Intersection Capacity Utilization 92.9% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 7: Ninth Line & Britannia Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	209	819	376	186	1231	206	211	971	141	219	1003	183
v/c Ratio	0.79	0.46	0.50	0.55	0.72	0.35	0.82	0.89	0.26	0.84	0.89	0.34
Control Delay	56.1	40.4	9.7	30.4	48.8	18.8	62.4	60.1	18.7	64.1	59.8	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.1	40.4	9.7	30.4	48.8	18.8	62.4	60.1	18.7	64.1	59.8	19.9
Queue Length 50th (m)	45.5	77.2	12.4	35.2	132.7	19.5	46.4	154.0	13.5	49.5	159.1	19.6
Queue Length 95th (m)	78.6	96.6	44.1	54.9	159.8	45.3	#86.0	190.0	33.1	#87.8	194.2	42.5
Internal Link Dist (m)		192.6			220.1			171.1			3043.1	
Turn Bay Length (m)	60.0		120.0	60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	313	1785	759	379	1698	590	295	1242	593	308	1291	612
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.46	0.50	0.49	0.72	0.35	0.72	0.78	0.24	0.71	0.78	0.30

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1233	0	0	1607	63	174
Future Volume (vph)	1233	0	0	1607	63	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	5193	0	0	5193	1750	1581
Flt Permitted					0.950	
Satd. Flow (perm)	5193	0	0	5193	1750	1581
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						85
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Adj. Flow (vph)	1233	0	0	1607	63	174
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1233	0	0	1607	63	174
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	109.0			109.0	51.0	51.0
Total Split (%)	68.1%			68.1%	31.9%	31.9%
Maximum Green (s)	103.0			103.0	44.0	44.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	103.1			103.1	13.1	13.1
Actuated g/C Ratio	0.80			0.80	0.10	0.10
v/c Ratio	0.30			0.39	0.35	0.73
Control Delay	4.0			4.5	59.0	46.7
Queue Delay	0.0			0.2	0.0	0.0
Total Delay	4.0			4.7	59.0	46.7
LOS	A			A	E	D
Approach Delay	4.0			4.7	50.0	
Approach LOS	A			A	D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 129.3	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 7.9	Intersection LOS: A
Intersection Capacity Utilization 64.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1233	1607	63	174
v/c Ratio	0.30	0.39	0.35	0.73
Control Delay	4.0	4.5	59.0	46.7
Queue Delay	0.0	0.2	0.0	0.0
Total Delay	4.0	4.7	59.0	46.7
Queue Length 50th (m)	26.2	37.7	16.0	23.2
Queue Length 95th (m)	41.9	59.2	30.7	48.9
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	4142	4142	596	594
Starvation Cap Reductn	0	1416	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.30	0.59	0.11	0.29

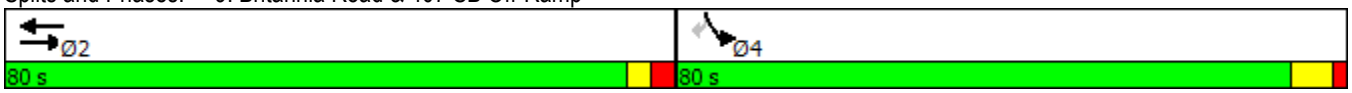
Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	823	1493	0	452	70
Future Volume (vph)	0	823	1493	0	452	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	5193	5193	0	1767	1536
Flt Permitted					0.950	
Satd. Flow (perm)	0	5193	5193	0	1767	1536
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						13
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	1%	4%
Adj. Flow (vph)	0	823	1493	0	452	70
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	823	1493	0	452	70
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		80.0	80.0		80.0	80.0
Total Split (%)		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)		74.0	74.0		73.0	73.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		74.4	74.4		36.7	36.7
Actuated g/C Ratio		0.60	0.60		0.30	0.30
v/c Ratio		0.26	0.48		0.87	0.15
Control Delay		13.0	15.6		58.5	26.1
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		13.0	15.6		58.5	26.1
LOS		B	B		E	C
Approach Delay		13.0	15.6		54.2	
Approach LOS		B	B		D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 124.1	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 21.9	Intersection LOS: C
Intersection Capacity Utilization 64.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	823	1493	452	70
v/c Ratio	0.26	0.48	0.87	0.15
Control Delay	13.0	15.6	58.5	26.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.0	15.6	58.5	26.1
Queue Length 50th (m)	34.4	73.8	109.4	10.7
Queue Length 95th (m)	54.9	111.6	150.8	22.0
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	3111	3111	1044	913
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.26	0.48	0.43	0.08

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1537	0	0	872	12	151
Future Volume (vph)	1537	0	0	872	12	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3510	2935	1507
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3510	2935	1507
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						63
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	4%	18%	6%
Adj. Flow (vph)	1537	0	0	872	12	151
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1537	0	0	872	12	151
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	121.0			121.0	39.0	39.0
Total Split (%)	75.6%			75.6%	24.4%	24.4%
Maximum Green (s)	115.0			115.0	32.0	32.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	115.2			115.2	14.1	14.1
Actuated g/C Ratio	0.81			0.81	0.10	0.10
v/c Ratio	0.53			0.31	0.04	0.73
Control Delay	5.8			4.1	56.6	56.3
Queue Delay	0.3			0.0	0.0	0.0
Total Delay	6.0			4.1	56.6	56.3
LOS	A			A	E	E
Approach Delay	6.0			4.1	56.3	
Approach LOS	A			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 142.3	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 8.6	Intersection LOS: A
Intersection Capacity Utilization 72.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1537	872	12	151
v/c Ratio	0.53	0.31	0.04	0.73
Control Delay	5.8	4.1	56.6	56.3
Queue Delay	0.3	0.0	0.0	0.0
Total Delay	6.0	4.1	56.6	56.3
Queue Length 50th (m)	66.2	28.6	1.7	25.6
Queue Length 95th (m)	106.8	47.8	5.1	50.7
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2896	2841	661	388
Starvation Cap Reductn	605	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.67	0.31	0.02	0.39

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2003	648	0	38	50
Future Volume (vph)	0	2003	648	0	38	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3510	0	3148	1309
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3510	0	3148	1309
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						50
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	10%	22%
Adj. Flow (vph)	0	2003	648	0	38	50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2003	648	0	38	50
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		133.0	133.0		27.0	27.0
Total Split (%)		83.1%	83.1%		16.9%	16.9%
Maximum Green (s)		127.0	127.0		20.0	20.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		128.6	128.6		8.0	8.0
Actuated g/C Ratio		0.89	0.89		0.06	0.06
v/c Ratio		0.63	0.21		0.22	0.42
Control Delay		4.0	1.8		70.0	27.5
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		4.0	1.8		70.0	27.5
LOS		A	A		E	C
Approach Delay		4.0	1.8		45.9	
Approach LOS		A	A		D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 145.2	
Natural Cycle: 75	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 4.8	Intersection LOS: A
Intersection Capacity Utilization 72.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2003	648	38	50
v/c Ratio	0.63	0.21	0.22	0.42
Control Delay	4.0	1.8	70.0	27.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.0	1.8	70.0	27.5
Queue Length 50th (m)	75.3	13.3	5.9	0.0
Queue Length 95th (m)	106.5	20.2	12.4	14.2
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3200	3108	434	223
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.21	0.09	0.22

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	325	1252	113	144	587	287	233	653	234	43	481	258
Future Volume (vph)	325	1252	113	144	587	287	233	653	234	43	481	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		50.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00										
Frt		0.988			0.951				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	3569	0	1733	3359	0	1750	3614	1566	1716	3614	1581
Flt Permitted	0.195			0.100			0.195			0.316		
Satd. Flow (perm)	346	3569	0	182	3359	0	359	3614	1566	571	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			57				234			258
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			813.6			145.2	
Travel Time (s)		14.1			11.0			41.8			7.5	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	1%	0%	3%	4%	2%	2%	1%	2%	4%	1%	1%
Adj. Flow (vph)	325	1252	113	144	587	287	233	653	234	43	481	258
Shared Lane Traffic (%)												
Lane Group Flow (vph)	325	1365	0	144	874	0	233	653	234	43	481	258
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	10.0	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1		9.5	30.1		9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	39.0	81.0		19.0	61.0		24.0	50.2	50.2	9.8	36.0	36.0
Total Split (%)	24.4%	50.6%		11.9%	38.1%		15.0%	31.4%	31.4%	6.1%	22.5%	22.5%
Maximum Green (s)	36.0	74.9		16.0	54.9		21.0	43.8	43.8	6.8	29.6	29.6
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0			15.0			14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	92.3	75.2		77.5	63.4		50.6	39.6	39.6	34.9	24.9	24.9
Actuated g/C Ratio	0.62	0.50		0.52	0.43		0.34	0.27	0.27	0.23	0.17	0.17
v/c Ratio	0.78	0.76		0.69	0.60		0.77	0.68	0.40	0.23	0.80	0.54
Control Delay	30.6	34.2		42.5	35.3		55.5	53.7	7.1	37.7	70.7	10.4
Queue Delay	0.0	2.5		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	36.7		42.5	35.3		55.5	53.7	7.1	37.7	70.7	10.4
LOS	C	D		D	D		E	D	A	D	E	B
Approach Delay		35.5			36.3			44.3			49.0	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 149	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 40.1	Intersection LOS: D
Intersection Capacity Utilization 89.5%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: Ninth Line & Derry Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	325	1365	144	874	233	653	234	43	481	258
v/c Ratio	0.78	0.76	0.69	0.60	0.77	0.68	0.40	0.23	0.80	0.54
Control Delay	30.6	34.2	42.5	35.3	55.5	53.7	7.1	37.7	70.7	10.4
Queue Delay	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	36.7	42.5	35.3	55.5	53.7	7.1	37.7	70.7	10.4
Queue Length 50th (m)	48.1	181.3	18.8	106.7	54.9	97.8	0.0	9.0	77.3	0.0
Queue Length 95th (m)	83.8	234.7	48.1	154.0	#86.2	125.5	22.0	19.3	102.0	26.4
Internal Link Dist (m)		210.9		158.6		789.6			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	539	1806	267	1461	318	1067	627	186	721	522
Starvation Cap Reductn	0	309	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.91	0.54	0.60	0.73	0.61	0.37	0.23	0.67	0.49

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	5	46	141	2	172	14	912	99	66	657	4
Future Volume (vph)	53	5	46	141	2	172	14	912	99	66	657	4
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1860	1900	1640	1860	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.3	3.0	3.5	3.2	3.0	3.5	3.6
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		25.0	80.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor									0.98	1.00		
Frt		0.864			0.852				0.850		0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1609	0	1412	1587	0	1617	3500	1222	1649	3531	0
Flt Permitted	0.531			0.721			0.379			0.228		
Satd. Flow (perm)	854	1609	0	1071	1587	0	645	3500	1194	396	3531	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			187				71		1	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		140.5			218.3			843.0			487.0	
Travel Time (s)		10.1			15.7			43.4			25.0	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	9%	0%	1%	2%
Adj. Flow (vph)	58	5	50	153	2	187	15	991	108	72	714	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	55	0	153	189	0	15	991	108	72	718	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.04	1.12	1.01	1.28	1.12	1.01	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		7.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		-3.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		-3.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		10.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5		9.5	26.0	26.0	9.5	26.0	
Total Split (s)	36.0	36.0		36.0	36.0		10.0	54.0	54.0	10.0	54.0	
Total Split (%)	36.0%	36.0%		36.0%	36.0%		10.0%	54.0%	54.0%	10.0%	54.0%	
Maximum Green (s)	29.5	29.5		29.5	29.5		7.0	47.0	47.0	7.0	47.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)	8.0	8.0		7.0	7.0			8.0	8.0		8.0	
Flash Dont Walk (s)	8.0	8.0		11.0	11.0			10.0	10.0		10.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	
Act Effct Green (s)	19.0	19.0		19.0	19.0		60.1	50.0	50.0	61.4	55.8	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.69	0.58	0.58	0.71	0.64	
v/c Ratio	0.31	0.14		0.65	0.38		0.03	0.49	0.15	0.18	0.32	
Control Delay	32.8	9.8		44.4	6.8		5.4	13.5	5.6	6.1	8.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	32.8	9.8		44.4	6.8		5.4	13.5	5.6	6.1	8.8	
LOS	C	A		D	A		A	B	A	A	A	
Approach Delay		21.6			23.6			12.6			8.6	
Approach LOS		C			C			B			A	

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 86.6	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 13.3	Intersection LOS: B
Intersection Capacity Utilization 62.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Street "F"/Doug Leavens Boulevard

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	58	55	153	189	15	991	108	72	718
v/c Ratio	0.31	0.14	0.65	0.38	0.03	0.49	0.15	0.18	0.32
Control Delay	32.8	9.8	44.4	6.8	5.4	13.5	5.6	6.1	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.8	9.8	44.4	6.8	5.4	13.5	5.6	6.1	8.8
Queue Length 50th (m)	8.7	0.7	24.8	0.3	0.7	52.8	2.8	3.2	24.3
Queue Length 95th (m)	19.7	9.6	45.2	15.9	3.2	88.8	12.7	9.9	58.5
Internal Link Dist (m)		116.5		194.3		819.0			463.0
Turn Bay Length (m)					15.0		25.0	80.0	
Base Capacity (vph)	309	614	387	694	556	2022	719	412	2275
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.09	0.40	0.27	0.03	0.49	0.15	0.17	0.32

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	68	968	36	31	832
Future Volume (vph)	47	68	968	36	31	832
Ideal Flow (vphpl)	1640	1900	1900	1900	1640	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.0	3.5
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				15.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt	0.920		0.995			
Flt Protected	0.980				0.950	
Satd. Flow (prot)	1380	0	3441	0	1412	3500
Flt Permitted	0.980				0.950	
Satd. Flow (perm)	1380	0	3441	0	1412	3500
Link Speed (k/h)	50		70			70
Link Distance (m)	166.2		289.9			843.0
Travel Time (s)	12.0		14.9			43.4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	3%	9%	3%	2%
Adj. Flow (vph)	49	71	1008	38	32	867
Shared Lane Traffic (%)						
Lane Group Flow (vph)	120	0	1046	0	32	867
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.31	1.09	1.01	1.01	1.31	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	47	68	968	36	31	832
Future Volume (Veh/h)	47	68	968	36	31	832
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	49	71	1008	38	32	867
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			290			
pX, platoon unblocked	0.89	0.89			0.89	
vC, conflicting volume	1524	523			1046	
vC1, stage 1 conf vol	1027					
vC2, stage 2 conf vol	498					
vCu, unblocked vol	1339	211			800	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	90			96	
cM capacity (veh/h)	321	711			721	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	120	672	374	32	434	434
Volume Left	49	0	0	32	0	0
Volume Right	71	0	38	0	0	0
cSH	475	1700	1700	721	1700	1700
Volume to Capacity	0.25	0.40	0.22	0.04	0.26	0.26
Queue Length 95th (m)	7.9	0.0	0.0	1.1	0.0	0.0
Control Delay (s)	15.1	0.0	0.0	10.2	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	15.1	0.0		0.4		
Approach LOS	C					

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	124	93	902	92	20	858
Future Volume (vph)	124	93	902	92	20	858
Ideal Flow (vphpl)	1640	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.6	3.6
Storage Length (m)	15.0	0.0		25.0	20.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1412	1436	3433	1276	1683	3574
Flt Permitted	0.950				0.274	
Satd. Flow (perm)	1412	1436	3433	1276	485	3574
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		96		61		
Link Speed (k/h)	50		70			70
Link Distance (m)	186.9		633.8			289.9
Travel Time (s)	13.5		32.6			14.9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	5%	4%	8%	5%	1%
Adj. Flow (vph)	128	96	930	95	21	885
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	96	930	95	21	885
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.31	1.09	1.01	1.22	1.03	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right		Thru
Leading Detector (m)	9.0	9.0	10.0	2.0	20.0	10.0
Trailing Detector (m)	-1.0	-1.0	0.0	0.0	10.0	0.0
Detector 1 Position(m)	-1.0	-1.0	0.0	0.0	10.0	0.0
Detector 1 Size(m)	10.0	10.0	0.6	2.0	10.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	8.0	8.0	5.0	8.0
Minimum Split (s)	24.0	24.0	25.0	25.0	9.5	25.0
Total Split (s)	32.0	32.0	58.0	58.0	10.0	68.0
Total Split (%)	32.0%	32.0%	58.0%	58.0%	10.0%	68.0%
Maximum Green (s)	26.0	26.0	51.0	51.0	7.0	61.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	14.5	14.5	63.1	63.1	70.3	66.3
Actuated g/C Ratio	0.16	0.16	0.69	0.69	0.77	0.73
v/c Ratio	0.57	0.31	0.39	0.11	0.04	0.34
Control Delay	44.2	9.6	7.5	3.5	3.4	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	9.6	7.5	3.5	3.4	5.2
LOS	D	A	A	A	A	A
Approach Delay	29.4		7.2			5.2
Approach LOS	C		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 90.8	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 8.6	Intersection LOS: A
Intersection Capacity Utilization 41.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Osprey Boulevard

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	128	96	930	95	21	885
v/c Ratio	0.57	0.31	0.39	0.11	0.04	0.34
Control Delay	44.2	9.6	7.5	3.5	3.4	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	9.6	7.5	3.5	3.4	5.2
Queue Length 50th (m)	21.0	0.0	27.1	1.4	0.7	25.1
Queue Length 95th (m)	38.8	12.6	62.6	9.1	2.9	43.4
Internal Link Dist (m)	162.9		609.8			265.9
Turn Bay Length (m)	15.0			25.0	20.0	
Base Capacity (vph)	420	494	2385	904	494	2608
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.19	0.39	0.11	0.04	0.34

Intersection Summary

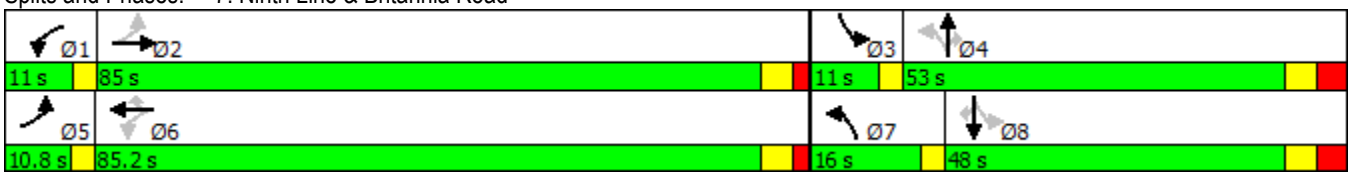
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	1228	357	95	540	147	165	637	138	72	810	100
Future Volume (vph)	132	1228	357	95	540	147	165	637	138	72	810	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		50.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98	1.00		
Frt		0.966				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3491	0	1733	3579	1439	1767	3544	1581	1608	3614	1581
Flt Permitted	0.402			0.051			0.096			0.271		
Satd. Flow (perm)	755	3491	0	93	3579	1439	179	3544	1557	458	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33				147			94			82
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	3%	2%	11%	1%	3%	1%	11%	1%	1%
Adj. Flow (vph)	132	1228	357	95	540	147	165	637	138	72	810	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	132	1585	0	95	540	147	165	637	138	72	810	100
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template		Thru		Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		8
Detector Phase	5	2		1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	10.8	85.0		11.0	85.2	85.2	16.0	53.0	53.0	11.0	48.0	48.0
Total Split (%)	6.8%	53.1%		6.9%	53.3%	53.3%	10.0%	33.1%	33.1%	6.9%	30.0%	30.0%
Maximum Green (s)	7.8	78.9		8.0	79.1	79.1	13.0	45.3	45.3	8.0	40.3	40.3
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0			11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	89.7	78.9		90.1	79.1	79.1	59.1	43.9	43.9	50.9	38.6	38.6
Actuated g/C Ratio	0.57	0.50		0.57	0.50	0.50	0.37	0.28	0.28	0.32	0.24	0.24
v/c Ratio	0.28	0.90		0.71	0.30	0.19	0.84	0.65	0.28	0.36	0.92	0.22
Control Delay	16.5	43.7		54.4	24.1	3.6	70.8	53.8	17.0	37.7	74.0	14.3
Queue Delay	0.0	46.2		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.5	89.9		54.4	24.1	3.6	70.8	53.8	17.0	37.7	74.0	14.3
LOS	B	F		D	C	A	E	D	B	D	E	B
Approach Delay		84.3			23.9			51.4			65.2	
Approach LOS		F			C			D			E	

Intersection Summary

Area Type:	Other
Cycle Length: 160	
Actuated Cycle Length: 158	
Natural Cycle: 115	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 62.4	Intersection LOS: E
Intersection Capacity Utilization 100.3%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 7: Ninth Line & Britannia Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	132	1585	95	540	147	165	637	138	72	810	100
v/c Ratio	0.28	0.90	0.71	0.30	0.19	0.84	0.65	0.28	0.36	0.92	0.22
Control Delay	16.5	43.7	54.4	24.1	3.6	70.8	53.8	17.0	37.7	74.0	14.3
Queue Delay	0.0	46.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.5	89.9	54.4	24.1	3.6	70.8	53.8	17.0	37.7	74.0	14.3
Queue Length 50th (m)	19.3	249.4	14.7	55.6	0.0	37.6	98.7	11.0	15.6	138.8	4.6
Queue Length 95th (m)	30.6	287.1	#43.4	69.4	12.5	#78.6	121.1	30.1	27.8	#173.0	20.7
Internal Link Dist (m)		192.6		220.1			171.1			609.8	
Turn Bay Length (m)	60.0		60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	479	1760	136	1792	793	197	1016	513	207	922	464
Starvation Cap Reductn	0	336	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	1.11	0.70	0.30	0.19	0.84	0.63	0.27	0.35	0.88	0.22

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1498	0	0	648	19	210
Future Volume (vph)	1498	0	0	648	19	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3579	1608	1566
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3579	1608	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						56
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	2%	11%	2%
Adj. Flow (vph)	1498	0	0	648	19	210
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1498	0	0	648	19	210
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	114.0			114.0	46.0	46.0
Total Split (%)	71.3%			71.3%	28.8%	28.8%
Maximum Green (s)	108.0			108.0	39.0	39.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	108.2			108.2	19.5	19.5
Actuated g/C Ratio	0.77			0.77	0.14	0.14
v/c Ratio	0.54			0.24	0.09	0.79
Control Delay	7.9			5.3	52.1	63.8
Queue Delay	0.3			0.0	0.0	0.0
Total Delay	8.2			5.3	52.1	63.8
LOS	A			A	D	E
Approach Delay	8.2			5.3	62.8	
Approach LOS	A			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 140.7	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 12.7	Intersection LOS: B
Intersection Capacity Utilization 65.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1498	648	19	210
v/c Ratio	0.54	0.24	0.09	0.79
Control Delay	7.9	5.3	52.1	63.8
Queue Delay	0.3	0.0	0.0	0.0
Total Delay	8.2	5.3	52.1	63.8
Queue Length 50th (m)	79.4	24.5	4.9	44.6
Queue Length 95th (m)	124.8	41.2	12.9	74.0
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2778	2751	446	475
Starvation Cap Reductn	572	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.68	0.24	0.04	0.44

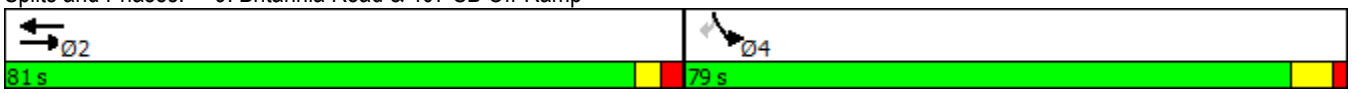
Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1098	511	0	443	21
Future Volume (vph)	0	1098	511	0	443	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3579	0	1684	1210
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3579	0	1684	1210
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						19
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	2%	0%	6%	32%
Adj. Flow (vph)	0	1098	511	0	443	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1098	511	0	443	21
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		81.0	81.0		79.0	79.0
Total Split (%)		50.6%	50.6%		49.4%	49.4%
Maximum Green (s)		75.0	75.0		72.0	72.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		75.4	75.4		38.1	38.1
Actuated g/C Ratio		0.60	0.60		0.30	0.30
v/c Ratio		0.51	0.24		0.88	0.06
Control Delay		17.0	13.5		60.5	12.7
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		17.0	13.5		60.5	12.7
LOS		B	B		E	B
Approach Delay		17.0	13.5		58.3	
Approach LOS		B	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 126.5	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 25.4	Intersection LOS: C
Intersection Capacity Utilization 65.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1098	511	443	21
v/c Ratio	0.51	0.24	0.88	0.06
Control Delay	17.0	13.5	60.5	12.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.0	13.5	60.5	12.7
Queue Length 50th (m)	82.8	31.2	109.6	0.4
Queue Length 95th (m)	129.8	52.7	151.7	6.4
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2153	2132	963	700
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.51	0.24	0.46	0.03

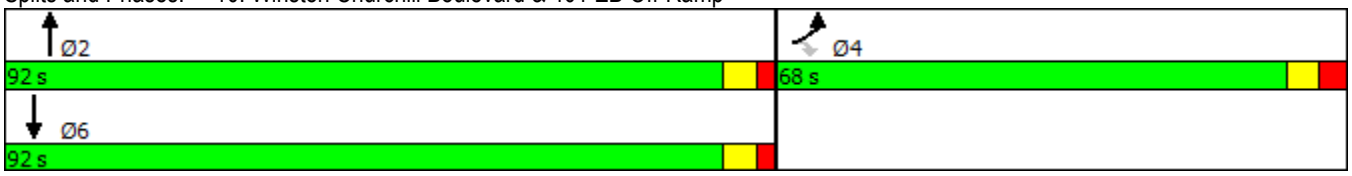
Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	330	275	0	1044	920	0
Future Volume (vph)	330	275	0	1044	920	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.969	0.850				
Flt Protected	0.962					
Satd. Flow (prot)	3280	1425	0	4980	4885	0
Flt Permitted	0.962					
Satd. Flow (perm)	3280	1425	0	4980	4885	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	25	103				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	0%	3%	5%	0%
Adj. Flow (vph)	347	289	0	1099	968	0
Shared Lane Traffic (%)		31%				
Lane Group Flow (vph)	437	199	0	1099	968	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	68.0	68.0		92.0	92.0	
Total Split (%)	42.5%	42.5%		57.5%	57.5%	
Maximum Green (s)	60.5	60.5		85.5	85.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	24.8	24.8		87.1	87.1	
Actuated g/C Ratio	0.20	0.20		0.71	0.71	
v/c Ratio	0.64	0.54		0.31	0.28	
Control Delay	46.1	25.9		7.0	6.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	46.1	25.9		7.0	6.8	
LOS	D	C		A	A	
Approach Delay	39.8			7.0	6.8	
Approach LOS	D			A	A	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 121.9	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 45.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	437	199	1099	968
v/c Ratio	0.64	0.54	0.31	0.28
Control Delay	46.1	25.9	7.0	6.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	46.1	25.9	7.0	6.8
Queue Length 50th (m)	49.3	22.9	33.0	28.2
Queue Length 95th (m)	66.5	50.3	47.9	41.5
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1708	786	3557	3490
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.26	0.25	0.31	0.28

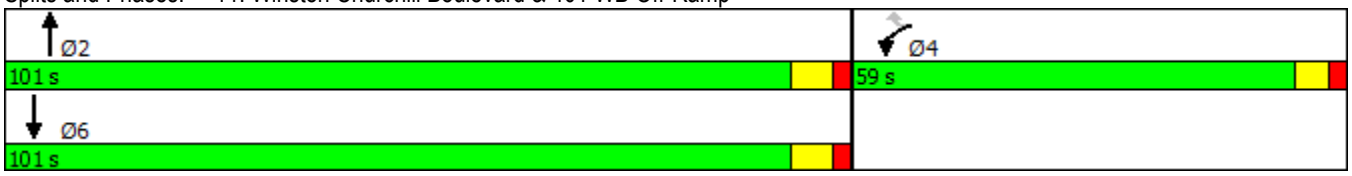
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	202	367	1140	0	0	1237
Future Volume (vph)	202	367	1140	0	0	1237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.91
Frt	0.929	0.850				
Flt Protected	0.974					
Satd. Flow (prot)	2973	1298	4980	0	0	4839
Flt Permitted	0.974					
Satd. Flow (perm)	2973	1298	4980	0	0	4839
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	76	76				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	10%	12%	3%	0%	0%	6%
Adj. Flow (vph)	213	386	1200	0	0	1302
Shared Lane Traffic (%)		50%				
Lane Group Flow (vph)	406	193	1200	0	0	1302
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	59.0	59.0	101.0			101.0
Total Split (%)	36.9%	36.9%	63.1%			63.1%
Maximum Green (s)	52.5	52.5	93.5			93.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	23.1	23.1	96.2			96.2
Actuated g/C Ratio	0.18	0.18	0.74			0.74
v/c Ratio	0.68	0.66	0.32			0.36
Control Delay	46.1	40.3	6.3			6.5
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	46.1	40.3	6.3			6.5
LOS	D	D	A			A
Approach Delay	44.2		6.3			6.5
Approach LOS	D		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 129.3	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 13.7	Intersection LOS: B
Intersection Capacity Utilization 45.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	406	193	1200	1302
v/c Ratio	0.68	0.66	0.32	0.36
Control Delay	46.1	40.3	6.3	6.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	46.1	40.3	6.3	6.5
Queue Length 50th (m)	43.1	32.3	34.9	39.2
Queue Length 95th (m)	60.6	61.7	53.2	59.8
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1287	587	3703	3599
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.32	0.33	0.32	0.36

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	8	2	1135	719	18
Future Volume (vph)	20	8	2	1135	719	18
Ideal Flow (vphpl)	1640	1640	1640	1900	1900	1900
Lane Width (m)	3.6	3.6	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	0.0	25.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.996	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1527	1367	1510	3500	3486	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1527	1367	1510	3500	3486	0
Link Speed (k/h)	50			70	70	
Link Distance (m)	121.9			487.0	813.6	
Travel Time (s)	8.8			25.0	41.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	8	2	1135	719	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	8	2	1135	737	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.21	1.21	1.22	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	8	2	1135	719	18
Future Volume (Veh/h)	20	8	2	1135	719	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	20	8	2	1135	719	18
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1300	368	737			
vC1, stage 1 conf vol	728					
vC2, stage 2 conf vol	572					
vCu, unblocked vol	1300	368	737			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	99	100			
cM capacity (veh/h)	359	629	865			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	20	8	2	568	568	479	258
Volume Left	20	0	2	0	0	0	0
Volume Right	0	8	0	0	0	0	18
cSH	359	629	865	1700	1700	1700	1700
Volume to Capacity	0.06	0.01	0.00	0.33	0.33	0.28	0.15
Queue Length 95th (m)	1.4	0.3	0.1	0.0	0.0	0.0	0.0
Control Delay (s)	15.6	10.8	9.2	0.0	0.0	0.0	0.0
Lane LOS	C	B	A				
Approach Delay (s)	14.2		0.0			0.0	
Approach LOS	B						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	980	0	0	1778	73	169
Future Volume (vph)	980	0	0	1778	73	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3614	3362	1597
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3614	3362	1597
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						169
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	1%	3%	0%
Adj. Flow (vph)	980	0	0	1778	73	169
Shared Lane Traffic (%)						
Lane Group Flow (vph)	980	0	0	1778	73	169
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	129.0			129.0	31.0	31.0
Total Split (%)	80.6%			80.6%	19.4%	19.4%
Maximum Green (s)	123.0			123.0	24.0	24.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	123.0			123.0	9.3	9.3
Actuated g/C Ratio	0.85			0.85	0.06	0.06
v/c Ratio	0.32			0.58	0.34	0.65
Control Delay	2.8			4.4	69.2	21.0
Queue Delay	0.0			0.8	0.0	0.0
Total Delay	2.8			5.2	69.2	21.0
LOS	A			A	E	C
Approach Delay	2.8			5.2	35.6	
Approach LOS	A			A	D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 145.3	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 6.8	Intersection LOS: A
Intersection Capacity Utilization 82.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	980	1778	73	169
v/c Ratio	0.32	0.58	0.34	0.65
Control Delay	2.8	4.4	69.2	21.0
Queue Delay	0.0	0.8	0.0	0.0
Total Delay	2.8	5.2	69.2	21.0
Queue Length 50th (m)	24.6	63.9	11.1	0.0
Queue Length 95th (m)	39.0	97.7	19.8	24.0
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3030	3060	555	404
Starvation Cap Reductn	0	851	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.32	0.80	0.13	0.42

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	826	1742	0	209	376
Future Volume (vph)	0	826	1742	0	209	376
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3510	3614	0	3429	1597
Flt Permitted					0.950	
Satd. Flow (perm)	0	3510	3614	0	3429	1597
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						21
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	4%	1%	0%	1%	0%
Adj. Flow (vph)	0	826	1742	0	209	376
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	826	1742	0	209	376
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		102.0	102.0		58.0	58.0
Total Split (%)		63.8%	63.8%		36.3%	36.3%
Maximum Green (s)		96.0	96.0		51.0	51.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		96.3	96.3		37.7	37.7
Actuated g/C Ratio		0.65	0.65		0.26	0.26
v/c Ratio		0.36	0.74		0.24	0.88
Control Delay		13.0	20.7		43.2	72.1
Queue Delay		0.0	0.8		0.0	0.0
Total Delay		13.0	21.5		43.2	72.1
LOS		B	C		D	E
Approach Delay		13.0	21.5		61.8	
Approach LOS		B	C		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 147.1	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 26.8	Intersection LOS: C
Intersection Capacity Utilization 82.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	826	1742	209	376
v/c Ratio	0.36	0.74	0.24	0.88
Control Delay	13.0	20.7	43.2	72.1
Queue Delay	0.0	0.8	0.0	0.0
Total Delay	13.0	21.5	43.2	72.1
Queue Length 50th (m)	56.8	177.1	26.2	105.9
Queue Length 95th (m)	87.6	260.4	37.3	147.1
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2298	2366	1192	569
Starvation Cap Reductn	0	312	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.85	0.18	0.66

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	712	228	232	1437	80	114	591	197	152	776	298
Future Volume (vph)	152	712	228	232	1437	80	114	591	197	152	776	298
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		50.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98	1.00		
Frt		0.964			0.992				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1767	3441	0	1767	3583	0	1767	3614	1581	1785	3614	1581
Flt Permitted	0.053			0.203			0.113			0.195		
Satd. Flow (perm)	99	3441	0	378	3583	0	210	3614	1556	366	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			5				197			202
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			813.6			145.2	
Travel Time (s)		14.1			11.0			41.8			7.5	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	3%	0%	1%	1%	2%	1%	1%	1%	0%	1%	1%
Adj. Flow (vph)	152	712	228	232	1437	80	114	591	197	152	776	298
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	940	0	232	1517	0	114	591	197	152	776	298
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	10.0	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1		9.5	30.1		9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	18.0	73.6		27.2	82.8		13.0	44.2	44.2	15.0	46.2	46.2
Total Split (%)	11.3%	46.0%		17.0%	51.8%		8.1%	27.6%	27.6%	9.4%	28.9%	28.9%
Maximum Green (s)	15.0	67.5		24.2	76.7		10.0	37.8	37.8	12.0	39.8	39.8
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0			15.0			14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	90.7	75.2		93.6	76.9		48.7	35.5	35.5	52.2	37.2	37.2
Actuated g/C Ratio	0.59	0.49		0.60	0.50		0.31	0.23	0.23	0.34	0.24	0.24
v/c Ratio	0.80	0.56		0.66	0.85		0.70	0.71	0.39	0.66	0.89	0.56
Control Delay	65.6	29.4		22.8	40.6		58.6	60.7	8.3	51.8	70.5	20.8
Queue Delay	0.0	0.5		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.6	29.8		22.8	40.6		58.6	60.7	8.3	51.8	70.5	20.8
LOS	E	C		C	D		E	E	A	D	E	C
Approach Delay		34.8			38.2			49.0			56.1	
Approach LOS		C			D			D			E	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 154.8
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 43.8 — Intersection LOS: D
Intersection Capacity Utilization 95.5% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 3: Ninth Line & Derry Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	152	940	232	1517	114	591	197	152	776	298
v/c Ratio	0.80	0.56	0.66	0.85	0.70	0.71	0.39	0.66	0.89	0.56
Control Delay	65.6	29.4	22.8	40.6	58.6	60.7	8.3	51.8	70.5	20.8
Queue Delay	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.6	29.8	22.8	40.6	58.6	60.7	8.3	51.8	70.5	20.8
Queue Length 50th (m)	32.2	111.1	33.4	233.6	26.2	95.1	0.0	35.7	130.7	26.4
Queue Length 95th (m)	#64.7	142.3	48.1	272.4	#46.5	118.6	21.6	55.4	158.6	59.7
Internal Link Dist (m)		210.9		158.6		789.6			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	221	1688	450	1781	167	884	529	234	930	557
Starvation Cap Reductn	0	317	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.69	0.52	0.85	0.68	0.67	0.37	0.65	0.83	0.54

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	3	27	104	5	59	44	803	134	124	1076	13
Future Volume (vph)	31	3	27	104	5	59	44	803	134	124	1076	13
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1860	1900	1640	1860	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.3	3.6	3.5	3.2	3.0	3.5	3.6
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		25.0	80.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor									0.97	1.00		
Frt		0.865			0.861				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1611	0	1454	1633	0	1732	3535	1332	1649	3527	0
Flt Permitted	0.714			0.737			0.222			0.298		
Satd. Flow (perm)	1148	1611	0	1128	1633	0	405	3535	1298	517	3527	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			61				103		2	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		111.4			218.3			577.9			487.0	
Travel Time (s)		8.0			15.7			29.7			25.0	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	1%	0%	0%	1%	2%
Adj. Flow (vph)	32	3	28	108	5	61	46	836	140	129	1121	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	31	0	108	66	0	46	836	140	129	1135	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.04	1.03	1.01	1.28	1.12	1.01	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		7.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		-3.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		-3.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		10.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5		9.5	26.0	26.0	9.5	26.0	
Total Split (s)	30.0	30.0		30.0	30.0		10.0	59.0	59.0	11.0	60.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		10.0%	59.0%	59.0%	11.0%	60.0%	
Maximum Green (s)	23.5	23.5		23.5	23.5		7.0	52.0	52.0	8.0	53.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)	8.0	8.0		7.0	7.0			8.0	8.0		8.0	
Flash Dont Walk (s)	8.0	8.0		11.0	11.0			10.0	10.0		10.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	
Act Effct Green (s)	15.4	15.4		15.3	15.3		69.6	57.4	57.4	71.5	63.1	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.78	0.64	0.64	0.80	0.70	
v/c Ratio	0.16	0.10		0.56	0.20		0.11	0.37	0.16	0.25	0.46	
Control Delay	33.0	13.3		45.7	11.1		4.0	9.9	3.8	4.5	9.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	33.0	13.3		45.7	11.1		4.0	9.9	3.8	4.5	9.7	
LOS	C	B		D	B		A	A	A	A	A	
Approach Delay		23.3			32.6			8.8			9.2	
Approach LOS		C			C			A			A	

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 89.8	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 59.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Street "F"/Doug Leavens Boulevard

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	32	31	108	66	46	836	140	129	1135
v/c Ratio	0.16	0.10	0.56	0.20	0.11	0.37	0.16	0.25	0.46
Control Delay	33.0	13.3	45.7	11.1	4.0	9.9	3.8	4.5	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.0	13.3	45.7	11.1	4.0	9.9	3.8	4.5	9.7
Queue Length 50th (m)	5.0	0.5	18.1	0.8	1.6	38.0	2.5	4.8	55.4
Queue Length 95th (m)	13.0	7.9	35.3	11.4	5.6	62.7	12.1	12.7	91.0
Internal Link Dist (m)		87.4		194.3		553.9			463.0
Turn Bay Length (m)					15.0		25.0	80.0	
Base Capacity (vph)	320	469	314	499	450	2260	867	538	2479
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.07	0.34	0.13	0.10	0.37	0.16	0.24	0.46

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	22	17	966	61	43	1166
Future Volume (vph)	22	17	966	61	43	1166
Ideal Flow (vphpl)	1640	1900	1900	1900	1640	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.0	3.5
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				15.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt	0.941		0.991			
Flt Protected	0.973				0.950	
Satd. Flow (prot)	1401	0	3505	0	1426	3570
Flt Permitted	0.973				0.950	
Satd. Flow (perm)	1401	0	3505	0	1426	3570
Link Speed (k/h)	50		70			70
Link Distance (m)	166.2		289.9			265.1
Travel Time (s)	12.0		14.9			13.6
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	1%	0%	2%	0%
Adj. Flow (vph)	23	18	1006	64	45	1215
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	0	1070	0	45	1215
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.31	1.09	1.01	1.01	1.31	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	22	17	966	61	43	1166
Future Volume (Veh/h)	22	17	966	61	43	1166
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	23	18	1006	64	45	1215
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			290			
pX, platoon unblocked	0.88	0.88			0.88	
vC, conflicting volume	1736	535			1070	
vC1, stage 1 conf vol	1038					
vC2, stage 2 conf vol	698					
vCu, unblocked vol	1568	209			814	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	97			94	
cM capacity (veh/h)	286	710			714	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	41	671	399	45	608	608
Volume Left	23	0	0	45	0	0
Volume Right	18	0	64	0	0	0
cSH	387	1700	1700	714	1700	1700
Volume to Capacity	0.11	0.39	0.23	0.06	0.36	0.36
Queue Length 95th (m)	2.8	0.0	0.0	1.6	0.0	0.0
Control Delay (s)	15.4	0.0	0.0	10.4	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	15.4	0.0		0.4		
Approach LOS	C					

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	69	30	1027	102	44	1143
Future Volume (vph)	69	30	1027	102	44	1143
Ideal Flow (vphpl)	1640	1900	1900	1640	1860	1900
Lane Width (m)	3.0	3.0	3.5	3.5	3.6	3.6
Storage Length (m)	15.0	0.0		25.0	20.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor				0.98	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1359	1463	3535	1351	1767	3610
Flt Permitted	0.950				0.237	
Satd. Flow (perm)	1359	1463	3535	1321	441	3610
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		31		64		
Link Speed (k/h)	50		70			70
Link Distance (m)	186.9		633.8			289.9
Travel Time (s)	13.5		32.6			14.9
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	3%	1%	2%	0%	0%
Adj. Flow (vph)	72	31	1070	106	46	1191
Shared Lane Traffic (%)						
Lane Group Flow (vph)	72	31	1070	106	46	1191
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.0		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.31	1.09	1.01	1.22	1.03	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template			Thru	Right		Thru
Leading Detector (m)	9.0	9.0	10.0	2.0	20.0	10.0
Trailing Detector (m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Position(m)	-0.2	-1.0	0.0	0.0	10.0	0.0
Detector 1 Size(m)	9.2	10.0	0.6	2.0	10.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	8.0	8.0	5.0	8.0
Minimum Split (s)	24.0	24.0	25.0	25.0	9.5	25.0
Total Split (s)	28.0	28.0	61.0	61.0	11.0	72.0
Total Split (%)	28.0%	28.0%	61.0%	61.0%	11.0%	72.0%
Maximum Green (s)	22.0	22.0	54.0	54.0	8.0	65.0
Yellow Time (s)	4.0	4.0	5.0	5.0	3.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	1.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	11.3	11.3	69.2	69.2	77.1	74.2
Actuated g/C Ratio	0.12	0.12	0.75	0.75	0.84	0.81
v/c Ratio	0.43	0.15	0.40	0.10	0.10	0.41
Control Delay	44.5	13.8	6.5	3.0	2.6	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	13.8	6.5	3.0	2.6	4.1
LOS	D	B	A	A	A	A
Approach Delay	35.3		6.2			4.1
Approach LOS	D		A			A

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 91.9	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.43	
Intersection Signal Delay: 6.4	Intersection LOS: A
Intersection Capacity Utilization 48.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Osprey Boulevard

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	72	31	1070	106	46	1191
v/c Ratio	0.43	0.15	0.40	0.10	0.10	0.41
Control Delay	44.5	13.8	6.5	3.0	2.6	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	13.8	6.5	3.0	2.6	4.1
Queue Length 50th (m)	12.0	0.0	41.4	2.2	1.2	31.4
Queue Length 95th (m)	25.2	7.8	64.1	8.7	3.8	52.0
Internal Link Dist (m)	162.9		609.8			265.9
Turn Bay Length (m)	15.0			25.0	20.0	
Base Capacity (vph)	341	390	2662	1010	514	2913
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.08	0.40	0.10	0.09	0.41

Intersection Summary

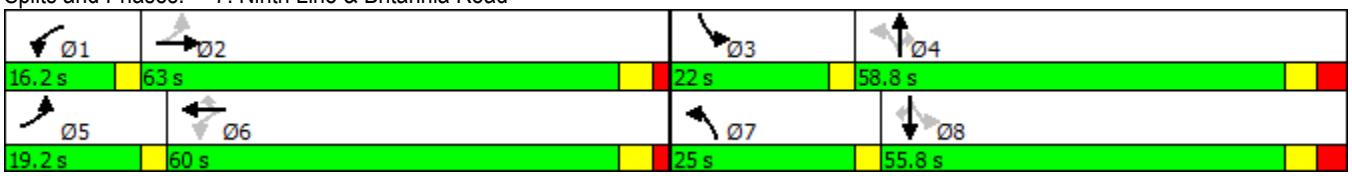
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	672	307	123	906	137	193	878	121	179	847	147
Future Volume (vph)	150	672	307	123	906	137	193	878	121	179	847	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		0.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98	1.00		
Frt		0.953				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3455	0	1785	3614	1551	1767	3614	1597	1716	3614	1536
Flt Permitted	0.173			0.153			0.107			0.108		
Satd. Flow (perm)	325	3455	0	287	3614	1551	199	3614	1570	195	3614	1536
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52				83			63			90
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	1%	1%	0%	4%	1%	4%
Adj. Flow (vph)	150	672	307	123	906	137	193	878	121	179	847	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	150	979	0	123	906	137	193	878	121	179	847	147
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template		Thru		Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		8
Detector Phase	5	2		1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	19.2	63.0		16.2	60.0	60.0	25.0	58.8	58.8	22.0	55.8	55.8
Total Split (%)	12.0%	39.4%		10.1%	37.5%	37.5%	15.6%	36.8%	36.8%	13.8%	34.9%	34.9%
Maximum Green (s)	16.2	56.9		13.2	53.9	53.9	22.0	51.1	51.1	19.0	48.1	48.1
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0			11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	72.0	57.4		70.0	56.4	56.4	60.4	40.5	40.5	57.8	39.2	39.2
Actuated g/C Ratio	0.51	0.40		0.49	0.40	0.40	0.42	0.28	0.28	0.41	0.28	0.28
v/c Ratio	0.53	0.69		0.49	0.63	0.21	0.77	0.85	0.25	0.79	0.85	0.30
Control Delay	27.1	37.9		26.7	39.2	14.8	50.4	57.2	20.7	55.3	58.1	18.5
Queue Delay	0.0	0.4		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	38.3		26.7	39.2	14.8	50.4	57.2	20.7	55.3	58.1	18.5
LOS	C	D		C	D	B	D	E	C	E	E	B
Approach Delay		36.8			35.0			52.4			52.7	
Approach LOS		D			C			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 142.2
Natural Cycle: 85
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 44.3 — Intersection LOS: D
Intersection Capacity Utilization 87.6% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 7: Ninth Line & Britannia Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	150	979	123	906	137	193	878	121	179	847	147
v/c Ratio	0.53	0.69	0.49	0.63	0.21	0.77	0.85	0.25	0.79	0.85	0.30
Control Delay	27.1	37.9	26.7	39.2	14.8	50.4	57.2	20.7	55.3	58.1	18.5
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	38.3	26.7	39.2	14.8	50.4	57.2	20.7	55.3	58.1	18.5
Queue Length 50th (m)	22.9	120.1	18.5	113.8	10.0	35.8	129.3	12.8	32.7	124.4	12.7
Queue Length 95th (m)	43.6	174.3	36.6	168.0	30.0	64.7	165.9	31.0	63.0	163.4	33.7
Internal Link Dist (m)		192.6		220.1			171.1			609.8	
Turn Bay Length (m)	60.0		60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	336	1425	285	1432	664	331	1309	609	288	1233	583
Starvation Cap Reductn	0	113	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.75	0.43	0.63	0.21	0.58	0.67	0.20	0.62	0.69	0.25

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	992	0	0	1189	49	136
Future Volume (vph)	992	0	0	1189	49	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3614	1750	1581
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3614	1750	1581
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						136
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Adj. Flow (vph)	992	0	0	1189	49	136
Shared Lane Traffic (%)						
Lane Group Flow (vph)	992	0	0	1189	49	136
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	120.0			120.0	40.0	40.0
Total Split (%)	75.0%			75.0%	25.0%	25.0%
Maximum Green (s)	114.0			114.0	33.0	33.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	114.0			114.0	9.4	9.4
Actuated g/C Ratio	0.84			0.84	0.07	0.07
v/c Ratio	0.33			0.39	0.41	0.58
Control Delay	3.0			3.3	70.9	19.5
Queue Delay	0.0			0.4	0.0	0.0
Total Delay	3.0			3.6	70.9	19.5
LOS	A			A	E	B
Approach Delay	3.0			3.6	33.1	
Approach LOS	A			A	C	

Intersection Summary	
Area Type:	Other
Cycle Length: 160	
Actuated Cycle Length: 136.4	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 5.7	Intersection LOS: A
Intersection Capacity Utilization 62.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	992	1189	49	136
v/c Ratio	0.33	0.39	0.41	0.58
Control Delay	3.0	3.3	70.9	19.5
Queue Delay	0.0	0.4	0.0	0.0
Total Delay	3.0	3.6	70.9	19.5
Queue Length 50th (m)	25.9	33.5	13.6	0.0
Queue Length 95th (m)	37.7	48.2	27.3	20.9
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	3020	3020	423	485
Starvation Cap Reductn	0	1133	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.63	0.12	0.28

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	634	1105	0	388	54
Future Volume (vph)	0	634	1105	0	388	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3614	0	1767	1536
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3614	0	1767	1536
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						51
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	1%	4%
Adj. Flow (vph)	0	634	1105	0	388	54
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	634	1105	0	388	54
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		88.0	88.0		72.0	72.0
Total Split (%)		55.0%	55.0%		45.0%	45.0%
Maximum Green (s)		82.0	82.0		65.0	65.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		82.3	82.3		33.1	33.1
Actuated g/C Ratio		0.64	0.64		0.26	0.26
v/c Ratio		0.27	0.48		0.85	0.12
Control Delay		11.3	13.7		63.1	10.4
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		11.3	13.7		63.1	10.4
LOS		B	B		E	B
Approach Delay		11.3	13.7		56.7	
Approach LOS		B	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 128.4	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 21.7	Intersection LOS: C
Intersection Capacity Utilization 62.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	634	1105	388	54
v/c Ratio	0.27	0.48	0.85	0.12
Control Delay	11.3	13.7	63.1	10.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.3	13.7	63.1	10.4
Queue Length 50th (m)	36.0	74.5	98.4	0.6
Queue Length 95th (m)	58.4	115.1	136.8	10.9
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2315	2315	897	805
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.48	0.43	0.07

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	396	294	0	1226	1683	0
Future Volume (vph)	396	294	0	1226	1683	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.975	0.850				
Flt Protected	0.960					
Satd. Flow (prot)	3065	1411	0	4980	5079	0
Flt Permitted	0.960					
Satd. Flow (perm)	3065	1411	0	4980	5079	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	16	*171				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	13%	3%	0%	3%	1%	0%
Adj. Flow (vph)	408	303	0	1264	1735	0
Shared Lane Traffic (%)		27%				
Lane Group Flow (vph)	490	221	0	1264	1735	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-0.2	-1.0		0.0	0.0	
Detector 1 Position(m)	-0.2	-1.0		0.0	0.0	
Detector 1 Size(m)	9.2	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	60.0	60.0		100.0	100.0	
Total Split (%)	37.5%	37.5%		62.5%	62.5%	
Maximum Green (s)	52.5	52.5		93.5	93.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	30.7	30.7		95.2	95.2	
Actuated g/C Ratio	0.23	0.23		0.70	0.70	
v/c Ratio	0.70	0.49		0.36	0.49	
Control Delay	52.1	15.3		9.0	10.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	52.1	15.3		9.0	10.3	
LOS	D	B		A	B	
Approach Delay	40.6			9.0	10.3	
Approach LOS	D			A	B	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 135.9	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 15.7	Intersection LOS: B
Intersection Capacity Utilization 65.1%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	490	221	1264	1735
v/c Ratio	0.70	0.49	0.36	0.49
Control Delay	52.1	15.3	9.0	10.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	52.1	15.3	9.0	10.3
Queue Length 50th (m)	63.8	12.5	47.3	73.6
Queue Length 95th (m)	83.0	39.4	69.0	104.7
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1252	673	3488	3557
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.39	0.33	0.36	0.49

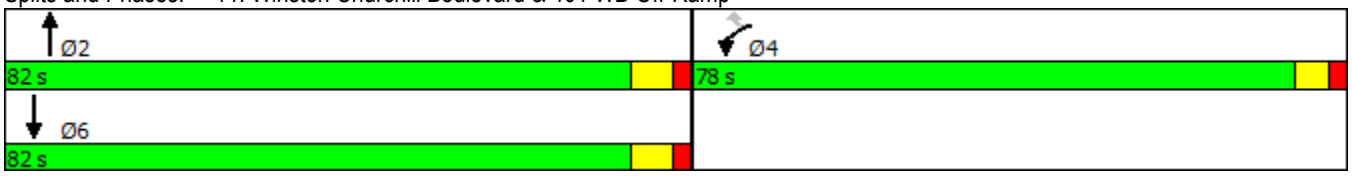
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	739	741	1353	0	0	1282
Future Volume (vph)	739	741	1353	0	0	1282
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.91
Frt	0.959	0.850				
Flt Protected	0.965					
Satd. Flow (prot)	3322	1411	4839	0	0	4932
Flt Permitted	0.965					
Satd. Flow (perm)	3322	1411	4839	0	0	4932
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	21	*419				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	3%	6%	0%	0%	4%
Adj. Flow (vph)	762	764	1395	0	0	1322
Shared Lane Traffic (%)		37%				
Lane Group Flow (vph)	1045	481	1395	0	0	1322
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	78.0	78.0	82.0			82.0
Total Split (%)	48.8%	48.8%	51.3%			51.3%
Maximum Green (s)	71.5	71.5	74.5			74.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	57.6	57.6	77.4			77.4
Actuated g/C Ratio	0.40	0.40	0.53			0.53
v/c Ratio	0.78	0.59	0.54			0.50
Control Delay	41.8	7.7	24.4			23.6
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	41.8	7.7	24.4			23.6
LOS	D	A	C			C
Approach Delay	31.0		24.4			23.6
Approach LOS	C		C			C

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 145.1	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 26.5	Intersection LOS: C
Intersection Capacity Utilization 65.1%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	1045	481	1395	1322
v/c Ratio	0.78	0.59	0.54	0.50
Control Delay	41.8	7.7	24.4	23.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	41.8	7.7	24.4	23.6
Queue Length 50th (m)	138.5	12.8	98.8	90.9
Queue Length 95th (m)	163.7	46.4	138.6	128.0
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1690	920	2581	2631
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.52	0.54	0.50

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	12	5	8	886	1208	57
Future Volume (vph)	12	5	8	886	1208	57
Ideal Flow (vphpl)	1640	1640	1640	1900	1900	1900
Storage Length (m)	0.0	0.0	25.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.993	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1527	1367	1527	3539	3514	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1527	1367	1527	3539	3514	0
Link Speed (k/h)	50			70	70	
Link Distance (m)	100.7			487.0	813.6	
Travel Time (s)	7.3			25.0	41.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	5	8	886	1208	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	5	8	886	1265	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.21	1.21	1.21	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 45.2%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	5	8	886	1208	57
Future Volume (Veh/h)	12	5	8	886	1208	57
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	5	8	886	1208	57
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1696	632	1265			
vC1, stage 1 conf vol	1236					
vC2, stage 2 conf vol	459					
vCu, unblocked vol	1696	632	1265			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	99	99			
cM capacity (veh/h)	222	423	545			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	12	5	8	443	443	805	460
Volume Left	12	0	8	0	0	0	0
Volume Right	0	5	0	0	0	0	57
cSH	222	423	545	1700	1700	1700	1700
Volume to Capacity	0.05	0.01	0.01	0.26	0.26	0.47	0.27
Queue Length 95th (m)	1.4	0.3	0.4	0.0	0.0	0.0	0.0
Control Delay (s)	22.2	13.6	11.7	0.0	0.0	0.0	0.0
Lane LOS	C	B	B				
Approach Delay (s)	19.7		0.1			0.0	
Approach LOS	C						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1647	0	0	956	13	161
Future Volume (vph)	1647	0	0	956	13	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3510	2935	1507
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3510	2935	1507
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						50
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	4%	18%	6%
Adj. Flow (vph)	1647	0	0	956	13	161
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1647	0	0	956	13	161
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	121.0			121.0	39.0	39.0
Total Split (%)	75.6%			75.6%	24.4%	24.4%
Maximum Green (s)	115.0			115.0	32.0	32.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	115.1			115.1	16.3	16.3
Actuated g/C Ratio	0.80			0.80	0.11	0.11
v/c Ratio	0.58			0.34	0.04	0.75
Control Delay	7.1			4.9	55.5	63.5
Queue Delay	0.3			0.3	0.0	0.0
Total Delay	7.4			5.2	55.5	63.5
LOS	A			A	E	E
Approach Delay	7.4			5.2	62.9	
Approach LOS	A			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 144.5	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 10.1	Intersection LOS: B
Intersection Capacity Utilization 75.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1647	956	13	161
v/c Ratio	0.58	0.34	0.04	0.75
Control Delay	7.1	4.9	55.5	63.5
Queue Delay	0.3	0.3	0.0	0.0
Total Delay	7.4	5.2	55.5	63.5
Queue Length 50th (m)	83.3	35.8	1.8	33.0
Queue Length 95th (m)	131.2	58.5	5.4	59.0
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2851	2796	650	373
Starvation Cap Reductn	561	1045	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.72	0.55	0.02	0.43

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2129	716	0	54	53
Future Volume (vph)	0	2129	716	0	54	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3510	0	3148	1309
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3510	0	3148	1309
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						53
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	10%	22%
Adj. Flow (vph)	0	2129	716	0	54	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2129	716	0	54	53
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		134.0	134.0		26.0	26.0
Total Split (%)		83.8%	83.8%		16.3%	16.3%
Maximum Green (s)		128.0	128.0		19.0	19.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		128.0	128.0		8.4	8.4
Actuated g/C Ratio		0.86	0.86		0.06	0.06
v/c Ratio		0.69	0.24		0.31	0.43
Control Delay		5.2	2.2		72.2	27.0
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		5.2	2.2		72.2	27.0
LOS		A	A		E	C
Approach Delay		5.2	2.2		49.8	
Approach LOS		A	A		D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 149.4	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 6.1	Intersection LOS: A
Intersection Capacity Utilization 75.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2129	716	54	53
v/c Ratio	0.69	0.24	0.31	0.43
Control Delay	5.2	2.2	72.2	27.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	5.2	2.2	72.2	27.0
Queue Length 50th (m)	91.7	15.9	8.5	0.0
Queue Length 95th (m)	124.5	22.9	16.2	14.6
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3096	3007	400	213
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.69	0.24	0.14	0.25

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	343	1326	141	193	623	315	307	725	380	65	515	266
Future Volume (vph)	343	1326	141	193	623	315	307	725	380	65	515	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		50.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00										
Frt		0.986			0.950				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	3562	0	1733	3356	0	1750	3614	1566	1716	3614	1581
Flt Permitted	0.149			0.065			0.143			0.314		
Satd. Flow (perm)	264	3562	0	119	3356	0	263	3614	1566	567	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			62				250			258
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			813.6			145.2	
Travel Time (s)		14.1			11.0			41.8			7.5	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	1%	0%	3%	4%	2%	2%	1%	2%	4%	1%	1%
Adj. Flow (vph)	343	1326	141	193	623	315	307	725	380	65	515	266
Shared Lane Traffic (%)												
Lane Group Flow (vph)	343	1467	0	193	938	0	307	725	380	65	515	266
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	10.0	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1		9.5	30.1		9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	35.9	79.0		20.0	63.1		28.0	51.0	51.0	10.0	33.0	33.0
Total Split (%)	22.4%	49.4%		12.5%	39.4%		17.5%	31.9%	31.9%	6.3%	20.6%	20.6%
Maximum Green (s)	32.9	72.9		17.0	57.0		25.0	44.6	44.6	7.0	26.6	26.6
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0			15.0			14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	94.1	73.0		79.9	61.7		56.7	45.4	45.4	35.5	25.3	25.3
Actuated g/C Ratio	0.60	0.47		0.51	0.39		0.36	0.29	0.29	0.23	0.16	0.16
v/c Ratio	0.87	0.88		0.90	0.69		0.92	0.69	0.60	0.37	0.88	0.57
Control Delay	49.9	45.9		83.4	41.3		77.0	54.4	20.7	41.5	82.2	12.2
Queue Delay	0.0	24.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.9	69.9		83.4	41.3		77.0	54.4	20.7	41.5	82.2	12.2
LOS	D	E		F	D		E	D	C	D	F	B
Approach Delay		66.1			48.4			50.2			57.1	
Approach LOS		E			D			D			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 156.8	
Natural Cycle: 110	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 56.5	Intersection LOS: E
Intersection Capacity Utilization 100.2%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 3: Ninth Line & Derry Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	343	1467	193	938	307	725	380	65	515	266
v/c Ratio	0.87	0.88	0.90	0.69	0.92	0.69	0.60	0.37	0.88	0.57
Control Delay	49.9	45.9	83.4	41.3	77.0	54.4	20.7	41.5	82.2	12.2
Queue Delay	0.0	24.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.9	69.9	83.4	41.3	77.0	54.4	20.7	41.5	82.2	12.2
Queue Length 50th (m)	70.5	235.1	46.9	130.7	83.4	116.0	37.4	14.4	89.4	2.3
Queue Length 95th (m)	109.8	270.5	#93.1	164.7	#145.1	140.4	75.5	26.3	#117.7	30.6
Internal Link Dist (m)		210.9		158.6		789.6			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	456	1661	237	1359	332	1050	632	180	613	482
Starvation Cap Reductn	0	255	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	1.04	0.81	0.69	0.92	0.69	0.60	0.36	0.84	0.55

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	13	54	148	5	175	17	1115	114	69	741	17
Future Volume (vph)	133	13	54	148	5	175	17	1115	114	69	741	17
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1860	1900	1640	1860	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.3	3.0	3.5	3.2	3.0	3.5	3.6
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		25.0	80.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor									0.98			
Frt		0.879			0.854				0.850		0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1637	0	1412	1591	0	1617	3500	1222	1649	3523	0
Flt Permitted	0.529			0.709			0.317			0.157		
Satd. Flow (perm)	851	1637	0	1054	1591	0	540	3500	1194	273	3523	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		59			167				71		3	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		140.5			218.3			577.9			487.0	
Travel Time (s)		10.1			15.7			29.7			25.0	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	9%	0%	1%	2%
Adj. Flow (vph)	145	14	59	161	5	190	18	1212	124	75	805	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	145	73	0	161	195	0	18	1212	124	75	823	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.04	1.12	1.01	1.28	1.12	1.01	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		7.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		-3.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		-3.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		10.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5		9.5	26.0	26.0	9.5	26.0	
Total Split (s)	36.0	36.0		36.0	36.0		9.5	54.4	54.4	9.6	54.5	
Total Split (%)	36.0%	36.0%		36.0%	36.0%		9.5%	54.4%	54.4%	9.6%	54.5%	
Maximum Green (s)	29.5	29.5		29.5	29.5		6.5	47.4	47.4	6.6	47.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)	8.0	8.0		7.0	7.0			8.0	8.0		8.0	
Flash Dont Walk (s)	8.0	8.0		11.0	11.0			10.0	10.0		10.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	
Act Effct Green (s)	20.5	20.5		20.5	20.5		60.3	50.2	50.2	61.2	54.0	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.69	0.57	0.57	0.70	0.61	
v/c Ratio	0.74	0.17		0.66	0.39		0.04	0.61	0.17	0.23	0.38	
Control Delay	53.5	10.6		44.1	8.9		6.0	16.1	6.6	7.4	11.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	53.5	10.6		44.1	8.9		6.0	16.1	6.6	7.4	11.1	
LOS	D	B		D	A		A	B	A	A	B	
Approach Delay		39.1			24.8			15.1			10.8	
Approach LOS		D			C			B			B	

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 88	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 16.8	Intersection LOS: B
Intersection Capacity Utilization 70.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Street "F"/Doug Leavens Boulevard

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	145	73	161	195	18	1212	124	75	823
v/c Ratio	0.74	0.17	0.66	0.39	0.04	0.61	0.17	0.23	0.38
Control Delay	53.5	10.6	44.1	8.9	6.0	16.1	6.6	7.4	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.5	10.6	44.1	8.9	6.0	16.1	6.6	7.4	11.1
Queue Length 50th (m)	24.5	2.0	26.6	4.0	0.9	74.7	4.3	3.6	31.0
Queue Length 95th (m)	46.3	12.1	47.6	20.3	3.8	121.8	15.7	10.9	72.0
Internal Link Dist (m)		116.5		194.3		553.9			463.0
Turn Bay Length (m)					15.0		25.0	80.0	
Base Capacity (vph)	304	623	376	676	478	1995	711	326	2164
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.12	0.43	0.29	0.04	0.61	0.17	0.23	0.38

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	0	42	48	0	69	10	1126	36	31	910	39
Future Volume (vph)	29	0	42	48	0	69	10	1126	36	31	910	39
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1640	1900	1900	1640	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.0	3.6	3.5	3.5	3.0	3.5	3.6
Storage Length (m)	0.0		0.0	0.0		0.0	65.0		0.0	15.0		30.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.850			0.850			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1583	0	1454	1615	0	1527	3442	0	1412	3500	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1527	1583	0	1454	1615	0	1527	3442	0	1412	3500	1583
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		123.4			166.2			289.9			265.1	
Travel Time (s)		8.9			12.0			14.9			13.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	3%	9%	3%	2%	2%
Adj. Flow (vph)	30	0	44	50	0	72	10	1173	38	32	948	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	44	0	50	72	0	10	1211	0	32	948	41
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.09	1.21	1.01	1.01	1.31	1.01	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.7%		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 (veh/h)	29	0	42	48	0	69	10	1126	36	31	910	39
Future Volume (Veh/h)	29	0	42	48	0	69	10	1126	36	31	910	39
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	30	0	44	50	0	72	10	1173	38	32	948	41
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								290				
pX, platoon unblocked	0.85	0.85		0.85	0.85	0.85				0.85		
vC, conflicting volume	1690	2243	474	1794	2265	606	989			1211		
vC1, stage 1 conf vol	1012	1012		1212	1212							
vC2, stage 2 conf vol	678	1231		582	1053							
vCu, unblocked vol	1468	2114	474	1589	2140	198	989			907		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.2		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	86	100	92	77	100	90	99			95		
cM capacity (veh/h)	219	193	537	214	199	697	695			632		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	30	44	50	72	10	782	429	32	474	474	41
Volume Left	30	0	50	0	10	0	0	32	0	0	0
Volume Right	0	44	0	72	0	0	38	0	0	0	41
cSH	219	537	214	697	695	1700	1700	632	1700	1700	1700
Volume to Capacity	0.14	0.08	0.23	0.10	0.01	0.46	0.25	0.05	0.28	0.28	0.02
Queue Length 95th (m)	3.7	2.1	7.0	2.8	0.4	0.0	0.0	1.3	0.0	0.0	0.0
Control Delay (s)	24.1	12.3	26.9	10.8	10.3	0.0	0.0	11.0	0.0	0.0	0.0
Lane LOS	C	B	D	B	B			B			
Approach Delay (s)	17.1		17.4		0.1			0.3			
Approach LOS	C		C								

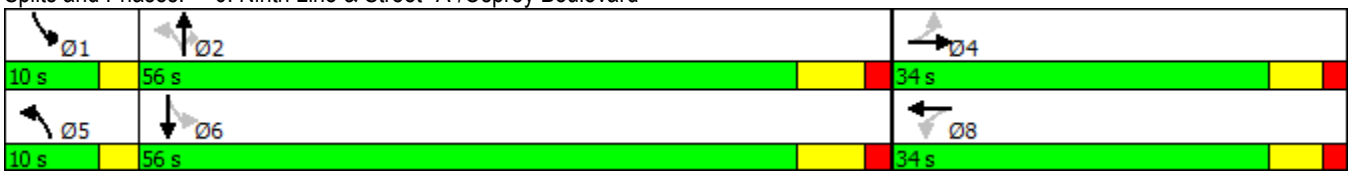
Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	0	93	127	0	94	30	971	93	21	970	8
Future Volume (vph)	93	0	93	127	0	94	30	971	93	21	970	8
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1860	1900	1640	1860	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.0	3.6	3.5	3.5	3.6	3.6	3.6
Storage Length (m)	0.0		0.0	15.0		0.0	15.0		25.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			15.0			7.5			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.850			0.850				0.850		0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1583	0	1412	1538	0	1732	3433	1276	1683	3570	0
Flt Permitted	0.694			0.695			0.232			0.252		
Satd. Flow (perm)	1116	1583	0	1033	1538	0	423	3433	1276	446	3570	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		206			206				65		1	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		122.1			186.9			633.8			289.9	
Travel Time (s)		8.8			13.5			32.6			14.9	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	3%	2%	5%	2%	4%	8%	5%	1%	2%
Adj. Flow (vph)	96	0	96	131	0	97	31	1001	96	22	1000	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	96	0	131	97	0	31	1001	96	22	1008	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.09	1.03	1.01	1.22	1.03	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru			Thru		Left	Thru	Right		Thru	
Leading Detector (m)	2.0	10.0		9.0	10.0		2.0	10.0	2.0	20.0	10.0	
Trailing Detector (m)	0.0	0.0		-1.0	0.0		0.0	0.0	0.0	10.0	0.0	
Detector 1 Position(m)	0.0	0.0		-1.0	0.0		0.0	0.0	0.0	10.0	0.0	
Detector 1 Size(m)	2.0	0.6		10.0	0.6		2.0	0.6	2.0	10.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		9.5	25.0	25.0	9.5	25.0	
Total Split (s)	34.0	34.0		34.0	34.0		10.0	56.0	56.0	10.0	56.0	
Total Split (%)	34.0%	34.0%		34.0%	34.0%		10.0%	56.0%	56.0%	10.0%	56.0%	
Maximum Green (s)	28.0	28.0		28.0	28.0		7.0	49.0	49.0	7.0	49.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	2.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	
Act Effct Green (s)	17.1	17.1		17.1	17.1		62.9	55.9	55.9	61.5	53.6	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.73	0.65	0.65	0.72	0.62	
v/c Ratio	0.43	0.20		0.64	0.21		0.07	0.45	0.11	0.05	0.45	
Control Delay	36.2	0.9		46.3	1.0		4.8	9.9	4.3	4.8	11.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	36.2	0.9		46.3	1.0		4.8	9.9	4.3	4.8	11.2	
LOS	D	A		D	A		A	A	A	A	B	
Approach Delay		18.6			27.0			9.3			11.0	
Approach LOS		B			C			A			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 86	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 12.2	Intersection LOS: B
Intersection Capacity Utilization 50.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Street "A"/Osprey Boulevard



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	96	96	131	97	31	1001	96	22	1008
v/c Ratio	0.43	0.20	0.64	0.21	0.07	0.45	0.11	0.05	0.45
Control Delay	36.2	0.9	46.3	1.0	4.8	9.9	4.3	4.8	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.2	0.9	46.3	1.0	4.8	9.9	4.3	4.8	11.2
Queue Length 50th (m)	15.0	0.0	21.3	0.0	1.2	34.9	1.5	0.9	49.4
Queue Length 95th (m)	30.0	0.0	40.7	0.0	4.8	81.8	10.3	3.8	84.8
Internal Link Dist (m)		98.1		162.9		609.8			265.9
Turn Bay Length (m)			15.0		15.0		25.0	20.0	
Base Capacity (vph)	379	674	351	659	447	2231	852	455	2223
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.14	0.37	0.15	0.07	0.45	0.11	0.05	0.45

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	1311	374	103	574	165	173	710	149	105	965	128
Future Volume (vph)	152	1311	374	103	574	165	173	710	149	105	965	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		50.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98	1.00		
Frt		0.967				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3495	0	1733	3579	1439	1767	3544	1581	1608	3614	1581
Flt Permitted	0.361			0.054			0.086			0.211		
Satd. Flow (perm)	678	3495	0	99	3579	1439	160	3544	1557	357	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31				165			91			66
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	3%	2%	11%	1%	3%	1%	11%	1%	1%
Adj. Flow (vph)	152	1311	374	103	574	165	173	710	149	105	965	128
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	1685	0	103	574	165	173	710	149	105	965	128
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template		Thru		Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		8
Detector Phase	5	2		1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	12.8	82.7		10.4	80.3	80.3	15.5	53.1	53.1	13.8	51.4	51.4
Total Split (%)	8.0%	51.7%		6.5%	50.2%	50.2%	9.7%	33.2%	33.2%	8.6%	32.1%	32.1%
Maximum Green (s)	9.8	76.6		7.4	74.2	74.2	12.5	45.4	45.4	10.8	43.7	43.7
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0			11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	89.1	76.6		85.1	74.6	74.6	63.1	46.3	46.3	58.3	43.7	43.7
Actuated g/C Ratio	0.56	0.48		0.53	0.47	0.47	0.39	0.29	0.29	0.36	0.27	0.27
v/c Ratio	0.34	1.00		0.81	0.34	0.22	0.92	0.69	0.29	0.51	0.98	0.27
Control Delay	19.0	61.7		70.3	28.0	3.9	85.7	54.9	19.4	40.1	80.8	23.7
Queue Delay	0.0	37.5		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	99.2		70.3	28.0	3.9	85.7	54.9	19.4	40.1	80.8	23.7
LOS	B	F		E	C	A	F	D	B	D	F	C
Approach Delay		92.5			28.4			54.9			71.1	
Approach LOS		F			C			D			E	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Natural Cycle: 135
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 68.4 — Intersection LOS: E
Intersection Capacity Utilization 108.3% — ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 7: Ninth Line & Britannia Road

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	152	1685	103	574	165	173	710	149	105	965	128
v/c Ratio	0.34	1.00	0.81	0.34	0.22	0.92	0.69	0.29	0.51	0.98	0.27
Control Delay	19.0	61.7	70.3	28.0	3.9	85.7	54.9	19.4	40.1	80.8	23.7
Queue Delay	0.0	37.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	99.2	70.3	28.0	3.9	85.7	54.9	19.4	40.1	80.8	23.7
Queue Length 50th (m)	23.6	288.7	17.6	63.8	0.0	40.6	112.8	14.5	22.5	169.7	15.8
Queue Length 95th (m)	36.2	#348.0	#52.7	79.1	13.8	#89.5	136.8	34.9	37.3	#216.2	34.8
Internal Link Dist (m)		192.6		220.1			171.1			609.8	
Turn Bay Length (m)	60.0		60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	447	1689	127	1667	758	188	1026	515	216	987	479
Starvation Cap Reductn	0	293	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	1.21	0.81	0.34	0.22	0.92	0.69	0.29	0.49	0.98	0.27

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1591	0	0	714	21	230
Future Volume (vph)	1591	0	0	714	21	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3579	1608	1566
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3579	1608	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						46
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	2%	11%	2%
Adj. Flow (vph)	1591	0	0	714	21	230
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1591	0	0	714	21	230
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	114.0			114.0	46.0	46.0
Total Split (%)	71.3%			71.3%	28.8%	28.8%
Maximum Green (s)	108.0			108.0	39.0	39.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	108.2			108.2	22.5	22.5
Actuated g/C Ratio	0.75			0.75	0.16	0.16
v/c Ratio	0.58			0.27	0.08	0.81
Control Delay	9.7			6.3	51.0	68.0
Queue Delay	0.4			0.0	0.0	0.0
Total Delay	10.1			6.3	51.0	68.0
LOS	B			A	D	E
Approach Delay	10.1			6.3	66.6	
Approach LOS	B			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 143.8	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 69.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1591	714	21	230
v/c Ratio	0.58	0.27	0.08	0.81
Control Delay	9.7	6.3	51.0	68.0
Queue Delay	0.4	0.0	0.0	0.0
Total Delay	10.1	6.3	51.0	68.0
Queue Length 50th (m)	98.3	30.7	5.5	54.4
Queue Length 95th (m)	152.7	50.7	13.5	85.7
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2720	2693	437	459
Starvation Cap Reductn	533	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.73	0.27	0.05	0.50

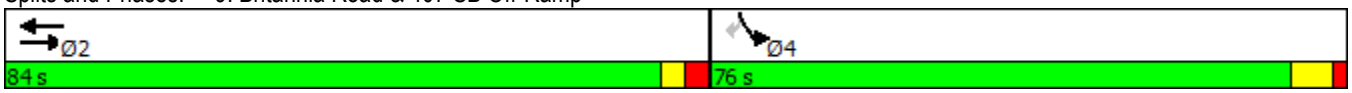
Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1189	547	0	447	22
Future Volume (vph)	0	1189	547	0	447	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3579	0	1684	1210
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3579	0	1684	1210
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						19
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	2%	0%	6%	32%
Adj. Flow (vph)	0	1189	547	0	447	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1189	547	0	447	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		84.0	84.0		76.0	76.0
Total Split (%)		52.5%	52.5%		47.5%	47.5%
Maximum Green (s)		78.0	78.0		69.0	69.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		78.4	78.4		39.5	39.5
Actuated g/C Ratio		0.60	0.60		0.30	0.30
v/c Ratio		0.55	0.26		0.88	0.06
Control Delay		18.2	14.0		62.4	13.5
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		18.2	14.0		62.4	13.5
LOS		B	B		E	B
Approach Delay		18.2	14.0		60.1	
Approach LOS		B	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 131	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 26.1	Intersection LOS: C
Intersection Capacity Utilization 69.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1189	547	447	22
v/c Ratio	0.55	0.26	0.88	0.06
Control Delay	18.2	14.0	62.4	13.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.2	14.0	62.4	13.5
Queue Length 50th (m)	96.0	34.9	115.0	0.6
Queue Length 95th (m)	149.6	58.4	157.7	6.8
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2162	2141	891	649
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	0.26	0.50	0.03

Intersection Summary

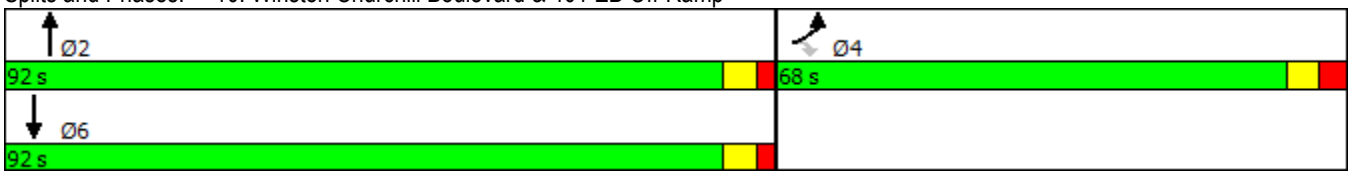
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	350	292	0	1080	1022	0
Future Volume (vph)	350	292	0	1080	1022	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.969	0.850				
Flt Protected	0.962					
Satd. Flow (prot)	3280	1425	0	4980	4885	0
Flt Permitted	0.962					
Satd. Flow (perm)	3280	1425	0	4980	4885	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	24	78				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	0%	3%	5%	0%
Adj. Flow (vph)	368	307	0	1137	1076	0
Shared Lane Traffic (%)		31%				
Lane Group Flow (vph)	463	212	0	1137	1076	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	68.0	68.0		92.0	92.0	
Total Split (%)	42.5%	42.5%		57.5%	57.5%	
Maximum Green (s)	60.5	60.5		85.5	85.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	26.1	26.1		87.1	87.1	
Actuated g/C Ratio	0.21	0.21		0.71	0.71	
v/c Ratio	0.65	0.58		0.32	0.31	
Control Delay	46.4	33.7		7.5	7.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	46.4	33.7		7.5	7.4	
LOS	D	C		A	A	
Approach Delay	42.4			7.5	7.4	
Approach LOS	D			A	A	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 123.2
Natural Cycle: 50
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 15.6 — Intersection LOS: B
Intersection Capacity Utilization 47.2% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	463	212	1137	1076
v/c Ratio	0.65	0.58	0.32	0.31
Control Delay	46.4	33.7	7.5	7.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	46.4	33.7	7.5	7.4
Queue Length 50th (m)	53.0	33.7	35.8	33.5
Queue Length 95th (m)	70.8	62.4	51.7	48.7
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1690	767	3520	3453
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.28	0.32	0.31

Intersection Summary

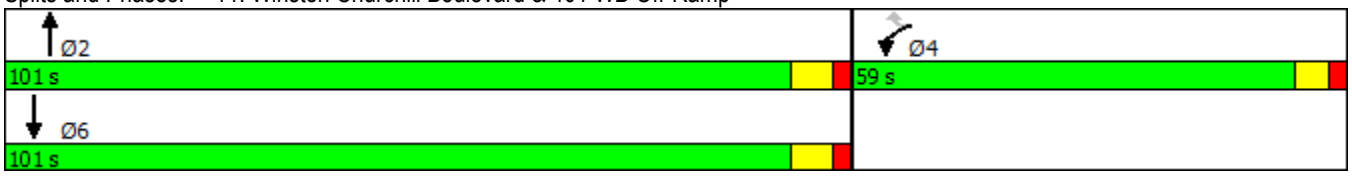
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	237	389	1180	0	0	1342
Future Volume (vph)	237	389	1180	0	0	1342
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.91
Frt	0.933	0.850				
Flt Protected	0.973					
Satd. Flow (prot)	2984	1298	4980	0	0	4839
Flt Permitted	0.973					
Satd. Flow (perm)	2984	1298	4980	0	0	4839
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	69	69				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	10%	12%	3%	0%	0%	6%
Adj. Flow (vph)	249	409	1242	0	0	1413
Shared Lane Traffic (%)		49%				
Lane Group Flow (vph)	449	209	1242	0	0	1413
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	59.0	59.0	101.0			101.0
Total Split (%)	36.9%	36.9%	63.1%			63.1%
Maximum Green (s)	52.5	52.5	93.5			93.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	25.9	25.9	96.2			96.2
Actuated g/C Ratio	0.20	0.20	0.73			0.73
v/c Ratio	0.70	0.67	0.34			0.40
Control Delay	47.6	43.6	7.3			7.8
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	47.6	43.6	7.3			7.8
LOS	D	D	A			A
Approach Delay	46.3		7.3			7.8
Approach LOS	D		A			A

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 132.1
Natural Cycle: 60
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 15.2 — Intersection LOS: B
Intersection Capacity Utilization 47.2% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	449	209	1242	1413
v/c Ratio	0.70	0.67	0.34	0.40
Control Delay	47.6	43.6	7.3	7.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	47.6	43.6	7.3	7.8
Queue Length 50th (m)	50.6	39.5	39.5	47.9
Queue Length 95th (m)	69.1	70.5	60.6	72.6
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1262	572	3625	3522
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.37	0.34	0.40

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	8	2	1421	819	18
Future Volume (vph)	20	8	2	1421	819	18
Ideal Flow (vphpl)	1640	1640	1640	1900	1900	1900
Lane Width (m)	3.6	3.6	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	0.0	25.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.997	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1527	1367	1510	3500	3489	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1527	1367	1510	3500	3489	0
Link Speed (k/h)	50			70	70	
Link Distance (m)	121.9			487.0	813.6	
Travel Time (s)	8.8			25.0	41.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	8	2	1421	819	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	8	2	1421	837	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.21	1.21	1.22	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	8	2	1421	819	18
Future Volume (Veh/h)	20	8	2	1421	819	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	20	8	2	1421	819	18
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1542	418	837			
vC1, stage 1 conf vol	828					
vC2, stage 2 conf vol	714					
vCu, unblocked vol	1542	418	837			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	99	100			
cM capacity (veh/h)	304	583	793			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	20	8	2	710	710	546	291
Volume Left	20	0	2	0	0	0	0
Volume Right	0	8	0	0	0	0	18
cSH	304	583	793	1700	1700	1700	1700
Volume to Capacity	0.07	0.01	0.00	0.42	0.42	0.32	0.17
Queue Length 95th (m)	1.7	0.3	0.1	0.0	0.0	0.0	0.0
Control Delay (s)	17.7	11.3	9.6	0.0	0.0	0.0	0.0
Lane LOS	C	B	A				
Approach Delay (s)	15.9		0.0			0.0	
Approach LOS	C						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	25	9	1203	927	16
Future Volume (vph)	42	25	9	1203	927	16
Ideal Flow (vphpl)	1640	1640	1640	1900	1900	1900
Storage Length (m)	0.0	0.0	95.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.997	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1527	1367	1527	3539	3529	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1527	1367	1527	3539	3529	0
Link Speed (k/h)	50			70	70	
Link Distance (m)	131.1			265.1	577.9	
Travel Time (s)	9.4			13.6	29.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	42	25	9	1203	927	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	42	25	9	1203	943	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.21	1.21	1.21	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	42	25	9	1203	927	16
Future Volume (Veh/h)	42	25	9	1203	927	16
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	42	25	9	1203	927	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1554	472	943			
vC1, stage 1 conf vol	935					
vC2, stage 2 conf vol	620					
vCu, unblocked vol	1554	472	943			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	86	95	99			
cM capacity (veh/h)	290	539	723			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	42	25	9	602	602	618	325
Volume Left	42	0	9	0	0	0	0
Volume Right	0	25	0	0	0	0	16
cSH	290	539	723	1700	1700	1700	1700
Volume to Capacity	0.14	0.05	0.01	0.35	0.35	0.36	0.19
Queue Length 95th (m)	4.0	1.2	0.3	0.0	0.0	0.0	0.0
Control Delay (s)	19.5	12.0	10.0	0.0	0.0	0.0	0.0
Lane LOS	C	B	B				
Approach Delay (s)	16.7		0.1			0.0	
Approach LOS	C						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1103	0	0	1882	77	181
Future Volume (vph)	1103	0	0	1882	77	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3614	3362	1597
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3614	3362	1597
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						163
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	1%	3%	0%
Adj. Flow (vph)	1103	0	0	1882	77	181
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1103	0	0	1882	77	181
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	128.0			128.0	32.0	32.0
Total Split (%)	80.0%			80.0%	20.0%	20.0%
Maximum Green (s)	122.0			122.0	25.0	25.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	122.0			122.0	10.0	10.0
Actuated g/C Ratio	0.84			0.84	0.07	0.07
v/c Ratio	0.37			0.62	0.33	0.69
Control Delay	3.2			5.1	67.9	26.6
Queue Delay	0.0			0.9	0.0	0.0
Total Delay	3.2			6.0	67.9	26.6
LOS	A			A	E	C
Approach Delay	3.2			6.0	38.9	
Approach LOS	A			A	D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 145	
Natural Cycle: 70	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 7.7	Intersection LOS: A
Intersection Capacity Utilization 86.5%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1103	1882	77	181
v/c Ratio	0.37	0.62	0.33	0.69
Control Delay	3.2	5.1	67.9	26.6
Queue Delay	0.0	0.9	0.0	0.0
Total Delay	3.2	6.0	67.9	26.6
Queue Length 50th (m)	29.6	72.5	11.6	5.2
Queue Length 95th (m)	50.4	121.0	20.4	30.6
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3011	3041	579	410
Starvation Cap Reductn	0	790	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.37	0.84	0.13	0.44

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	901	1843	0	262	399
Future Volume (vph)	0	901	1843	0	262	399
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3510	3614	0	3429	1597
Flt Permitted					0.950	
Satd. Flow (perm)	0	3510	3614	0	3429	1597
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						17
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	4%	1%	0%	1%	0%
Adj. Flow (vph)	0	901	1843	0	262	399
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	901	1843	0	262	399
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		103.0	103.0		57.0	57.0
Total Split (%)		64.4%	64.4%		35.6%	35.6%
Maximum Green (s)		97.0	97.0		50.0	50.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		97.3	97.3		40.6	40.6
Actuated g/C Ratio		0.64	0.64		0.27	0.27
v/c Ratio		0.40	0.79		0.28	0.90
Control Delay		14.3	24.1		43.9	75.1
Queue Delay		0.0	1.6		0.0	0.0
Total Delay		14.3	25.7		43.9	75.1
LOS		B	C		D	E
Approach Delay		14.3	25.7		62.7	
Approach LOS		B	C		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 151	
Natural Cycle: 75	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 29.9	Intersection LOS: C
Intersection Capacity Utilization 86.5%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	901	1843	262	399
v/c Ratio	0.40	0.79	0.28	0.90
Control Delay	14.3	24.1	43.9	75.1
Queue Delay	0.0	1.6	0.0	0.0
Total Delay	14.3	25.7	43.9	75.1
Queue Length 50th (m)	69.2	214.7	33.8	117.4
Queue Length 95th (m)	96.1	285.7	46.2	162.2
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2261	2328	1138	541
Starvation Cap Reductn	0	298	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.91	0.23	0.74

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	748	309	375	1501	101	160	645	283	228	860	315
Future Volume (vph)	167	748	309	375	1501	101	160	645	283	228	860	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		50.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt		0.956			0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1767	3417	0	1767	3579	0	1767	3614	1581	1785	3614	1581
Flt Permitted	0.065			0.103			0.115			0.134		
Satd. Flow (perm)	121	3417	0	192	3579	0	214	3614	1556	252	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		46			6				283			171
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			813.6			145.2	
Travel Time (s)		14.1			11.0			41.8			7.5	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	3%	0%	1%	1%	2%	1%	1%	1%	0%	1%	1%
Adj. Flow (vph)	167	748	309	375	1501	101	160	645	283	228	860	315
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	1057	0	375	1602	0	160	645	283	228	860	315
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	10.0	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1		9.5	30.1		9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	16.0	67.8		31.2	83.0		14.0	42.0	42.0	19.0	47.0	47.0
Total Split (%)	10.0%	42.4%		19.5%	51.9%		8.8%	26.3%	26.3%	11.9%	29.4%	29.4%
Maximum Green (s)	13.0	61.7		28.2	76.9		11.0	35.6	35.6	16.0	40.6	40.6
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0			15.0			14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	77.2	61.8		95.4	76.9		49.2	34.8	34.8	57.2	39.8	39.8
Actuated g/C Ratio	0.49	0.39		0.60	0.48		0.31	0.22	0.22	0.36	0.25	0.25
v/c Ratio	0.90	0.78		0.97	0.92		0.92	0.81	0.50	0.93	0.95	0.60
Control Delay	85.3	45.5		78.2	47.8		89.1	68.1	8.5	81.0	77.7	28.4
Queue Delay	0.0	0.8		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.3	46.3		78.2	47.8		89.1	68.1	8.5	81.0	77.7	28.4
LOS	F	D		E	D		F	E	A	F	E	C
Approach Delay		51.6			53.6			55.7			67.2	
Approach LOS		D			D			E			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 158.6	
Natural Cycle: 110	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 56.9	Intersection LOS: E
Intersection Capacity Utilization 103.7%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 3: Ninth Line & Derry Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	167	1057	375	1602	160	645	283	228	860	315
v/c Ratio	0.90	0.78	0.97	0.92	0.92	0.81	0.50	0.93	0.95	0.60
Control Delay	85.3	45.5	78.2	47.8	89.1	68.1	8.5	81.0	77.7	28.4
Queue Delay	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.3	46.3	78.2	47.8	89.1	68.1	8.5	81.0	77.7	28.4
Queue Length 50th (m)	38.6	157.7	96.4	260.5	37.5	108.7	0.0	55.8	149.6	42.5
Queue Length 95th (m)	#83.4	186.6	#163.6	298.5	#83.4	133.0	26.2	#107.9	#190.3	77.4
Internal Link Dist (m)		210.9		158.6		789.6			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	194	1359	395	1739	174	812	569	245	926	531
Starvation Cap Reductn	0	99	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.84	0.95	0.92	0.92	0.79	0.50	0.93	0.93	0.59

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	8	32	119	13	62	52	933	144	126	1324	53
Future Volume (vph)	79	8	32	119	13	62	52	933	144	126	1324	53
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1860	1900	1640	1860	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.3	3.6	3.5	3.2	3.0	3.5	3.6
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		25.0	80.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor									0.97	1.00		
Frt		0.879			0.877				0.850		0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1637	0	1454	1660	0	1732	3535	1332	1649	3512	0
Flt Permitted	0.706			0.730			0.128			0.241		
Satd. Flow (perm)	1135	1637	0	1117	1660	0	233	3535	1298	418	3512	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			65				99		7	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		111.4			218.3			577.9			487.0	
Travel Time (s)		8.0			15.7			29.7			25.0	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	1%	0%	0%	1%	2%
Adj. Flow (vph)	82	8	33	124	14	65	54	972	150	131	1379	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	41	0	124	79	0	54	972	150	131	1434	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.04	1.03	1.01	1.28	1.12	1.01	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		7.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		-3.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		-3.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		10.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5		9.5	26.0	26.0	9.5	26.0	
Total Split (s)	28.0	28.0		28.0	28.0		10.0	61.0	61.0	11.0	62.0	
Total Split (%)	28.0%	28.0%		28.0%	28.0%		10.0%	61.0%	61.0%	11.0%	62.0%	
Maximum Green (s)	21.5	21.5		21.5	21.5		7.0	54.0	54.0	8.0	55.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)	8.0	8.0		7.0	7.0			8.0	8.0		8.0	
Flash Dont Walk (s)	8.0	8.0		11.0	11.0			10.0	10.0		10.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	
Act Effct Green (s)	16.7	16.7		16.7	16.7		69.4	57.2	57.2	71.4	59.9	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.74	0.61	0.61	0.76	0.64	
v/c Ratio	0.41	0.13		0.63	0.23		0.18	0.45	0.18	0.30	0.64	
Control Delay	40.0	14.4		49.9	12.6		5.0	11.6	4.4	5.5	13.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	40.0	14.4		49.9	12.6		5.0	11.6	4.4	5.5	13.6	
LOS	D	B		D	B		A	B	A	A	B	
Approach Delay		31.4			35.4			10.4			12.9	
Approach LOS		C			D			B			B	

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 94.1	
Natural Cycle: 70	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 14.2	Intersection LOS: B
Intersection Capacity Utilization 68.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Street "F"/Doug Leavens Boulevard

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	82	41	124	79	54	972	150	131	1434
v/c Ratio	0.41	0.13	0.63	0.23	0.18	0.45	0.18	0.30	0.64
Control Delay	40.0	14.4	49.9	12.6	5.0	11.6	4.4	5.5	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	14.4	49.9	12.6	5.0	11.6	4.4	5.5	13.6
Queue Length 50th (m)	13.8	1.3	21.8	2.2	2.1	49.4	3.7	5.4	85.4
Queue Length 95th (m)	28.1	10.0	41.1	14.2	6.3	75.9	13.8	13.0	130.6
Internal Link Dist (m)		87.4		194.3		553.9			463.0
Turn Bay Length (m)					15.0		25.0	80.0	
Base Capacity (vph)	278	425	273	455	317	2149	827	448	2239
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.10	0.45	0.17	0.17	0.45	0.18	0.29	0.64

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	0	25	23	0	18	32	1098	62	43	1281	120
Future Volume (vph)	18	0	25	23	0	18	32	1098	62	43	1281	120
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1640	1900	1900	1640	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.0	3.6	3.5	3.5	3.0	3.5	3.6
Storage Length (m)	0.0		0.0	0.0		0.0	65.0		0.0	15.0		30.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.850			0.850			0.992				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1583	0	1454	1615	0	1527	3508	0	1426	3570	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1527	1583	0	1454	1615	0	1527	3508	0	1426	3570	1583
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		103.7			166.2			289.9			265.1	
Travel Time (s)		7.5			12.0			14.9			13.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	1%	0%	2%	0%	2%
Adj. Flow (vph)	19	0	26	24	0	19	33	1144	65	45	1334	125
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	26	0	24	19	0	33	1209	0	45	1334	125
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.09	1.21	1.01	1.01	1.31	1.01	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 56.2%	ICU Level of Service B
Analysis Period (min) 15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	0	25	23	0	18	32	1098	62	43	1281	120
Future Volume (Veh/h)	18	0	25	23	0	18	32	1098	62	43	1281	120
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	19	0	26	24	0	19	33	1144	65	45	1334	125
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								290				
pX, platoon unblocked	0.85	0.85		0.85	0.85	0.85				0.85		
vC, conflicting volume	2081	2699	667	2026	2792	604	1459			1209		
vC1, stage 1 conf vol	1424	1424		1242	1242							
vC2, stage 2 conf vol	657	1275		783	1549							
vCu, unblocked vol	1920	2646	667	1855	2755	186	1459			896		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	100	94	86	100	97	93			93		
cM capacity (veh/h)	126	135	401	173	112	707	459			641		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	19	26	24	19	33	763	446	45	667	667	125
Volume Left	19	0	24	0	33	0	0	45	0	0	0
Volume Right	0	26	0	19	0	0	65	0	0	0	125
cSH	126	401	173	707	459	1700	1700	641	1700	1700	1700
Volume to Capacity	0.15	0.06	0.14	0.03	0.07	0.45	0.26	0.07	0.39	0.39	0.07
Queue Length 95th (m)	4.1	1.7	3.8	0.7	1.8	0.0	0.0	1.8	0.0	0.0	0.0
Control Delay (s)	38.6	14.6	29.1	10.2	13.4	0.0	0.0	11.0	0.0	0.0	0.0
Lane LOS	E	B	D	B	B			B			
Approach Delay (s)	24.7		20.8		0.4			0.3			
Approach LOS	C		C								

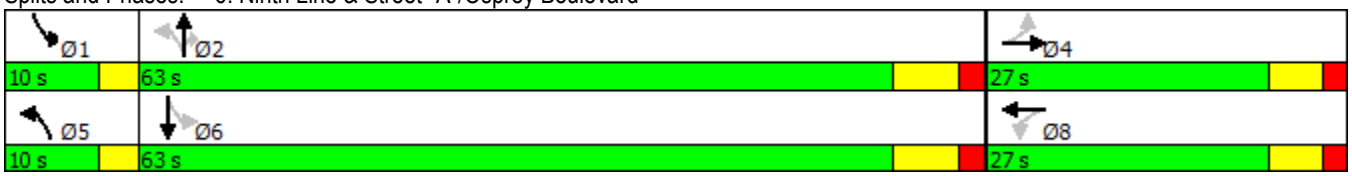
Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	0	55	71	0	30	92	1145	105	45	1258	24
Future Volume (vph)	55	0	55	71	0	30	92	1145	105	45	1258	24
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1860	1900	1640	1860	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.0	3.6	3.5	3.5	3.6	3.6	3.6
Storage Length (m)	0.0		0.0	15.0		0.0	15.0		25.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			15.0			7.5			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor									0.98	1.00		
Frt		0.850			0.850				0.850		0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1583	0	1359	1568	0	1732	3535	1351	1767	3598	0
Flt Permitted	0.737			0.720			0.157			0.209		
Satd. Flow (perm)	1185	1583	0	1030	1568	0	286	3535	1321	389	3598	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		168			183				65		3	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		103.4			186.9			633.8			289.9	
Travel Time (s)		7.4			13.5			32.6			14.9	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	7%	2%	3%	2%	1%	2%	0%	0%	2%
Adj. Flow (vph)	57	0	57	74	0	31	96	1193	109	47	1310	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	57	0	74	31	0	96	1193	109	47	1335	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.09	1.03	1.01	1.22	1.03	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru			Thru		Left	Thru	Right		Thru	
Leading Detector (m)	2.0	10.0		9.0	10.0		2.0	10.0	2.0	20.0	10.0	
Trailing Detector (m)	0.0	0.0		-0.2	0.0		0.0	0.0	0.0	10.0	0.0	
Detector 1 Position(m)	0.0	0.0		-0.2	0.0		0.0	0.0	0.0	10.0	0.0	
Detector 1 Size(m)	2.0	0.6		9.2	0.6		2.0	0.6	2.0	10.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		9.5	25.0	25.0	9.5	25.0	
Total Split (s)	27.0	27.0		27.0	27.0		10.0	63.0	63.0	10.0	63.0	
Total Split (%)	27.0%	27.0%		27.0%	27.0%		10.0%	63.0%	63.0%	10.0%	63.0%	
Maximum Green (s)	21.0	21.0		21.0	21.0		7.0	56.0	56.0	7.0	56.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	2.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	
Act Effct Green (s)	13.2	13.2		12.7	12.7		73.4	65.9	65.9	71.3	62.9	
Actuated g/C Ratio	0.15	0.15		0.14	0.14		0.82	0.74	0.74	0.80	0.70	
v/c Ratio	0.33	0.15		0.51	0.08		0.26	0.46	0.11	0.11	0.53	
Control Delay	39.8	0.9		48.1	0.4		4.3	7.9	3.5	3.3	10.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	39.8	0.9		48.1	0.4		4.3	7.9	3.5	3.3	10.0	
LOS	D	A		D	A		A	A	A	A	A	
Approach Delay		20.3			34.1			7.4			9.8	
Approach LOS		C			C			A			A	

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 89.4	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 9.9	Intersection LOS: A
Intersection Capacity Utilization 63.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Street "A"/Osprey Boulevard



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	57	57	74	31	96	1193	109	47	1335
v/c Ratio	0.33	0.15	0.51	0.08	0.26	0.46	0.11	0.11	0.53
Control Delay	39.8	0.9	48.1	0.4	4.3	7.9	3.5	3.3	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.8	0.9	48.1	0.4	4.3	7.9	3.5	3.3	10.0
Queue Length 50th (m)	9.6	0.0	12.7	0.0	2.9	52.2	2.5	1.4	65.6
Queue Length 95th (m)	21.4	0.0	26.8	0.0	8.3	84.7	10.0	4.8	103.6
Internal Link Dist (m)		79.4		162.9		609.8			265.9
Turn Bay Length (m)			15.0		15.0		25.0	20.0	
Base Capacity (vph)	293	518	254	525	381	2603	990	456	2533
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.11	0.29	0.06	0.25	0.46	0.11	0.10	0.53

Intersection Summary

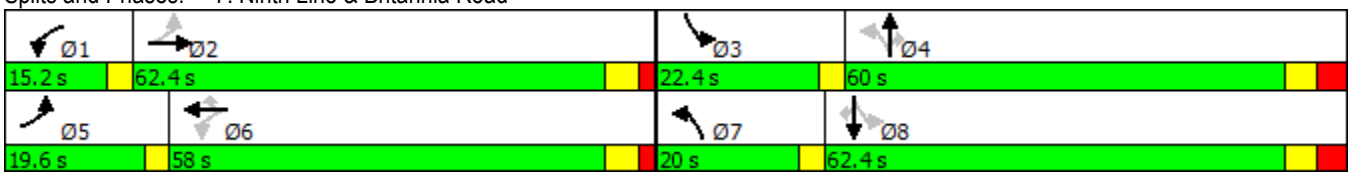
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	187	703	323	140	972	177	197	1036	127	205	972	172
Future Volume (vph)	187	703	323	140	972	177	197	1036	127	205	972	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		0.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt		0.953				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3455	0	1785	3614	1551	1767	3614	1597	1716	3614	1536
Flt Permitted	0.105			0.113			0.107			0.080		
Satd. Flow (perm)	197	3455	0	212	3614	1551	199	3614	1570	145	3614	1536
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52				98			82			98
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	1%	1%	0%	4%	1%	4%
Adj. Flow (vph)	187	703	323	140	972	177	197	1036	127	205	972	172
Shared Lane Traffic (%)												
Lane Group Flow (vph)	187	1026	0	140	972	177	197	1036	127	205	972	172
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template		Thru		Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		8
Detector Phase	5	2		1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	19.6	62.4		15.2	58.0	58.0	20.0	60.0	60.0	22.4	62.4	62.4
Total Split (%)	12.3%	39.0%		9.5%	36.3%	36.3%	12.5%	37.5%	37.5%	14.0%	39.0%	39.0%
Maximum Green (s)	16.6	56.3		12.2	51.9	51.9	17.0	52.3	52.3	19.4	54.7	54.7
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0			11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	73.3	56.6		67.5	53.3	53.3	67.3	48.0	48.0	71.8	50.3	50.3
Actuated g/C Ratio	0.48	0.37		0.44	0.35	0.35	0.44	0.31	0.31	0.47	0.33	0.33
v/c Ratio	0.77	0.78		0.67	0.77	0.29	0.83	0.91	0.23	0.85	0.82	0.30
Control Delay	49.1	46.5		42.2	50.7	18.9	59.5	62.8	16.1	67.7	53.4	17.8
Queue Delay	0.0	0.8		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.1	47.3		42.2	50.7	18.9	59.5	62.8	16.1	67.7	53.4	17.8
LOS	D	D		D	D	B	E	E	B	E	D	B
Approach Delay		47.6			45.4			58.0			51.0	
Approach LOS		D			D			E			D	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 152.5
Natural Cycle: 85
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 50.7 — Intersection LOS: D
Intersection Capacity Utilization 95.7% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 7: Ninth Line & Britannia Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	187	1026	140	972	177	197	1036	127	205	972	172
v/c Ratio	0.77	0.78	0.67	0.77	0.29	0.83	0.91	0.23	0.85	0.82	0.30
Control Delay	49.1	46.5	42.2	50.7	18.9	59.5	62.8	16.1	67.7	53.4	17.8
Queue Delay	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.1	47.3	42.2	50.7	18.9	59.5	62.8	16.1	67.7	53.4	17.8
Queue Length 50th (m)	36.8	157.7	26.8	158.7	18.9	39.6	172.7	10.5	47.7	152.4	16.9
Queue Length 95th (m)	#69.5	187.1	#45.1	187.3	40.5	#76.7	202.6	27.7	#87.9	182.2	37.6
Internal Link Dist (m)		192.6		220.1			171.1			609.8	
Turn Bay Length (m)	60.0		60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	268	1314	221	1263	605	265	1245	594	269	1308	618
Starvation Cap Reductn	0	92	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.84	0.63	0.77	0.29	0.74	0.83	0.21	0.76	0.74	0.28

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1047	0	0	1291	52	167
Future Volume (vph)	1047	0	0	1291	52	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3614	1750	1581
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3614	1750	1581
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						161
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Adj. Flow (vph)	1047	0	0	1291	52	167
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1047	0	0	1291	52	167
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	121.0			121.0	39.0	39.0
Total Split (%)	75.6%			75.6%	24.4%	24.4%
Maximum Green (s)	115.0			115.0	32.0	32.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	115.0			115.0	9.8	9.8
Actuated g/C Ratio	0.83			0.83	0.07	0.07
v/c Ratio	0.35			0.43	0.42	0.64
Control Delay	3.1			3.6	71.5	21.4
Queue Delay	0.0			0.4	0.0	0.0
Total Delay	3.1			4.0	71.5	21.4
LOS	A			A	E	C
Approach Delay	3.1			4.0	33.3	
Approach LOS	A			A	C	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 137.8	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 6.1	Intersection LOS: A
Intersection Capacity Utilization 65.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1047	1291	52	167
v/c Ratio	0.35	0.43	0.42	0.64
Control Delay	3.1	3.6	71.5	21.4
Queue Delay	0.0	0.4	0.0	0.0
Total Delay	3.1	4.0	71.5	21.4
Queue Length 50th (m)	28.3	38.5	14.6	1.6
Queue Length 95th (m)	42.8	57.6	29.1	25.1
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	3016	3016	406	490
Starvation Cap Reductn	0	1087	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.35	0.67	0.13	0.34

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	677	1186	0	402	57
Future Volume (vph)	0	677	1186	0	402	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3614	0	1767	1536
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3614	0	1767	1536
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						51
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	1%	4%
Adj. Flow (vph)	0	677	1186	0	402	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	677	1186	0	402	57
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		89.0	89.0		71.0	71.0
Total Split (%)		55.6%	55.6%		44.4%	44.4%
Maximum Green (s)		83.0	83.0		64.0	64.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		83.3	83.3		34.7	34.7
Actuated g/C Ratio		0.64	0.64		0.26	0.26
v/c Ratio		0.29	0.52		0.86	0.13
Control Delay		12.0	14.9		64.0	11.1
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		12.0	14.9		64.0	11.1
LOS		B	B		E	B
Approach Delay		12.0	14.9		57.4	
Approach LOS		B	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 131.1	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 22.5	Intersection LOS: C
Intersection Capacity Utilization 65.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	677	1186	402	57
v/c Ratio	0.29	0.52	0.86	0.13
Control Delay	12.0	14.9	64.0	11.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.0	14.9	64.0	11.1
Queue Length 50th (m)	40.5	85.9	104.0	1.2
Queue Length 95th (m)	65.3	132.2	143.4	11.6
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2296	2296	865	778
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.29	0.52	0.46	0.07

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	420	312	0	1354	1817	0
Future Volume (vph)	420	312	0	1354	1817	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.975	0.850				
Flt Protected	0.960					
Satd. Flow (prot)	3065	1411	0	4980	5079	0
Flt Permitted	0.960					
Satd. Flow (perm)	3065	1411	0	4980	5079	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	15	*171				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	13%	3%	0%	3%	1%	0%
Adj. Flow (vph)	433	322	0	1396	1873	0
Shared Lane Traffic (%)		27%				
Lane Group Flow (vph)	520	235	0	1396	1873	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	60.0	60.0		100.0	100.0	
Total Split (%)	37.5%	37.5%		62.5%	62.5%	
Maximum Green (s)	52.5	52.5		93.5	93.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	32.5	32.5		95.2	95.2	
Actuated g/C Ratio	0.24	0.24		0.69	0.69	
v/c Ratio	0.71	0.51		0.41	0.53	
Control Delay	52.3	16.8		10.0	11.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	52.3	16.8		10.0	11.6	
LOS	D	B		B	B	
Approach Delay	41.3			10.0	11.6	
Approach LOS	D			B	B	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 137.7	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 16.6	Intersection LOS: B
Intersection Capacity Utilization 69.7%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	520	235	1396	1873
v/c Ratio	0.71	0.51	0.41	0.53
Control Delay	52.3	16.8	10.0	11.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	52.3	16.8	10.0	11.6
Queue Length 50th (m)	68.8	16.2	58.3	89.1
Queue Length 95th (m)	88.5	44.7	81.9	122.5
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1235	667	3442	3510
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	0.35	0.41	0.53

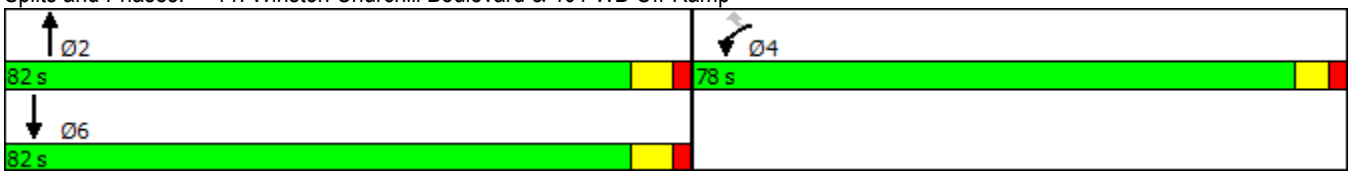
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	851	787	1494	0	0	1332
Future Volume (vph)	851	787	1494	0	0	1332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.91
Frt	0.964	0.850				
Flt Protected	0.963					
Satd. Flow (prot)	3335	1411	4839	0	0	4932
Flt Permitted	0.963					
Satd. Flow (perm)	3335	1411	4839	0	0	4932
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	14	*419				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	3%	6%	0%	0%	4%
Adj. Flow (vph)	877	811	1540	0	0	1373
Shared Lane Traffic (%)		34%				
Lane Group Flow (vph)	1153	535	1540	0	0	1373
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	78.0	78.0	82.0			82.0
Total Split (%)	48.8%	48.8%	51.3%			51.3%
Maximum Green (s)	71.5	71.5	74.5			74.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	64.0	64.0	77.3			77.3
Actuated g/C Ratio	0.42	0.42	0.51			0.51
v/c Ratio	0.81	0.64	0.62			0.55
Control Delay	42.9	10.5	28.9			27.0
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	42.9	10.5	28.9			27.0
LOS	D	B	C			C
Approach Delay	32.7		28.9			27.0
Approach LOS	C		C			C

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 151.3	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 29.7	Intersection LOS: C
Intersection Capacity Utilization 69.7%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	1153	535	1540	1373
v/c Ratio	0.81	0.64	0.62	0.55
Control Delay	42.9	10.5	28.9	27.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	42.9	10.5	28.9	27.0
Queue Length 50th (m)	161.5	27.2	129.6	109.2
Queue Length 95th (m)	189.5	70.6	158.5	134.6
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1622	899	2472	2519
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.60	0.62	0.55

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	12	5	8	1067	1499	57
Future Volume (vph)	12	5	8	1067	1499	57
Ideal Flow (vphpl)	1640	1640	1640	1900	1900	1900
Storage Length (m)	0.0	0.0	25.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.995	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1527	1367	1527	3539	3522	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1527	1367	1527	3539	3522	0
Link Speed (k/h)	50			70	70	
Link Distance (m)	100.7			487.0	813.6	
Travel Time (s)	7.3			25.0	41.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	5	8	1067	1499	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	5	8	1067	1556	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.21	1.21	1.21	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	5	8	1067	1499	57
Future Volume (Veh/h)	12	5	8	1067	1499	57
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	5	8	1067	1499	57
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	2077	778	1556			
vC1, stage 1 conf vol	1528					
vC2, stage 2 conf vol	550					
vCu, unblocked vol	2077	778	1556			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	99	98			
cM capacity (veh/h)	156	339	421			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	12	5	8	534	534	999	557
Volume Left	12	0	8	0	0	0	0
Volume Right	0	5	0	0	0	0	57
cSH	156	339	421	1700	1700	1700	1700
Volume to Capacity	0.08	0.01	0.02	0.31	0.31	0.59	0.33
Queue Length 95th (m)	2.0	0.4	0.5	0.0	0.0	0.0	0.0
Control Delay (s)	30.0	15.8	13.7	0.0	0.0	0.0	0.0
Lane LOS	D	C	B				
Approach Delay (s)	25.8		0.1			0.0	
Approach LOS	D						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	15	28	1104	1427	48
Future Volume (vph)	25	15	28	1104	1427	48
Ideal Flow (vphpl)	1640	1640	1640	1900	1900	1900
Storage Length (m)	0.0	0.0	95.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.995	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1527	1367	1527	3539	3522	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1527	1367	1527	3539	3522	0
Link Speed (k/h)	50			70	70	
Link Distance (m)	106.7			265.1	577.9	
Travel Time (s)	7.7			13.6	29.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	15	28	1104	1427	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	15	28	1104	1475	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.21	1.21	1.21	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.0%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	15	28	1104	1427	48
Future Volume (Veh/h)	25	15	28	1104	1427	48
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	25	15	28	1104	1427	48
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	2059	738	1475			
vC1, stage 1 conf vol	1451					
vC2, stage 2 conf vol	608					
vCu, unblocked vol	2059	738	1475			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	85	96	94			
cM capacity (veh/h)	168	361	453			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	25	15	28	552	552	951	524
Volume Left	25	0	28	0	0	0	0
Volume Right	0	15	0	0	0	0	48
cSH	168	361	453	1700	1700	1700	1700
Volume to Capacity	0.15	0.04	0.06	0.32	0.32	0.56	0.31
Queue Length 95th (m)	4.1	1.0	1.6	0.0	0.0	0.0	0.0
Control Delay (s)	30.2	15.4	13.5	0.0	0.0	0.0	0.0
Lane LOS	D	C	B				
Approach Delay (s)	24.6		0.3			0.0	
Approach LOS	C						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1812	0	0	1070	14	178
Future Volume (vph)	1812	0	0	1070	14	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3510	2935	1507
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3510	2935	1507
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						35
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	4%	18%	6%
Adj. Flow (vph)	1812	0	0	1070	14	178
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1812	0	0	1070	14	178
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	120.0			120.0	40.0	40.0
Total Split (%)	75.0%			75.0%	25.0%	25.0%
Maximum Green (s)	114.0			114.0	33.0	33.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	114.2			114.2	19.5	19.5
Actuated g/C Ratio	0.78			0.78	0.13	0.13
v/c Ratio	0.65			0.39	0.04	0.77
Control Delay	9.4			6.2	53.9	70.8
Queue Delay	0.5			0.3	0.0	0.0
Total Delay	9.9			6.5	53.9	70.8
LOS	A			A	D	E
Approach Delay	9.9			6.5	69.6	
Approach LOS	A			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 146.7	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 12.4	Intersection LOS: B
Intersection Capacity Utilization 81.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1812	1070	14	178
v/c Ratio	0.65	0.39	0.04	0.77
Control Delay	9.4	6.2	53.9	70.8
Queue Delay	0.5	0.3	0.0	0.0
Total Delay	9.9	6.5	53.9	70.8
Queue Length 50th (m)	113.8	47.7	1.9	43.1
Queue Length 95th (m)	176.3	76.0	5.6	70.7
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2785	2731	661	366
Starvation Cap Reductn	491	964	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.79	0.61	0.02	0.49

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2343	802	0	57	58
Future Volume (vph)	0	2343	802	0	57	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3510	0	3148	1309
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3510	0	3148	1309
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						58
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	10%	22%
Adj. Flow (vph)	0	2343	802	0	57	58
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2343	802	0	57	58
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		135.0	135.0		25.0	25.0
Total Split (%)		84.4%	84.4%		15.6%	15.6%
Maximum Green (s)		129.0	129.0		18.0	18.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		129.0	129.0		8.5	8.5
Actuated g/C Ratio		0.86	0.86		0.06	0.06
v/c Ratio		0.76	0.27		0.32	0.45
Control Delay		6.5	2.3		73.0	26.9
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		6.5	2.3		73.0	26.9
LOS		A	A		E	C
Approach Delay		6.5	2.3		49.7	
Approach LOS		A	A		D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 150.5	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 7.0	Intersection LOS: A
Intersection Capacity Utilization 81.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2343	802	57	58
v/c Ratio	0.76	0.27	0.32	0.45
Control Delay	6.5	2.3	73.0	26.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.5	2.3	73.0	26.9
Queue Length 50th (m)	118.7	18.5	9.0	0.0
Queue Length 95th (m)	162.7	26.6	16.9	15.4
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3097	3007	376	207
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.76	0.27	0.15	0.28

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	377	1460	155	213	689	370	329	783	420	105	556	279
Future Volume (vph)	377	1460	155	213	689	370	329	783	420	105	556	279
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		50.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00										
Frt		0.986			0.948				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	3562	0	1733	3350	0	1750	3614	1566	1716	3614	1581
Flt Permitted	0.084			0.068			0.140			0.201		
Satd. Flow (perm)	149	3562	0	124	3350	0	258	3614	1566	363	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			70				219			248
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			813.6			145.2	
Travel Time (s)		14.1			11.0			41.8			7.5	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	1%	0%	3%	4%	2%	2%	1%	2%	4%	1%	1%
Adj. Flow (vph)	377	1460	155	213	689	370	329	783	420	105	556	279
Shared Lane Traffic (%)												
Lane Group Flow (vph)	377	1615	0	213	1059	0	329	783	420	105	556	279
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	10.0	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1		9.5	30.1		9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	35.0	79.8		19.3	64.1		29.0	49.1	49.1	11.8	31.9	31.9
Total Split (%)	21.9%	49.9%		12.1%	40.1%		18.1%	30.7%	30.7%	7.4%	19.9%	19.9%
Maximum Green (s)	32.0	73.7		16.3	58.0		26.0	42.7	42.7	8.8	25.5	25.5
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0			15.0			14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	95.9	73.7		77.7	58.5		57.9	42.8	42.8	37.6	25.5	25.5
Actuated g/C Ratio	0.60	0.46		0.49	0.37		0.36	0.27	0.27	0.24	0.16	0.16
v/c Ratio	0.97	0.98		0.96	0.83		0.98	0.81	0.73	0.66	0.97	0.61
Control Delay	83.4	59.8		98.2	50.0		90.1	62.4	32.8	58.4	95.7	16.2
Queue Delay	0.0	40.5		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.4	100.3		98.2	50.0		90.1	62.4	32.8	58.4	95.7	16.2
LOS	F	F		F	D		F	E	C	E	F	B
Approach Delay		97.1			58.1			60.3			68.0	
Approach LOS		F			E			E			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 159.8	
Natural Cycle: 120	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 73.8	Intersection LOS: E
Intersection Capacity Utilization 107.8%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 3: Ninth Line & Derry Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	377	1615	213	1059	329	783	420	105	556	279
v/c Ratio	0.97	0.98	0.96	0.83	0.98	0.81	0.73	0.66	0.97	0.61
Control Delay	83.4	59.8	98.2	50.0	90.1	62.4	32.8	58.4	95.7	16.2
Queue Delay	0.0	40.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.4	100.3	98.2	50.0	90.1	62.4	32.8	58.4	95.7	16.2
Queue Length 50th (m)	104.4	275.8	55.1	161.7	92.7	130.1	63.9	23.9	98.7	9.0
Queue Length 95th (m)	#172.1	#332.8	#110.0	192.3	#160.1	156.2	108.0	#42.1	#138.0	40.4
Internal Link Dist (m)		210.9		158.6		789.6			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	396	1647	224	1272	335	967	579	159	576	460
Starvation Cap Reductn	0	246	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	1.15	0.95	0.83	0.98	0.81	0.73	0.66	0.97	0.61

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	13	54	152	5	178	17	1212	119	73	789	17
Future Volume (vph)	133	13	54	152	5	178	17	1212	119	73	789	17
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1860	1900	1640	1860	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.3	3.0	3.5	3.2	3.0	3.5	3.6
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		25.0	80.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor									0.98			
Frt		0.879			0.854				0.850		0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1637	0	1412	1591	0	1617	3500	1222	1649	3523	0
Flt Permitted	0.520			0.709			0.295			0.130		
Satd. Flow (perm)	836	1637	0	1054	1591	0	502	3500	1194	226	3523	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		59			157				71		3	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		140.5			218.3			577.9			487.0	
Travel Time (s)		10.1			15.7			29.7			25.0	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	9%	0%	1%	2%
Adj. Flow (vph)	145	14	59	165	5	193	18	1317	129	79	858	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	145	73	0	165	198	0	18	1317	129	79	876	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.04	1.12	1.01	1.28	1.12	1.01	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		7.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		-3.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		-3.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		10.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5		9.5	26.0	26.0	9.5	26.0	
Total Split (s)	35.0	35.0		35.0	35.0		9.5	55.4	55.4	9.6	55.5	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		9.5%	55.4%	55.4%	9.6%	55.5%	
Maximum Green (s)	28.5	28.5		28.5	28.5		6.5	48.4	48.4	6.6	48.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)	8.0	8.0		7.0	7.0			8.0	8.0		8.0	
Flash Dont Walk (s)	8.0	8.0		11.0	11.0			10.0	10.0		10.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	
Act Effct Green (s)	20.6	20.6		20.6	20.6		61.2	51.1	51.1	62.1	55.0	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.69	0.57	0.57	0.70	0.62	
v/c Ratio	0.75	0.17		0.68	0.40		0.04	0.66	0.18	0.27	0.40	
Control Delay	56.0	10.8		45.9	10.3		5.9	17.0	6.7	7.9	11.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	56.0	10.8		45.9	10.3		5.9	17.0	6.7	7.9	11.3	
LOS	E	B		D	B		A	B	A	A	B	
Approach Delay		40.8			26.5			15.9			11.0	
Approach LOS		D			C			B			B	

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 89.1	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 17.4	Intersection LOS: B
Intersection Capacity Utilization 73.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Street "F"/Doug Leavens Boulevard

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	145	73	165	198	18	1317	129	79	876
v/c Ratio	0.75	0.17	0.68	0.40	0.04	0.66	0.18	0.27	0.40
Control Delay	56.0	10.8	45.9	10.3	5.9	17.0	6.7	7.9	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	10.8	45.9	10.3	5.9	17.0	6.7	7.9	11.3
Queue Length 50th (m)	25.0	2.0	27.8	6.0	0.9	86.2	4.7	3.9	34.3
Queue Length 95th (m)	47.3	12.3	49.8	23.1	3.7	135.2	16.2	11.0	76.0
Internal Link Dist (m)		116.5		194.3		553.9			463.0
Turn Bay Length (m)					15.0		25.0	80.0	
Base Capacity (vph)	285	597	359	646	455	2006	714	296	2174
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.12	0.46	0.31	0.04	0.66	0.18	0.27	0.40

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	0	42	49	0	71	10	1228	37	32	976	39
Future Volume (vph)	29	0	42	49	0	71	10	1228	37	32	976	39
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1640	1900	1900	1640	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.0	3.6	3.5	3.5	3.0	3.5	3.6
Storage Length (m)	0.0		0.0	0.0		0.0	65.0		0.0	15.0		30.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.850			0.850			0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1583	0	1454	1615	0	1527	3446	0	1412	3500	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1527	1583	0	1454	1615	0	1527	3446	0	1412	3500	1583
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		123.4			166.2			289.9			265.1	
Travel Time (s)		8.9			12.0			14.9			13.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	3%	9%	3%	2%	2%
Adj. Flow (vph)	30	0	44	51	0	74	10	1279	39	33	1017	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	44	0	51	74	0	10	1318	0	33	1017	41
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.09	1.21	1.01	1.01	1.31	1.01	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 51.6%	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 (veh/h)	29	0	42	49	0	71	10	1228	37	32	976	39
Future Volume (Veh/h)	29	0	42	49	0	71	10	1228	37	32	976	39
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	30	0	44	51	0	74	10	1279	39	33	1017	41
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								290				
pX, platoon unblocked	0.83	0.83		0.83	0.83	0.83				0.83		
vC, conflicting volume	1816	2421	508	1937	2442	659	1058			1318		
vC1, stage 1 conf vol	1083	1083		1318	1318							
vC2, stage 2 conf vol	734	1338		618	1124							
vCu, unblocked vol	1575	2303	508	1720	2329	181	1058			975		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.2		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	100	91	73	100	89	98			94		
cM capacity (veh/h)	198	171	510	190	178	695	654			579		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	30	44	51	74	10	853	465	33	508	508	41
Volume Left	30	0	51	0	10	0	0	33	0	0	0
Volume Right	0	44	0	74	0	0	39	0	0	0	41
cSH	198	510	190	695	654	1700	1700	579	1700	1700	1700
Volume to Capacity	0.15	0.09	0.27	0.11	0.02	0.50	0.27	0.06	0.30	0.30	0.02
Queue Length 95th (m)	4.2	2.3	8.3	2.8	0.4	0.0	0.0	1.4	0.0	0.0	0.0
Control Delay (s)	26.4	12.7	30.8	10.8	10.6	0.0	0.0	11.6	0.0	0.0	0.0
Lane LOS	D	B	D	B	B			B			
Approach Delay (s)	18.3		18.9		0.1			0.4			
Approach LOS	C		C								

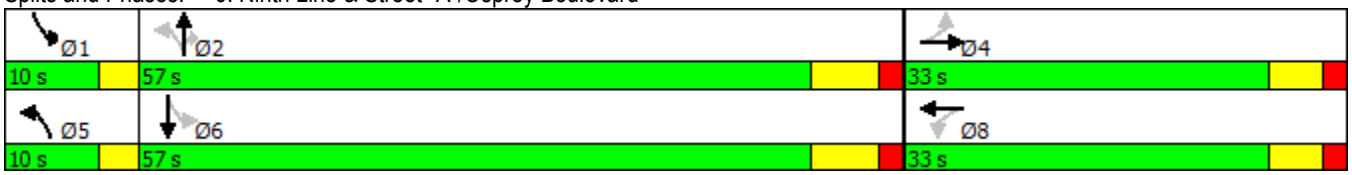
Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	0	93	131	0	96	30	1059	96	21	1037	8
Future Volume (vph)	93	0	93	131	0	96	30	1059	96	21	1037	8
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1860	1900	1640	1860	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.0	3.6	3.5	3.5	3.6	3.6	3.6
Storage Length (m)	0.0		0.0	15.0		0.0	15.0		25.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			15.0			7.5			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.850			0.850				0.850		0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1583	0	1412	1538	0	1732	3433	1276	1683	3570	0
Flt Permitted	0.693			0.695			0.210			0.222		
Satd. Flow (perm)	1114	1583	0	1033	1538	0	383	3433	1276	393	3570	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		196			192				65		1	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		122.1			186.9			633.8			289.9	
Travel Time (s)		8.8			13.5			32.6			14.9	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	3%	2%	5%	2%	4%	8%	5%	1%	2%
Adj. Flow (vph)	96	0	96	135	0	99	31	1092	99	22	1069	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	96	0	135	99	0	31	1092	99	22	1077	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.09	1.03	1.01	1.22	1.03	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru			Thru		Left	Thru	Right		Thru	
Leading Detector (m)	2.0	10.0		9.0	10.0		2.0	10.0	2.0	20.0	10.0	
Trailing Detector (m)	0.0	0.0		-1.0	0.0		0.0	0.0	0.0	10.0	0.0	
Detector 1 Position(m)	0.0	0.0		-1.0	0.0		0.0	0.0	0.0	10.0	0.0	
Detector 1 Size(m)	2.0	0.6		10.0	0.6		2.0	0.6	2.0	10.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		9.5	25.0	25.0	9.5	25.0	
Total Split (s)	33.0	33.0		33.0	33.0		10.0	57.0	57.0	10.0	57.0	
Total Split (%)	33.0%	33.0%		33.0%	33.0%		10.0%	57.0%	57.0%	10.0%	57.0%	
Maximum Green (s)	27.0	27.0		27.0	27.0		7.0	50.0	50.0	7.0	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	2.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	
Act Effct Green (s)	17.6	17.6		17.6	17.6		63.8	56.8	56.8	62.4	54.4	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.73	0.65	0.65	0.71	0.62	
v/c Ratio	0.43	0.20		0.65	0.21		0.08	0.49	0.12	0.06	0.48	
Control Delay	36.4	1.0		47.1	1.1		5.0	10.5	4.4	5.0	11.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	36.4	1.0		47.1	1.1		5.0	10.5	4.4	5.0	11.7	
LOS	D	A		D	A		A	B	A	A	B	
Approach Delay		18.7			27.6			9.9			11.6	
Approach LOS		B			C			A			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 87.4	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 12.7	Intersection LOS: B
Intersection Capacity Utilization 52.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Street "A"/Osprey Boulevard



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	96	96	135	99	31	1092	99	22	1077
v/c Ratio	0.43	0.20	0.65	0.21	0.08	0.49	0.12	0.06	0.48
Control Delay	36.4	1.0	47.1	1.1	5.0	10.5	4.4	5.0	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.4	1.0	47.1	1.1	5.0	10.5	4.4	5.0	11.7
Queue Length 50th (m)	15.2	0.0	22.4	0.0	1.3	40.7	1.7	0.9	55.3
Queue Length 95th (m)	30.3	0.0	42.2	0.0	4.9	94.0	10.9	3.9	94.4
Internal Link Dist (m)		98.1		162.9		609.8			265.9
Turn Bay Length (m)			15.0		15.0		25.0	20.0	
Base Capacity (vph)	360	644	334	627	419	2230	852	419	2224
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.15	0.40	0.16	0.07	0.49	0.12	0.05	0.48

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	1465	405	116	635	184	187	773	170	128	1019	142
Future Volume (vph)	176	1465	405	116	635	184	187	773	170	128	1019	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		50.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98	1.00		
Frt		0.968				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3498	0	1733	3579	1439	1767	3544	1581	1608	3614	1581
Flt Permitted	0.320			0.055			0.088			0.166		
Satd. Flow (perm)	601	3498	0	100	3579	1439	164	3544	1557	281	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30				184			95			82
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	3%	2%	11%	1%	3%	1%	11%	1%	1%
Adj. Flow (vph)	176	1465	405	116	635	184	187	773	170	128	1019	142
Shared Lane Traffic (%)												
Lane Group Flow (vph)	176	1870	0	116	635	184	187	773	170	128	1019	142
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template		Thru		Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		8
Detector Phase	5	2		1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	15.6	83.0		10.6	78.0	78.0	15.4	53.0	53.0	13.4	51.0	51.0
Total Split (%)	9.8%	51.9%		6.6%	48.8%	48.8%	9.6%	33.1%	33.1%	8.4%	31.9%	31.9%
Maximum Green (s)	12.6	76.9		7.6	71.9	71.9	12.4	45.3	45.3	10.4	43.3	43.3
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0			11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	90.2	76.9		83.7	73.0	73.0	62.6	45.7	45.7	58.0	43.3	43.3
Actuated g/C Ratio	0.56	0.48		0.52	0.46	0.46	0.39	0.29	0.29	0.36	0.27	0.27
v/c Ratio	0.42	1.10		0.89	0.39	0.24	0.99	0.76	0.33	0.70	1.04	0.29
Control Delay	19.9	94.1		87.8	29.8	4.0	103.4	58.2	21.6	53.0	95.7	21.5
Queue Delay	0.0	0.6		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	94.7		87.8	29.8	4.0	103.4	58.2	21.6	53.0	95.7	21.5
LOS	B	F		F	C	A	F	E	C	D	F	C
Approach Delay		88.2			31.9			60.2			83.3	
Approach LOS		F			C			E			F	

Intersection Summary

Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 160	
Natural Cycle: 135	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.10	
Intersection Signal Delay: 71.4	Intersection LOS: E
Intersection Capacity Utilization 116.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 7: Ninth Line & Britannia Road

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	176	1870	116	635	184	187	773	170	128	1019	142
v/c Ratio	0.42	1.10	0.89	0.39	0.24	0.99	0.76	0.33	0.70	1.04	0.29
Control Delay	19.9	94.1	87.8	29.8	4.0	103.4	58.2	21.6	53.0	95.7	21.5
Queue Delay	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	94.7	87.8	29.8	4.0	103.4	58.2	21.6	53.0	95.7	21.5
Queue Length 50th (m)	27.5	~370.7	22.5	73.9	0.0	45.4	125.7	19.1	28.0	~193.4	15.3
Queue Length 95th (m)	41.4	#413.6	#63.8	91.0	14.8	#101.0	151.3	41.5	#46.4	#238.0	35.7
Internal Link Dist (m)		192.6		220.1			171.1			609.8	
Turn Bay Length (m)	60.0		60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	433	1696	130	1633	756	188	1011	511	188	978	487
Starvation Cap Reductn	0	264	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	1.31	0.89	0.39	0.24	0.99	0.76	0.33	0.68	1.04	0.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1766	0	0	797	23	255
Future Volume (vph)	1766	0	0	797	23	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3579	1608	1566
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3579	1608	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						31
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	2%	11%	2%
Adj. Flow (vph)	1766	0	0	797	23	255
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1766	0	0	797	23	255
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	113.0			113.0	47.0	47.0
Total Split (%)	70.6%			70.6%	29.4%	29.4%
Maximum Green (s)	107.0			107.0	40.0	40.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	107.2			107.2	26.4	26.4
Actuated g/C Ratio	0.73			0.73	0.18	0.18
v/c Ratio	0.67			0.30	0.08	0.83
Control Delay	12.9			7.8	49.0	72.8
Queue Delay	0.6			0.0	0.0	0.0
Total Delay	13.6			7.8	49.0	72.8
LOS	B			A	D	E
Approach Delay	13.6			7.8	70.8	
Approach LOS	B			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 146.7	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 17.6	Intersection LOS: B
Intersection Capacity Utilization 75.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1766	797	23	255
v/c Ratio	0.67	0.30	0.08	0.83
Control Delay	12.9	7.8	49.0	72.8
Queue Delay	0.6	0.0	0.0	0.0
Total Delay	13.6	7.8	49.0	72.8
Queue Length 50th (m)	135.2	40.0	5.9	67.4
Queue Length 95th (m)	206.7	64.6	14.4	100.2
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2641	2615	439	450
Starvation Cap Reductn	463	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.81	0.30	0.05	0.57

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1358	612	0	456	24
Future Volume (vph)	0	1358	612	0	456	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3579	0	1684	1210
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3579	0	1684	1210
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						19
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	2%	0%	6%	32%
Adj. Flow (vph)	0	1358	612	0	456	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1358	612	0	456	24
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		88.0	88.0		72.0	72.0
Total Split (%)		55.0%	55.0%		45.0%	45.0%
Maximum Green (s)		82.0	82.0		65.0	65.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		82.4	82.4		42.0	42.0
Actuated g/C Ratio		0.60	0.60		0.31	0.31
v/c Ratio		0.63	0.29		0.89	0.06
Control Delay		20.7	14.9		65.0	14.8
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		20.7	14.9		65.0	14.8
LOS		C	B		E	B
Approach Delay		20.7	14.9		62.5	
Approach LOS		C	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 137.5	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 27.5	Intersection LOS: C
Intersection Capacity Utilization 75.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1358	612	456	24
v/c Ratio	0.63	0.29	0.89	0.06
Control Delay	20.7	14.9	65.0	14.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.7	14.9	65.0	14.8
Queue Length 50th (m)	124.2	42.2	123.7	1.0
Queue Length 95th (m)	191.0	69.2	167.8	7.8
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2166	2145	800	585
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.29	0.57	0.04

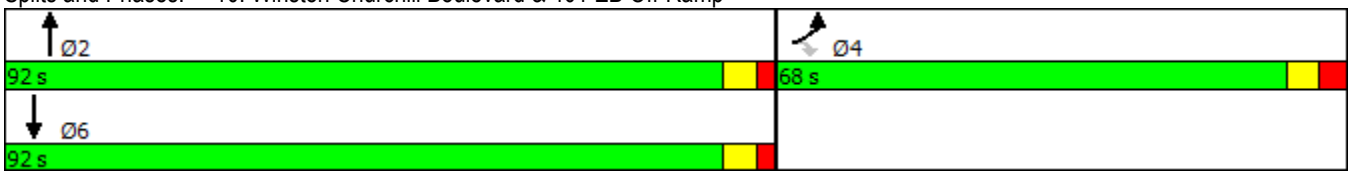
Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	387	322	0	1144	1172	0
Future Volume (vph)	387	322	0	1144	1172	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.969	0.850				
Flt Protected	0.962					
Satd. Flow (prot)	3280	1425	0	4980	4885	0
Flt Permitted	0.962					
Satd. Flow (perm)	3280	1425	0	4980	4885	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	25	52				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	0%	3%	5%	0%
Adj. Flow (vph)	407	339	0	1204	1234	0
Shared Lane Traffic (%)		31%				
Lane Group Flow (vph)	512	234	0	1204	1234	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	68.0	68.0		92.0	92.0	
Total Split (%)	42.5%	42.5%		57.5%	57.5%	
Maximum Green (s)	60.5	60.5		85.5	85.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	28.8	28.8		87.2	87.2	
Actuated g/C Ratio	0.23	0.23		0.69	0.69	
v/c Ratio	0.67	0.64		0.35	0.37	
Control Delay	46.3	42.0		8.7	8.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	46.3	42.0		8.7	8.9	
LOS	D	D		A	A	
Approach Delay	44.9			8.7	8.9	
Approach LOS	D			A	A	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 126	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 17.2	Intersection LOS: B
Intersection Capacity Utilization 50.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	512	234	1204	1234
v/c Ratio	0.67	0.64	0.35	0.37
Control Delay	46.3	42.0	8.7	8.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	46.3	42.0	8.7	8.9
Queue Length 50th (m)	59.9	47.4	42.6	44.3
Queue Length 95th (m)	78.5	78.6	62.6	65.2
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1655	739	3444	3379
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.31	0.32	0.35	0.37

Intersection Summary

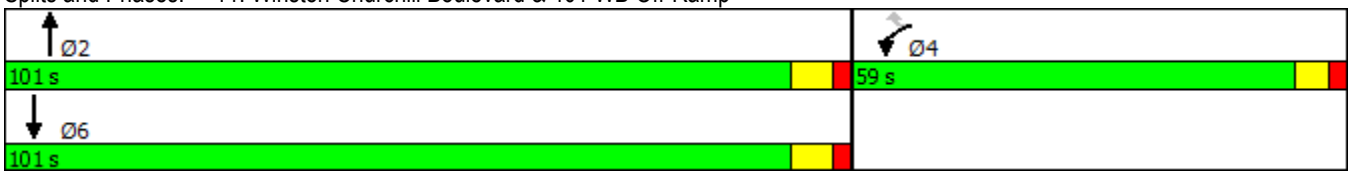
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	265	430	1249	0	0	1538
Future Volume (vph)	265	430	1249	0	0	1538
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.91
Frt	0.934	0.850				
Flt Protected	0.973					
Satd. Flow (prot)	2988	1298	4980	0	0	4839
Flt Permitted	0.973					
Satd. Flow (perm)	2988	1298	4980	0	0	4839
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	58	58				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	10%	12%	3%	0%	0%	6%
Adj. Flow (vph)	279	453	1315	0	0	1619
Shared Lane Traffic (%)		48%				
Lane Group Flow (vph)	496	236	1315	0	0	1619
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	59.0	59.0	101.0			101.0
Total Split (%)	36.9%	36.9%	63.1%			63.1%
Maximum Green (s)	52.5	52.5	93.5			93.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	29.6	29.6	96.3			96.3
Actuated g/C Ratio	0.22	0.22	0.71			0.71
v/c Ratio	0.71	0.72	0.37			0.47
Control Delay	49.0	49.4	8.8			9.9
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	49.0	49.4	8.8			9.9
LOS	D	D	A			A
Approach Delay	49.1		8.8			9.9
Approach LOS	D		A			A

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 135.9
Natural Cycle: 60
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 17.4 — Intersection LOS: B
Intersection Capacity Utilization 50.2% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	496	236	1315	1619
v/c Ratio	0.71	0.72	0.37	0.47
Control Delay	49.0	49.4	8.8	9.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	49.0	49.4	8.8	9.9
Queue Length 50th (m)	59.6	52.0	47.0	63.9
Queue Length 95th (m)	78.8	85.8	76.1	102.2
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1225	552	3528	3428
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.43	0.37	0.47

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	8	2	1521	871	18
Future Volume (vph)	20	8	2	1521	871	18
Ideal Flow (vphpl)	1640	1640	1640	1900	1900	1900
Lane Width (m)	3.6	3.6	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	0.0	25.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.997	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1527	1367	1510	3500	3489	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1527	1367	1510	3500	3489	0
Link Speed (k/h)	50			70	70	
Link Distance (m)	121.9			487.0	813.6	
Travel Time (s)	8.8			25.0	41.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	8	2	1521	871	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	8	2	1521	889	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.21	1.21	1.22	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.0%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	8	2	1521	871	18
Future Volume (Veh/h)	20	8	2	1521	871	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	20	8	2	1521	871	18
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1644	444	889			
vC1, stage 1 conf vol	880					
vC2, stage 2 conf vol	764					
vCu, unblocked vol	1644	444	889			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	99	100			
cM capacity (veh/h)	283	561	758			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	20	8	2	760	760	581	308
Volume Left	20	0	2	0	0	0	0
Volume Right	0	8	0	0	0	0	18
cSH	283	561	758	1700	1700	1700	1700
Volume to Capacity	0.07	0.01	0.00	0.45	0.45	0.34	0.18
Queue Length 95th (m)	1.8	0.3	0.1	0.0	0.0	0.0	0.0
Control Delay (s)	18.7	11.5	9.8	0.0	0.0	0.0	0.0
Lane LOS	C	B	A				
Approach Delay (s)	16.6		0.0			0.0	
Approach LOS	C						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	25	9	1305	979	16
Future Volume (vph)	42	25	9	1305	979	16
Ideal Flow (vphpl)	1640	1640	1640	1900	1900	1900
Storage Length (m)	0.0	0.0	95.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.998	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1527	1367	1527	3539	3532	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1527	1367	1527	3539	3532	0
Link Speed (k/h)	50			70	70	
Link Distance (m)	131.1			265.1	577.9	
Travel Time (s)	9.4			13.6	29.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	42	25	9	1305	979	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	42	25	9	1305	995	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.21	1.21	1.21	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	42	25	9	1305	979	16
Future Volume (Veh/h)	42	25	9	1305	979	16
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	42	25	9	1305	979	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1658	498	995			
vC1, stage 1 conf vol	987					
vC2, stage 2 conf vol	670					
vCu, unblocked vol	1658	498	995			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	84	95	99			
cM capacity (veh/h)	270	518	691			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	42	25	9	652	652	653	342
Volume Left	42	0	9	0	0	0	0
Volume Right	0	25	0	0	0	0	16
cSH	270	518	691	1700	1700	1700	1700
Volume to Capacity	0.16	0.05	0.01	0.38	0.38	0.38	0.20
Queue Length 95th (m)	4.3	1.2	0.3	0.0	0.0	0.0	0.0
Control Delay (s)	20.8	12.3	10.3	0.0	0.0	0.0	0.0
Lane LOS	C	B	B				
Approach Delay (s)	17.6		0.1			0.0	
Approach LOS	C						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1217	0	0	2046	85	202
Future Volume (vph)	1217	0	0	2046	85	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3614	3362	1597
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3614	3362	1597
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						133
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	1%	3%	0%
Adj. Flow (vph)	1217	0	0	2046	85	202
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1217	0	0	2046	85	202
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	128.0			128.0	32.0	32.0
Total Split (%)	80.0%			80.0%	20.0%	20.0%
Maximum Green (s)	122.0			122.0	25.0	25.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	122.1			122.1	13.0	13.0
Actuated g/C Ratio	0.82			0.82	0.09	0.09
v/c Ratio	0.41			0.69	0.29	0.77
Control Delay	4.3			7.4	64.9	43.1
Queue Delay	0.0			1.5	0.0	0.0
Total Delay	4.3			8.9	64.9	43.1
LOS	A			A	E	D
Approach Delay	4.3			8.9	49.5	
Approach LOS	A			A	D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 148.2	
Natural Cycle: 75	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 10.6	Intersection LOS: B
Intersection Capacity Utilization 93.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1217	2046	85	202
v/c Ratio	0.41	0.69	0.29	0.77
Control Delay	4.3	7.4	64.9	43.1
Queue Delay	0.0	1.5	0.0	0.0
Total Delay	4.3	8.9	64.9	43.1
Queue Length 50th (m)	41.7	107.3	12.8	20.7
Queue Length 95th (m)	72.4	181.7	21.9	50.1
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2949	2978	567	380
Starvation Cap Reductn	0	690	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.41	0.89	0.15	0.53

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1000	2002	0	285	440
Future Volume (vph)	0	1000	2002	0	285	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3510	3614	0	3429	1597
Flt Permitted					0.950	
Satd. Flow (perm)	0	3510	3614	0	3429	1597
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						12
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	4%	1%	0%	1%	0%
Adj. Flow (vph)	0	1000	2002	0	285	440
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1000	2002	0	285	440
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		103.0	103.0		57.0	57.0
Total Split (%)		64.4%	64.4%		35.6%	35.6%
Maximum Green (s)		97.0	97.0		50.0	50.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		97.2	97.2		45.1	45.1
Actuated g/C Ratio		0.63	0.63		0.29	0.29
v/c Ratio		0.46	0.89		0.29	0.93
Control Delay		16.6	31.3		43.1	79.5
Queue Delay		0.0	9.2		0.0	0.0
Total Delay		16.6	40.5		43.1	79.5
LOS		B	D		D	E
Approach Delay		16.6	40.5		65.2	
Approach LOS		B	D		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 155.3	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 38.9	Intersection LOS: D
Intersection Capacity Utilization 93.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1000	2002	285	440
v/c Ratio	0.46	0.89	0.29	0.93
Control Delay	16.6	31.3	43.1	79.5
Queue Delay	0.0	9.2	0.0	0.0
Total Delay	16.6	40.5	43.1	79.5
Queue Length 50th (m)	93.1	299.3	37.0	136.3
Queue Length 95th (m)	110.0	340.4	50.2	#198.8
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2196	2261	1106	523
Starvation Cap Reductn	0	259	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	1.00	0.26	0.84

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	812	347	378	1613	143	175	703	306	245	945	347
Future Volume (vph)	195	812	347	378	1613	143	175	703	306	245	945	347
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		50.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt		0.955			0.988				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1767	3414	0	1767	3568	0	1767	3614	1581	1785	3614	1581
Flt Permitted	0.065			0.065			0.130			0.118		
Satd. Flow (perm)	121	3414	0	121	3568	0	242	3614	1556	222	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		48			8				306			205
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			813.6			145.2	
Travel Time (s)		14.1			11.0			41.8			7.5	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	3%	0%	1%	1%	2%	1%	1%	1%	0%	1%	1%
Adj. Flow (vph)	195	812	347	378	1613	143	175	703	306	245	945	347
Shared Lane Traffic (%)												
Lane Group Flow (vph)	195	1159	0	378	1756	0	175	703	306	245	945	347
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	10.0	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1		9.5	30.1		9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	20.0	67.6		32.0	79.6		12.8	36.0	36.0	24.4	47.6	47.6
Total Split (%)	12.5%	42.3%		20.0%	49.8%		8.0%	22.5%	22.5%	15.3%	29.8%	29.8%
Maximum Green (s)	17.0	61.5		29.0	73.5		9.8	29.6	29.6	21.4	41.2	41.2
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0			15.0			14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	80.1	61.5		96.6	75.0		44.0	30.8	30.8	57.4	41.2	41.2
Actuated g/C Ratio	0.50	0.38		0.60	0.47		0.28	0.19	0.19	0.36	0.26	0.26
v/c Ratio	0.89	0.86		1.02	1.05		1.09	1.01	0.56	0.89	1.02	0.62
Control Delay	81.7	51.4		99.7	76.6		137.8	99.5	9.7	74.6	91.3	26.0
Queue Delay	0.0	2.3		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.7	53.7		99.7	76.6		137.8	99.5	9.7	74.6	91.3	26.0
LOS	F	D		F	E		F	F	A	E	F	C
Approach Delay		57.8			80.7			81.9			73.9	
Approach LOS		E			F			F			E	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Natural Cycle: 110
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 74.2 — Intersection LOS: E
Intersection Capacity Utilization 112.8% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 3: Ninth Line & Derry Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	195	1159	378	1756	175	703	306	245	945	347
v/c Ratio	0.89	0.86	1.02	1.05	1.09	1.01	0.56	0.89	1.02	0.62
Control Delay	81.7	51.4	99.7	76.6	137.8	99.5	9.7	74.6	91.3	26.0
Queue Delay	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.7	53.7	99.7	76.6	137.8	99.5	9.7	74.6	91.3	26.0
Queue Length 50th (m)	47.2	181.6	~115.3	~340.7	~48.7	~134.5	0.0	63.1	~175.1	42.1
Queue Length 95th (m)	#90.9	213.4	#184.8	#384.7	#101.6	#176.9	28.7	#111.4	#219.6	79.1
Internal Link Dist (m)		210.9		158.6		789.6			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	236	1341	371	1675	160	695	546	288	930	559
Starvation Cap Reductn	0	91	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.93	1.02	1.05	1.09	1.01	0.56	0.85	1.02	0.62

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	8	32	123	13	65	52	1009	149	130	1453	53
Future Volume (vph)	79	8	32	123	13	65	52	1009	149	130	1453	53
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1860	1900	1640	1860	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.3	3.6	3.5	3.2	3.0	3.5	3.6
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		25.0	80.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor									0.97	1.00		
Frt		0.879			0.876				0.850		0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1637	0	1454	1659	0	1732	3535	1332	1649	3516	0
Flt Permitted	0.704			0.730			0.099			0.215		
Satd. Flow (perm)	1132	1637	0	1117	1659	0	181	3535	1298	373	3516	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			68				95		6	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		111.4			218.3			577.9			487.0	
Travel Time (s)		8.0			15.7			29.7			25.0	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	1%	0%	0%	1%	2%
Adj. Flow (vph)	82	8	33	128	14	68	54	1051	155	135	1514	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	41	0	128	82	0	54	1051	155	135	1569	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.04	1.03	1.01	1.28	1.12	1.01	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		7.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		-3.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		-3.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		10.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5		9.5	26.0	26.0	9.5	26.0	
Total Split (s)	28.0	28.0		28.0	28.0		9.6	61.2	61.2	10.8	62.4	
Total Split (%)	28.0%	28.0%		28.0%	28.0%		9.6%	61.2%	61.2%	10.8%	62.4%	
Maximum Green (s)	21.5	21.5		21.5	21.5		6.6	54.2	54.2	7.8	55.4	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)	8.0	8.0		7.0	7.0			8.0	8.0		8.0	
Flash Dont Walk (s)	8.0	8.0		11.0	11.0			10.0	10.0		10.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	
Act Effct Green (s)	17.0	17.0		17.0	17.0		69.3	57.2	57.2	71.3	60.0	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.73	0.61	0.61	0.76	0.64	
v/c Ratio	0.40	0.13		0.64	0.23		0.20	0.49	0.19	0.33	0.70	
Control Delay	39.7	14.3		50.4	12.4		5.5	12.1	4.8	6.0	15.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	39.7	14.3		50.4	12.4		5.5	12.1	4.8	6.0	15.0	
LOS	D	B		D	B		A	B	A	A	B	
Approach Delay		31.3			35.6			10.9			14.2	
Approach LOS		C			D			B			B	

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 94.3	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 15.0	Intersection LOS: B
Intersection Capacity Utilization 72.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Street "F"/Doug Leavens Boulevard

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	82	41	128	82	54	1051	155	135	1569
v/c Ratio	0.40	0.13	0.64	0.23	0.20	0.49	0.19	0.33	0.70
Control Delay	39.7	14.3	50.4	12.4	5.5	12.1	4.8	6.0	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.7	14.3	50.4	12.4	5.5	12.1	4.8	6.0	15.0
Queue Length 50th (m)	13.9	1.3	22.7	2.2	2.2	55.8	4.5	5.7	100.9
Queue Length 95th (m)	28.2	10.0	42.3	14.3	6.3	83.7	14.8	13.3	151.0
Internal Link Dist (m)		87.4		194.3		553.9			463.0
Turn Bay Length (m)					15.0		25.0	80.0	
Base Capacity (vph)	276	425	273	456	275	2144	824	415	2238
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.10	0.47	0.18	0.20	0.49	0.19	0.33	0.70

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	0	25	23	0	18	32	1179	64	45	1413	120
Future Volume (vph)	18	0	25	23	0	18	32	1179	64	45	1413	120
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1640	1900	1900	1640	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.0	3.6	3.5	3.5	3.0	3.5	3.6
Storage Length (m)	0.0		0.0	0.0		0.0	65.0		0.0	15.0		30.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.850			0.850			0.992				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1583	0	1454	1615	0	1527	3508	0	1426	3570	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1527	1583	0	1454	1615	0	1527	3508	0	1426	3570	1583
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		103.7			166.2			289.9			265.1	
Travel Time (s)		7.5			12.0			14.9			13.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	1%	0%	2%	0%	2%
Adj. Flow (vph)	19	0	26	24	0	19	33	1228	67	47	1472	125
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	26	0	24	19	0	33	1295	0	47	1472	125
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.09	1.21	1.01	1.01	1.31	1.01	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 58.1%	ICU Level of Service B
Analysis Period (min) 15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	0	25	23	0	18	32	1179	64	45	1413	120
Future Volume (Veh/h)	18	0	25	23	0	18	32	1179	64	45	1413	120
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	19	0	26	24	0	19	33	1228	67	47	1472	125
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								290				
pX, platoon unblocked	0.83	0.83		0.83	0.83	0.83				0.83		
vC, conflicting volume	2265	2927	736	2184	3018	648	1597			1295		
vC1, stage 1 conf vol	1566	1566		1328	1328							
vC2, stage 2 conf vol	699	1361		856	1691							
vCu, unblocked vol	2113	2912	736	2014	3022	160	1597			942		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	81	100	93	84	100	97	92			92		
cM capacity (veh/h)	102	115	361	153	91	715	406			600		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	19	26	24	19	33	819	476	47	736	736	125
Volume Left	19	0	24	0	33	0	0	47	0	0	0
Volume Right	0	26	0	19	0	0	67	0	0	0	125
cSH	102	361	153	715	406	1700	1700	600	1700	1700	1700
Volume to Capacity	0.19	0.07	0.16	0.03	0.08	0.48	0.28	0.08	0.43	0.43	0.07
Queue Length 95th (m)	5.2	1.8	4.3	0.7	2.1	0.0	0.0	2.0	0.0	0.0	0.0
Control Delay (s)	48.0	15.7	32.9	10.2	14.6	0.0	0.0	11.5	0.0	0.0	0.0
Lane LOS	E	C	D	B	B			B			
Approach Delay (s)	29.4		22.9		0.4			0.3			
Approach LOS	D		C								

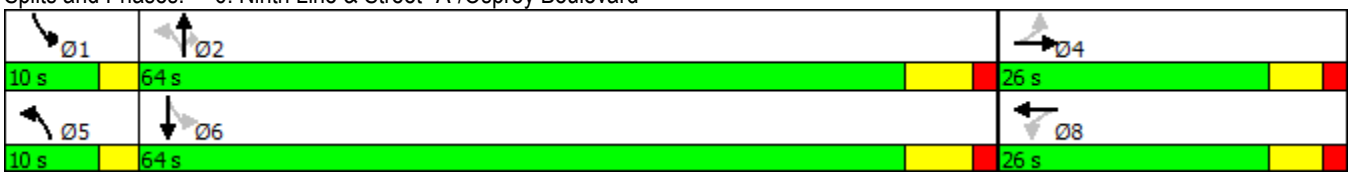
Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	0	55	73	0	31	92	1244	107	46	1390	24
Future Volume (vph)	55	0	55	73	0	31	92	1244	107	46	1390	24
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1860	1900	1640	1860	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.0	3.6	3.5	3.5	3.6	3.6	3.6
Storage Length (m)	0.0		0.0	15.0		0.0	15.0		25.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			15.0			7.5			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor									0.98			
Frt		0.850			0.850				0.850		0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1583	0	1359	1568	0	1732	3535	1351	1767	3598	0
Flt Permitted	0.736			0.720			0.127			0.181		
Satd. Flow (perm)	1183	1583	0	1030	1568	0	232	3535	1321	337	3598	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		155			170				65		3	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		103.4			186.9			633.8			289.9	
Travel Time (s)		7.4			13.5			32.6			14.9	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	7%	2%	3%	2%	1%	2%	0%	0%	2%
Adj. Flow (vph)	57	0	57	76	0	32	96	1296	111	48	1448	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	57	0	76	32	0	96	1296	111	48	1473	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.09	1.03	1.01	1.22	1.03	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru			Thru		Left	Thru	Right		Thru	
Leading Detector (m)	2.0	10.0		9.0	10.0		2.0	10.0	2.0	20.0	10.0	
Trailing Detector (m)	0.0	0.0		-0.2	0.0		0.0	0.0	0.0	10.0	0.0	
Detector 1 Position(m)	0.0	0.0		-0.2	0.0		0.0	0.0	0.0	10.0	0.0	
Detector 1 Size(m)	2.0	0.6		9.2	0.6		2.0	0.6	2.0	10.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		9.5	25.0	25.0	9.5	25.0	
Total Split (s)	26.0	26.0		26.0	26.0		10.0	64.0	64.0	10.0	64.0	
Total Split (%)	26.0%	26.0%		26.0%	26.0%		10.0%	64.0%	64.0%	10.0%	64.0%	
Maximum Green (s)	20.0	20.0		20.0	20.0		7.0	57.0	57.0	7.0	57.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	2.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	
Act Effct Green (s)	13.4	13.4		13.0	13.0		74.4	66.8	66.8	72.3	63.9	
Actuated g/C Ratio	0.15	0.15		0.14	0.14		0.82	0.74	0.74	0.80	0.71	
v/c Ratio	0.33	0.16		0.52	0.09		0.29	0.50	0.11	0.13	0.58	
Control Delay	40.2	0.9		49.0	0.5		4.9	8.4	3.6	3.5	10.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	40.2	0.9		49.0	0.5		4.9	8.4	3.6	3.5	10.8	
LOS	D	A		D	A		A	A	A	A	B	
Approach Delay		20.5			34.6			7.9			10.6	
Approach LOS		C			C			A			B	

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 90.6	
Natural Cycle: 70	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 10.5	Intersection LOS: B
Intersection Capacity Utilization 67.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Street "A"/Osprey Boulevard



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	57	57	76	32	96	1296	111	48	1473
v/c Ratio	0.33	0.16	0.52	0.09	0.29	0.50	0.11	0.13	0.58
Control Delay	40.2	0.9	49.0	0.5	4.9	8.4	3.6	3.5	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	0.9	49.0	0.5	4.9	8.4	3.6	3.5	10.8
Queue Length 50th (m)	9.7	0.0	13.2	0.0	3.0	59.9	2.7	1.4	77.8
Queue Length 95th (m)	21.5	0.0	27.8	0.0	8.5	97.0	10.3	4.9	122.7
Internal Link Dist (m)		79.4		162.9		609.8			265.9
Turn Bay Length (m)			15.0		15.0		25.0	20.0	
Base Capacity (vph)	275	487	239	495	340	2607	991	417	2539
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.12	0.32	0.06	0.28	0.50	0.11	0.12	0.58

Intersection Summary

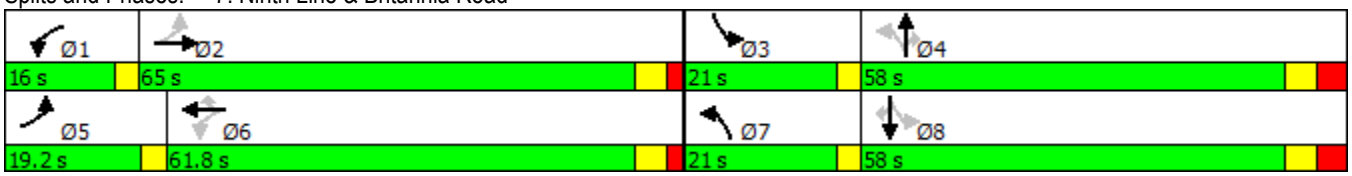
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	221	758	352	169	1094	216	206	1110	138	231	1065	196
Future Volume (vph)	221	758	352	169	1094	216	206	1110	138	231	1065	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		0.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt		0.952				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3451	0	1785	3614	1551	1767	3614	1597	1716	3614	1536
Flt Permitted	0.068			0.078			0.080			0.077		
Satd. Flow (perm)	128	3451	0	147	3614	1551	149	3614	1570	139	3614	1536
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		54				110			82			97
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	1%	1%	0%	4%	1%	4%
Adj. Flow (vph)	221	758	352	169	1094	216	206	1110	138	231	1065	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	221	1110	0	169	1094	216	206	1110	138	231	1065	196
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template		Thru		Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		8
Detector Phase	5	2		1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	19.2	65.0		16.0	61.8	61.8	21.0	58.0	58.0	21.0	58.0	58.0
Total Split (%)	12.0%	40.6%		10.0%	38.6%	38.6%	13.1%	36.3%	36.3%	13.1%	36.3%	36.3%
Maximum Green (s)	16.2	58.9		13.0	55.7	55.7	18.0	50.3	50.3	18.0	50.3	50.3
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0			11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	78.0	59.2		71.5	55.7	55.7	71.4	50.3	50.3	73.7	51.7	51.7
Actuated g/C Ratio	0.49	0.37		0.45	0.35	0.35	0.45	0.31	0.31	0.46	0.32	0.32
v/c Ratio	0.96	0.85		0.86	0.87	0.35	0.88	0.98	0.25	0.97	0.91	0.35
Control Delay	92.8	51.1		73.0	57.3	20.1	76.1	75.1	18.3	93.8	64.2	22.5
Queue Delay	0.0	3.3		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.8	54.4		73.0	57.3	20.1	76.1	75.1	18.3	93.8	64.2	22.5
LOS	F	D		E	E	C	E	E	B	F	E	C
Approach Delay		60.8			53.6			69.9			63.3	
Approach LOS		E			D			E			E	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 159.8
Natural Cycle: 95
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 61.9 — Intersection LOS: E
Intersection Capacity Utilization 104.1% — ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 7: Ninth Line & Britannia Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	221	1110	169	1094	216	206	1110	138	231	1065	196
v/c Ratio	0.96	0.85	0.86	0.87	0.35	0.88	0.98	0.25	0.97	0.91	0.35
Control Delay	92.8	51.1	73.0	57.3	20.1	76.1	75.1	18.3	93.8	64.2	22.5
Queue Delay	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.8	54.4	73.0	57.3	20.1	76.1	75.1	18.3	93.8	64.2	22.5
Queue Length 50th (m)	57.2	172.6	37.3	180.3	25.2	49.8	194.2	13.4	61.1	183.1	24.7
Queue Length 95th (m)	#113.4	203.5	#80.7	211.0	49.1	#93.8	#242.7	31.9	#118.6	#226.3	48.4
Internal Link Dist (m)		192.6		220.1			171.1			609.8	
Turn Bay Length (m)	60.0		60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	230	1312	199	1260	612	250	1137	550	241	1168	562
Starvation Cap Reductn	0	124	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.93	0.85	0.87	0.35	0.82	0.98	0.25	0.96	0.91	0.35

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1148	0	0	1456	57	185
Future Volume (vph)	1148	0	0	1456	57	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3614	1750	1581
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3614	1750	1581
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						135
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Adj. Flow (vph)	1148	0	0	1456	57	185
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1148	0	0	1456	57	185
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	122.0			122.0	38.0	38.0
Total Split (%)	76.3%			76.3%	23.8%	23.8%
Maximum Green (s)	116.0			116.0	31.0	31.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	116.1			116.1	11.5	11.5
Actuated g/C Ratio	0.83			0.83	0.08	0.08
v/c Ratio	0.38			0.49	0.40	0.73
Control Delay	3.8			4.5	69.1	36.3
Queue Delay	0.0			0.6	0.0	0.0
Total Delay	3.8			5.1	69.1	36.3
LOS	A			A	E	D
Approach Delay	3.8			5.1	44.0	
Approach LOS	A			A	D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 140.6	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 7.9	Intersection LOS: A
Intersection Capacity Utilization 71.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1148	1456	57	185
v/c Ratio	0.38	0.49	0.40	0.73
Control Delay	3.8	4.5	69.1	36.3
Queue Delay	0.0	0.6	0.0	0.0
Total Delay	3.8	5.1	69.1	36.3
Queue Length 50th (m)	33.8	49.1	16.1	14.1
Queue Length 95th (m)	59.8	85.7	30.9	40.9
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2984	2984	386	454
Starvation Cap Reductn	0	999	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.73	0.15	0.41

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	754	1338	0	430	63
Future Volume (vph)	0	754	1338	0	430	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3614	0	1767	1536
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3614	0	1767	1536
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						36
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	1%	4%
Adj. Flow (vph)	0	754	1338	0	430	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	754	1338	0	430	63
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		91.0	91.0		69.0	69.0
Total Split (%)		56.9%	56.9%		43.1%	43.1%
Maximum Green (s)		85.0	85.0		62.0	62.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		85.3	85.3		38.0	38.0
Actuated g/C Ratio		0.63	0.63		0.28	0.28
v/c Ratio		0.33	0.59		0.87	0.14
Control Delay		13.6	17.7		65.7	18.3
Queue Delay		0.0	0.2		0.0	0.0
Total Delay		13.6	17.9		65.7	18.3
LOS		B	B		E	B
Approach Delay		13.6	17.9		59.6	
Approach LOS		B	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 136.4	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 24.6	Intersection LOS: C
Intersection Capacity Utilization 71.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	754	1338	430	63
v/c Ratio	0.33	0.59	0.87	0.14
Control Delay	13.6	17.7	65.7	18.3
Queue Delay	0.0	0.2	0.0	0.0
Total Delay	13.6	17.9	65.7	18.3
Queue Length 50th (m)	50.0	111.6	116.3	5.6
Queue Length 95th (m)	79.6	170.1	157.7	16.8
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2260	2260	806	720
Starvation Cap Reductn	0	272	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.67	0.53	0.09

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	464	345	0	1599	1948	0
Future Volume (vph)	464	345	0	1599	1948	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.975	0.850				
Flt Protected	0.960					
Satd. Flow (prot)	3065	1411	0	4980	5079	0
Flt Permitted	0.960					
Satd. Flow (perm)	3065	1411	0	4980	5079	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	10	*171				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	13%	3%	0%	3%	1%	0%
Adj. Flow (vph)	478	356	0	1648	2008	0
Shared Lane Traffic (%)		27%				
Lane Group Flow (vph)	574	260	0	1648	2008	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	60.0	60.0		100.0	100.0	
Total Split (%)	37.5%	37.5%		62.5%	62.5%	
Maximum Green (s)	52.5	52.5		93.5	93.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	36.2	36.2		95.2	95.2	
Actuated g/C Ratio	0.26	0.26		0.67	0.67	
v/c Ratio	0.73	0.53		0.49	0.59	
Control Delay	52.7	19.1		12.5	14.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	52.7	19.1		12.5	14.0	
LOS	D	B		B	B	
Approach Delay	42.2			12.5	14.0	
Approach LOS	D			B	B	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 141.4	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 18.7	Intersection LOS: B
Intersection Capacity Utilization 78.5%	ICU Level of Service D
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	574	260	1648	2008
v/c Ratio	0.73	0.53	0.49	0.59
Control Delay	52.7	19.1	12.5	14.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	52.7	19.1	12.5	14.0
Queue Length 50th (m)	78.6	23.4	80.2	108.1
Queue Length 95th (m)	99.3	54.2	113.3	150.5
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1200	654	3353	3419
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.40	0.49	0.59

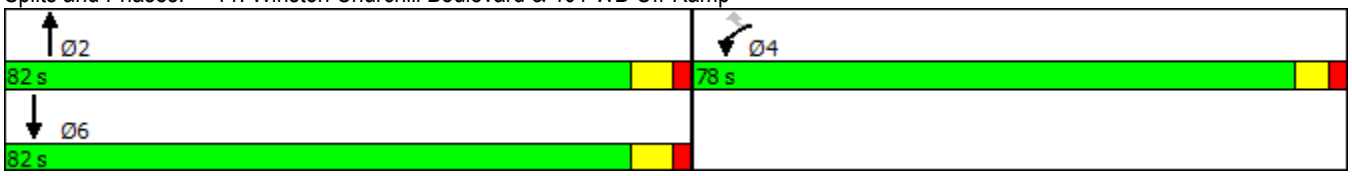
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	946	869	1764	0	0	1421
Future Volume (vph)	946	869	1764	0	0	1421
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.91
Frt	0.964	0.850				
Flt Protected	0.963					
Satd. Flow (prot)	3335	1411	4839	0	0	4932
Flt Permitted	0.963					
Satd. Flow (perm)	3335	1411	4839	0	0	4932
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	6	*419				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	3%	6%	0%	0%	4%
Adj. Flow (vph)	975	896	1819	0	0	1465
Shared Lane Traffic (%)		34%				
Lane Group Flow (vph)	1280	591	1819	0	0	1465
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	78.0	78.0	82.0			82.0
Total Split (%)	48.8%	48.8%	51.3%			51.3%
Maximum Green (s)	71.5	71.5	74.5			74.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	69.4	69.4	77.1			77.1
Actuated g/C Ratio	0.44	0.44	0.49			0.49
v/c Ratio	0.86	0.69	0.76			0.60
Control Delay	46.3	13.6	35.5			30.4
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	46.3	13.6	35.5			30.4
LOS	D	B	D			C
Approach Delay	36.0		35.5			30.4
Approach LOS	D		D			C

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 156.5	
Natural Cycle: 70	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 34.2	Intersection LOS: C
Intersection Capacity Utilization 78.5%	ICU Level of Service D
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	1280	591	1819	1465
v/c Ratio	0.86	0.69	0.76	0.60
Control Delay	46.3	13.6	35.5	30.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	46.3	13.6	35.5	30.4
Queue Length 50th (m)	191.8	48.1	182.6	130.6
Queue Length 95th (m)	223.8	99.7	202.5	146.9
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1560	882	2384	2430
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.82	0.67	0.76	0.60

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	12	5	8	1146	1632	57
Future Volume (vph)	12	5	8	1146	1632	57
Ideal Flow (vphpl)	1640	1640	1640	1900	1900	1900
Storage Length (m)	0.0	0.0	25.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.995	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1527	1367	1527	3539	3522	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1527	1367	1527	3539	3522	0
Link Speed (k/h)	50			70	70	
Link Distance (m)	100.7			487.0	813.6	
Travel Time (s)	7.3			25.0	41.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	5	8	1146	1632	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	5	8	1146	1689	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.21	1.21	1.21	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.9%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	5	8	1146	1632	57
Future Volume (Veh/h)	12	5	8	1146	1632	57
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	5	8	1146	1632	57
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	2250	844	1689			
vC1, stage 1 conf vol	1660					
vC2, stage 2 conf vol	589					
vCu, unblocked vol	2250	844	1689			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	98	98			
cM capacity (veh/h)	133	306	374			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	12	5	8	573	573	1088	601
Volume Left	12	0	8	0	0	0	0
Volume Right	0	5	0	0	0	0	57
cSH	133	306	374	1700	1700	1700	1700
Volume to Capacity	0.09	0.02	0.02	0.34	0.34	0.64	0.35
Queue Length 95th (m)	2.3	0.4	0.5	0.0	0.0	0.0	0.0
Control Delay (s)	34.9	16.9	14.8	0.0	0.0	0.0	0.0
Lane LOS	D	C	B				
Approach Delay (s)	29.6		0.1			0.0	
Approach LOS	D						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	15	28	1185	1560	48
Future Volume (vph)	25	15	28	1185	1560	48
Ideal Flow (vphpl)	1640	1640	1640	1900	1900	1900
Storage Length (m)	0.0	0.0	95.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.996	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1527	1367	1527	3539	3525	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1527	1367	1527	3539	3525	0
Link Speed (k/h)	50			70	70	
Link Distance (m)	106.7			265.1	577.9	
Travel Time (s)	7.7			13.6	29.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	15	28	1185	1560	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	15	28	1185	1608	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.21	1.21	1.21	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	15	28	1185	1560	48
Future Volume (Veh/h)	25	15	28	1185	1560	48
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	25	15	28	1185	1560	48
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	2232	804	1608			
vC1, stage 1 conf vol	1584					
vC2, stage 2 conf vol	648					
vCu, unblocked vol	2232	804	1608			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	83	95	93			
cM capacity (veh/h)	143	326	402			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	25	15	28	592	592	1040	568
Volume Left	25	0	28	0	0	0	0
Volume Right	0	15	0	0	0	0	48
cSH	143	326	402	1700	1700	1700	1700
Volume to Capacity	0.17	0.05	0.07	0.35	0.35	0.61	0.33
Queue Length 95th (m)	4.9	1.2	1.8	0.0	0.0	0.0	0.0
Control Delay (s)	35.4	16.6	14.6	0.0	0.0	0.0	0.0
Lane LOS	E	C	B				
Approach Delay (s)	28.3		0.3			0.0	
Approach LOS	D						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1979	0	0	1177	15	197
Future Volume (vph)	1979	0	0	1177	15	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3510	2935	1507
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3510	2935	1507
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						26
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	4%	18%	6%
Adj. Flow (vph)	1979	0	0	1177	15	197
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1979	0	0	1177	15	197
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	121.0			121.0	39.0	39.0
Total Split (%)	75.6%			75.6%	24.4%	24.4%
Maximum Green (s)	115.0			115.0	32.0	32.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	115.2			115.2	22.5	22.5
Actuated g/C Ratio	0.76			0.76	0.15	0.15
v/c Ratio	0.72			0.44	0.03	0.80
Control Delay	12.2			7.4	53.2	76.6
Queue Delay	0.9			0.4	0.0	0.0
Total Delay	13.1			7.9	53.2	76.6
LOS	B			A	D	E
Approach Delay	13.1			7.9	74.9	
Approach LOS	B			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 150.7	
Natural Cycle: 75	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 15.2	Intersection LOS: B
Intersection Capacity Utilization 87.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1979	1177	15	197
v/c Ratio	0.72	0.44	0.03	0.80
Control Delay	12.2	7.4	53.2	76.6
Queue Delay	0.9	0.4	0.0	0.0
Total Delay	13.1	7.9	53.2	76.6
Queue Length 50th (m)	153.3	61.3	2.1	53.0
Queue Length 95th (m)	230.0	94.4	5.8	82.6
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2735	2683	624	341
Starvation Cap Reductn	438	910	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.86	0.66	0.02	0.58

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2566	881	0	61	64
Future Volume (vph)	0	2566	881	0	61	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3510	0	3148	1309
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3510	0	3148	1309
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						64
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	10%	22%
Adj. Flow (vph)	0	2566	881	0	61	64
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2566	881	0	61	64
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		135.0	135.0		25.0	25.0
Total Split (%)		84.4%	84.4%		15.6%	15.6%
Maximum Green (s)		129.0	129.0		18.0	18.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		129.0	129.0		8.7	8.7
Actuated g/C Ratio		0.86	0.86		0.06	0.06
v/c Ratio		0.83	0.29		0.34	0.47
Control Delay		8.7	2.4		73.1	26.3
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		8.7	2.4		73.1	26.3
LOS		A	A		E	C
Approach Delay		8.7	2.4		49.2	
Approach LOS		A	A		D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 150.7	
Natural Cycle: 100	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 8.6	Intersection LOS: A
Intersection Capacity Utilization 87.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2566	881	61	64
v/c Ratio	0.83	0.29	0.34	0.47
Control Delay	8.7	2.4	73.1	26.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.7	2.4	73.1	26.3
Queue Length 50th (m)	159.8	21.1	9.6	0.0
Queue Length 95th (m)	222.4	30.5	17.9	16.0
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3093	3003	376	212
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.83	0.29	0.16	0.30

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	404	1607	166	229	763	376	341	805	430	106	568	286
Future Volume (vph)	404	1607	166	229	763	376	341	805	430	106	568	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		50.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00										
Frt		0.986			0.950				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	3562	0	1733	3356	0	1750	3614	1566	1716	3614	1581
Flt Permitted	0.066			0.069			0.145			0.174		
Satd. Flow (perm)	117	3562	0	126	3356	0	267	3614	1566	314	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			59				204			248
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			813.6			145.2	
Travel Time (s)		14.1			11.0			41.8			7.5	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	1%	0%	3%	4%	2%	2%	1%	2%	4%	1%	1%
Adj. Flow (vph)	404	1607	166	229	763	376	341	805	430	106	568	286
Shared Lane Traffic (%)												
Lane Group Flow (vph)	404	1773	0	229	1139	0	341	805	430	106	568	286
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	10.0	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1		9.5	30.1		9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	37.8	82.3		19.3	63.8		27.4	48.6	48.6	9.8	31.0	31.0
Total Split (%)	23.6%	51.4%		12.1%	39.9%		17.1%	30.4%	30.4%	6.1%	19.4%	19.4%
Maximum Green (s)	34.8	76.2		16.3	57.7		24.4	42.2	42.2	6.8	24.6	24.6
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0			15.0			14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	98.6	76.2		77.1	57.7		55.4	42.2	42.2	34.8	24.6	24.6
Actuated g/C Ratio	0.62	0.48		0.48	0.36		0.35	0.26	0.26	0.22	0.15	0.15
v/c Ratio	0.98	1.04		1.02	0.91		1.07	0.84	0.76	0.83	1.02	0.63
Control Delay	88.2	74.1		113.9	58.0		114.6	65.2	37.8	87.5	109.2	17.9
Queue Delay	0.0	23.8		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.2	97.9		113.9	58.0		114.6	65.2	37.8	87.5	109.2	17.9
LOS	F	F		F	E		F	E	D	F	F	B
Approach Delay		96.1			67.3			68.4			79.6	
Approach LOS		F			E			E			E	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Natural Cycle: 130
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 79.8 — Intersection LOS: E
Intersection Capacity Utilization 114.1% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 3: Ninth Line & Derry Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	404	1773	229	1139	341	805	430	106	568	286
v/c Ratio	0.98	1.04	1.02	0.91	1.07	0.84	0.76	0.83	1.02	0.63
Control Delay	88.2	74.1	113.9	58.0	114.6	65.2	37.8	87.5	109.2	17.9
Queue Delay	0.0	23.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.2	97.9	113.9	58.0	114.6	65.2	37.8	87.5	109.2	17.9
Queue Length 50th (m)	118.9	~336.1	~64.0	183.6	~107.8	135.4	73.7	24.8	~105.9	11.2
Queue Length 95th (m)	#191.3	#380.1	#122.3	#220.7	#175.3	162.2	119.8	#51.9	#146.4	43.9
Internal Link Dist (m)		210.9		158.6		789.6			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	412	1701	224	1247	318	953	563	127	555	452
Starvation Cap Reductn	0	251	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	1.22	1.02	0.91	1.07	0.84	0.76	0.83	1.02	0.63

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	13	54	155	5	182	17	1250	121	75	805	17
Future Volume (vph)	133	13	54	155	5	182	17	1250	121	75	805	17
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1860	1900	1640	1860	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.3	3.0	3.5	3.2	3.0	3.5	3.6
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		25.0	80.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor									0.98			
Frt		0.879			0.854				0.850		0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1637	0	1412	1591	0	1617	3500	1222	1649	3523	0
Flt Permitted	0.512			0.709			0.288			0.119		
Satd. Flow (perm)	823	1637	0	1054	1591	0	490	3500	1194	207	3523	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		59			154				71		3	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		140.5			218.3			577.9			487.0	
Travel Time (s)		10.1			15.7			29.7			25.0	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	9%	0%	1%	2%
Adj. Flow (vph)	145	14	59	168	5	198	18	1359	132	82	875	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	145	73	0	168	203	0	18	1359	132	82	893	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.04	1.12	1.01	1.28	1.12	1.01	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		7.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		-3.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		-3.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		10.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5		9.5	26.0	26.0	9.5	26.0	
Total Split (s)	35.2	35.2		35.2	35.2		9.5	55.2	55.2	9.6	55.3	
Total Split (%)	35.2%	35.2%		35.2%	35.2%		9.5%	55.2%	55.2%	9.6%	55.3%	
Maximum Green (s)	28.7	28.7		28.7	28.7		6.5	48.2	48.2	6.6	48.3	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)	8.0	8.0		7.0	7.0			8.0	8.0		8.0	
Flash Dont Walk (s)	8.0	8.0		11.0	11.0			10.0	10.0		10.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	
Act Effct Green (s)	20.8	20.8		20.8	20.8		61.1	50.9	50.9	62.0	54.8	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.69	0.57	0.57	0.70	0.62	
v/c Ratio	0.76	0.17		0.69	0.42		0.04	0.68	0.19	0.29	0.41	
Control Delay	56.8	10.7		46.1	11.0		5.9	17.6	6.9	8.4	11.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	56.8	10.7		46.1	11.0		5.9	17.6	6.9	8.4	11.5	
LOS	E	B		D	B		A	B	A	A	B	
Approach Delay		41.3			26.9			16.5			11.2	
Approach LOS		D			C			B			B	

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 89.1	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 17.8	Intersection LOS: B
Intersection Capacity Utilization 74.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Ninth Line & Street "F"/Doug Leavens Boulevard

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	145	73	168	203	18	1359	132	82	893
v/c Ratio	0.76	0.17	0.69	0.42	0.04	0.68	0.19	0.29	0.41
Control Delay	56.8	10.7	46.1	11.0	5.9	17.6	6.9	8.4	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	10.7	46.1	11.0	5.9	17.6	6.9	8.4	11.5
Queue Length 50th (m)	25.0	2.0	28.4	7.2	0.9	91.0	5.0	4.1	35.4
Queue Length 95th (m)	47.5	12.2	50.5	24.9	3.8	142.8	16.8	11.4	78.1
Internal Link Dist (m)		116.5		194.3		553.9			463.0
Turn Bay Length (m)					15.0		25.0	80.0	
Base Capacity (vph)	282	601	362	647	446	2000	712	285	2168
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.12	0.46	0.31	0.04	0.68	0.19	0.29	0.41

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	0	42	50	0	73	10	1268	38	33	995	39
Future Volume (vph)	29	0	42	50	0	73	10	1268	38	33	995	39
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1640	1900	1900	1640	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.0	3.6	3.5	3.5	3.0	3.5	3.6
Storage Length (m)	0.0		0.0	0.0		0.0	65.0		0.0	15.0		30.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.850			0.850			0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1583	0	1454	1615	0	1527	3446	0	1412	3500	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1527	1583	0	1454	1615	0	1527	3446	0	1412	3500	1583
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		123.4			166.2			289.9			265.1	
Travel Time (s)		8.9			12.0			14.9			13.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	3%	9%	3%	2%	2%
Adj. Flow (vph)	30	0	44	52	0	76	10	1321	40	34	1036	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	44	0	52	76	0	10	1361	0	34	1036	41
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.09	1.21	1.01	1.01	1.31	1.01	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 52.8%	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)	29	0	42	50	0	73	10	1268	38	33	995	39
Future Volume (Veh/h)	29	0	42	50	0	73	10	1268	38	33	995	39
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	30	0	44	52	0	76	10	1321	40	34	1036	41
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								290				
pX, platoon unblocked	0.82	0.82		0.82	0.82	0.82				0.82		
vC, conflicting volume	1860	2485	518	1991	2506	680	1077			1361		
vC1, stage 1 conf vol	1104	1104		1361	1361							
vC2, stage 2 conf vol	756	1381		630	1145							
vCu, unblocked vol	1608	2371	518	1767	2396	166	1077			997		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.2		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	84	100	91	71	100	89	98			94		
cM capacity (veh/h)	192	164	502	182	172	700	643			559		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	30	44	52	76	10	881	480	34	518	518	41
Volume Left	30	0	52	0	10	0	0	34	0	0	0
Volume Right	0	44	0	76	0	0	40	0	0	0	41
cSH	192	502	182	700	643	1700	1700	559	1700	1700	1700
Volume to Capacity	0.16	0.09	0.29	0.11	0.02	0.52	0.28	0.06	0.30	0.30	0.02
Queue Length 95th (m)	4.3	2.3	9.0	2.9	0.4	0.0	0.0	1.5	0.0	0.0	0.0
Control Delay (s)	27.2	12.9	32.5	10.8	10.7	0.0	0.0	11.9	0.0	0.0	0.0
Lane LOS	D	B	D	B	B			B			
Approach Delay (s)	18.7		19.6		0.1			0.4			
Approach LOS	C		C								

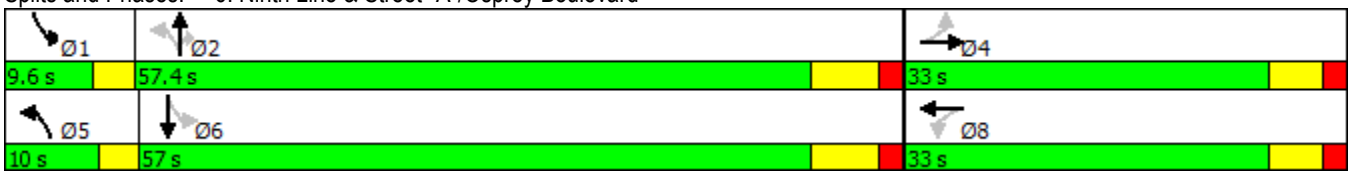
Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	0	93	134	0	97	30	1097	99	22	1056	8
Future Volume (vph)	93	0	93	134	0	97	30	1097	99	22	1056	8
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1860	1900	1640	1860	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.0	3.6	3.5	3.5	3.6	3.6	3.6
Storage Length (m)	0.0		0.0	15.0		0.0	15.0		25.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			15.0			7.5			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.850			0.850				0.850		0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1583	0	1412	1538	0	1732	3433	1276	1683	3570	0
Flt Permitted	0.692			0.695			0.203			0.208		
Satd. Flow (perm)	1113	1583	0	1033	1538	0	370	3433	1276	368	3570	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		186			181				65		1	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		122.1			186.9			633.8			289.9	
Travel Time (s)		8.8			13.5			32.6			14.9	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	3%	2%	5%	2%	4%	8%	5%	1%	2%
Adj. Flow (vph)	96	0	96	138	0	100	31	1131	102	23	1089	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	96	0	138	100	0	31	1131	102	23	1097	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.09	1.03	1.01	1.22	1.03	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru			Thru		Left	Thru	Right		Thru	
Leading Detector (m)	2.0	10.0		9.0	10.0		2.0	10.0	2.0	20.0	10.0	
Trailing Detector (m)	0.0	0.0		-1.0	0.0		0.0	0.0	0.0	10.0	0.0	
Detector 1 Position(m)	0.0	0.0		-1.0	0.0		0.0	0.0	0.0	10.0	0.0	
Detector 1 Size(m)	2.0	0.6		10.0	0.6		2.0	0.6	2.0	10.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		9.5	25.0	25.0	9.5	25.0	
Total Split (s)	33.0	33.0		33.0	33.0		10.0	57.4	57.4	9.6	57.0	
Total Split (%)	33.0%	33.0%		33.0%	33.0%		10.0%	57.4%	57.4%	9.6%	57.0%	
Maximum Green (s)	27.0	27.0		27.0	27.0		7.0	50.4	50.4	6.6	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	2.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	
Act Effct Green (s)	17.9	17.9		17.9	17.9		63.8	56.8	56.8	62.5	54.5	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.73	0.65	0.65	0.71	0.62	
v/c Ratio	0.42	0.20		0.66	0.22		0.08	0.51	0.12	0.06	0.49	
Control Delay	36.1	1.0		47.4	1.1		5.1	10.9	4.6	5.1	12.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	36.1	1.0		47.4	1.1		5.1	10.9	4.6	5.1	12.0	
LOS	D	A		D	A		A	B	A	A	B	
Approach Delay		18.5			27.9			10.3			11.8	
Approach LOS		B			C			B			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 87.7	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 13.0	Intersection LOS: B
Intersection Capacity Utilization 53.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Street "A"/Osprey Boulevard



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	96	96	138	100	31	1131	102	23	1097
v/c Ratio	0.42	0.20	0.66	0.22	0.08	0.51	0.12	0.06	0.49
Control Delay	36.1	1.0	47.4	1.1	5.1	10.9	4.6	5.1	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	1.0	47.4	1.1	5.1	10.9	4.6	5.1	12.0
Queue Length 50th (m)	15.2	0.0	23.0	0.0	1.3	43.4	1.9	1.0	57.3
Queue Length 95th (m)	30.3	0.0	43.2	0.0	5.0	100.0	11.5	4.1	97.7
Internal Link Dist (m)		98.1		162.9		609.8			265.9
Turn Bay Length (m)			15.0		15.0		25.0	20.0	
Base Capacity (vph)	358	635	332	617	409	2223	849	395	2217
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.15	0.42	0.16	0.08	0.51	0.12	0.06	0.49

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	1641	438	83	702	195	199	802	177	130	1038	145
Future Volume (vph)	195	1641	438	83	702	195	199	802	177	130	1038	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		50.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98	1.00		
Frt		0.968				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3498	0	1733	3579	1439	1767	3544	1581	1608	3614	1581
Flt Permitted	0.293			0.053			0.095			0.120		
Satd. Flow (perm)	551	3498	0	97	3579	1439	177	3544	1557	203	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31				187			93			82
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	3%	2%	11%	1%	3%	1%	11%	1%	1%
Adj. Flow (vph)	195	1641	438	83	702	195	199	802	177	130	1038	145
Shared Lane Traffic (%)												
Lane Group Flow (vph)	195	2079	0	83	702	195	199	802	177	130	1038	145
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template		Thru		Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		8
Detector Phase	5	2		1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	17.6	87.5		9.5	79.4	79.4	15.0	49.9	49.9	13.1	48.0	48.0
Total Split (%)	11.0%	54.7%		5.9%	49.6%	49.6%	9.4%	31.2%	31.2%	8.2%	30.0%	30.0%
Maximum Green (s)	14.6	81.4		6.5	73.3	73.3	12.0	42.2	42.2	10.1	40.3	40.3
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0			11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	93.9	81.4		85.0	75.4	75.4	58.9	42.2	42.2	55.1	40.3	40.3
Actuated g/C Ratio	0.59	0.51		0.53	0.47	0.47	0.37	0.26	0.26	0.34	0.25	0.25
v/c Ratio	0.46	1.16		0.71	0.42	0.25	1.08	0.86	0.37	0.82	1.14	0.32
Control Delay	19.1	114.0		56.7	29.1	4.5	127.0	66.3	24.6	73.2	128.8	23.3
Queue Delay	0.0	0.5		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.1	114.5		56.7	29.1	4.5	127.0	66.3	24.6	73.2	128.8	23.3
LOS	B	F		E	C	A	F	E	C	E	F	C
Approach Delay		106.3			26.5			70.3			111.7	
Approach LOS		F			C			E			F	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Natural Cycle: 145
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.16
Intersection Signal Delay: 86.5 — Intersection LOS: F
Intersection Capacity Utilization 121.8% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 7: Ninth Line & Britannia Road

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	195	2079	83	702	195	199	802	177	130	1038	145
v/c Ratio	0.46	1.16	0.71	0.42	0.25	1.08	0.86	0.37	0.82	1.14	0.32
Control Delay	19.1	114.0	56.7	29.1	4.5	127.0	66.3	24.6	73.2	128.8	23.3
Queue Delay	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.1	114.5	56.7	29.1	4.5	127.0	66.3	24.6	73.2	128.8	23.3
Queue Length 50th (m)	29.2	~429.7	11.6	80.6	1.4	~55.8	135.5	22.1	29.6	~212.7	16.6
Queue Length 95th (m)	43.1	#471.5	#39.7	100.0	16.6	#111.2	162.7	46.0	#61.1	#257.3	37.7
Internal Link Dist (m)		192.6		220.1			171.1			609.8	
Turn Bay Length (m)	60.0		60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	436	1794	117	1686	776	184	934	479	158	910	459
Starvation Cap Reductn	0	264	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	1.36	0.71	0.42	0.25	1.08	0.86	0.37	0.82	1.14	0.32

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1956	0	0	876	25	280
Future Volume (vph)	1956	0	0	876	25	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3579	1608	1566
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3579	1608	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						20
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	2%	11%	2%
Adj. Flow (vph)	1956	0	0	876	25	280
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1956	0	0	876	25	280
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	113.0			113.0	47.0	47.0
Total Split (%)	70.6%			70.6%	29.4%	29.4%
Maximum Green (s)	107.0			107.0	40.0	40.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	107.3			107.3	29.8	29.8
Actuated g/C Ratio	0.71			0.71	0.20	0.20
v/c Ratio	0.76			0.34	0.08	0.86
Control Delay	16.9			9.2	48.0	77.8
Queue Delay	1.4			0.3	0.0	0.0
Total Delay	18.3			9.5	48.0	77.8
LOS	B			A	D	E
Approach Delay	18.3			9.5	75.4	
Approach LOS	B			A	E	

Intersection Summary	
Area Type:	Other
Cycle Length: 160	
Actuated Cycle Length: 150.1	
Natural Cycle: 70	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 21.4	Intersection LOS: C
Intersection Capacity Utilization 82.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1956	876	25	280
v/c Ratio	0.76	0.34	0.08	0.86
Control Delay	16.9	9.2	48.0	77.8
Queue Delay	1.4	0.3	0.0	0.0
Total Delay	18.3	9.5	48.0	77.8
Queue Length 50th (m)	185.6	50.5	6.4	79.9
Queue Length 95th (m)	266.7	75.8	15.3	115.7
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2582	2557	429	432
Starvation Cap Reductn	403	1012	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.90	0.57	0.06	0.65

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1547	676	0	462	27
Future Volume (vph)	0	1547	676	0	462	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3579	0	1684	1210
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3579	0	1684	1210
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						21
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	2%	0%	6%	32%
Adj. Flow (vph)	0	1547	676	0	462	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1547	676	0	462	27
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		91.0	91.0		69.0	69.0
Total Split (%)		56.9%	56.9%		43.1%	43.1%
Maximum Green (s)		85.0	85.0		62.0	62.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		85.5	85.5		43.8	43.8
Actuated g/C Ratio		0.60	0.60		0.31	0.31
v/c Ratio		0.71	0.31		0.89	0.07
Control Delay		23.8	15.7		67.1	14.9
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		23.8	15.7		67.1	14.9
LOS		C	B		E	B
Approach Delay		23.8	15.7		64.2	
Approach LOS		C	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 142.3	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 29.1	Intersection LOS: C
Intersection Capacity Utilization 82.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1547	676	462	27
v/c Ratio	0.71	0.31	0.89	0.07
Control Delay	23.8	15.7	67.1	14.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.8	15.7	67.1	14.9
Queue Length 50th (m)	159.8	49.2	130.1	1.2
Queue Length 95th (m)	244.0	80.0	175.3	8.5
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2170	2148	737	541
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.31	0.63	0.05

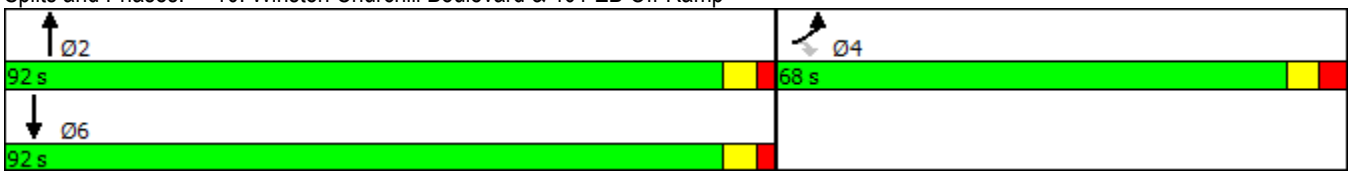
Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	427	356	0	1211	1337	0
Future Volume (vph)	427	356	0	1211	1337	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.969	0.850				
Flt Protected	0.962					
Satd. Flow (prot)	3280	1425	0	4980	4885	0
Flt Permitted	0.962					
Satd. Flow (perm)	3280	1425	0	4980	4885	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	25	33				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	0%	3%	5%	0%
Adj. Flow (vph)	449	375	0	1275	1407	0
Shared Lane Traffic (%)		31%				
Lane Group Flow (vph)	565	259	0	1275	1407	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	68.0	68.0		92.0	92.0	
Total Split (%)	42.5%	42.5%		57.5%	57.5%	
Maximum Green (s)	60.5	60.5		85.5	85.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	32.4	32.4		87.2	87.2	
Actuated g/C Ratio	0.25	0.25		0.67	0.67	
v/c Ratio	0.68	0.68		0.38	0.43	
Control Delay	45.8	47.5		10.4	10.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	45.8	47.5		10.4	10.9	
LOS	D	D		B	B	
Approach Delay	46.3			10.4	10.9	
Approach LOS	D			B	B	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 129.6	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 19.0	Intersection LOS: B
Intersection Capacity Utilization 55.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	565	259	1275	1407
v/c Ratio	0.68	0.68	0.38	0.43
Control Delay	45.8	47.5	10.4	10.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	45.8	47.5	10.4	10.9
Queue Length 50th (m)	67.8	60.8	49.3	56.8
Queue Length 95th (m)	87.0	94.2	77.2	88.6
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1611	711	3351	3287
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.35	0.36	0.38	0.43

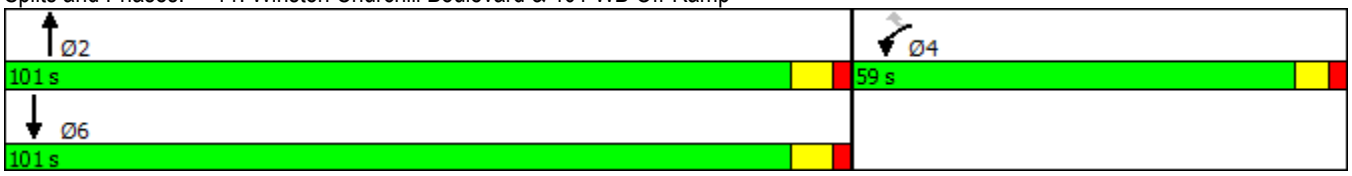
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	288	475	1323	0	0	1762
Future Volume (vph)	288	475	1323	0	0	1762
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.91
Frt	0.933	0.850				
Flt Protected	0.973					
Satd. Flow (prot)	2984	1298	4980	0	0	4839
Flt Permitted	0.973					
Satd. Flow (perm)	2984	1298	4980	0	0	4839
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	48	48				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	10%	12%	3%	0%	0%	6%
Adj. Flow (vph)	303	500	1393	0	0	1855
Shared Lane Traffic (%)		49%				
Lane Group Flow (vph)	548	255	1393	0	0	1855
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	59.0	59.0	101.0			101.0
Total Split (%)	36.9%	36.9%	63.1%			63.1%
Maximum Green (s)	52.5	52.5	93.5			93.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	33.7	33.7	96.3			96.3
Actuated g/C Ratio	0.24	0.24	0.69			0.69
v/c Ratio	0.73	0.73	0.41			0.56
Control Delay	50.0	51.9	10.7			12.8
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	50.0	51.9	10.7			12.8
LOS	D	D	B			B
Approach Delay	50.6		10.7			12.8
Approach LOS	D		B			B

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 140.1	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 19.6	Intersection LOS: B
Intersection Capacity Utilization 55.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	548	255	1393	1855
v/c Ratio	0.73	0.73	0.41	0.56
Control Delay	50.0	51.9	10.7	12.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	50.0	51.9	10.7	12.8
Queue Length 50th (m)	69.7	62.0	57.5	89.4
Queue Length 95th (m)	90.0	97.3	91.6	139.8
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1183	531	3423	3327
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	0.48	0.41	0.56

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	8	2	1563	889	18
Future Volume (vph)	20	8	2	1563	889	18
Ideal Flow (vphpl)	1640	1640	1640	1900	1900	1900
Lane Width (m)	3.6	3.6	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	0.0	25.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.997	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1527	1367	1510	3500	3489	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1527	1367	1510	3500	3489	0
Link Speed (k/h)	50			70	70	
Link Distance (m)	121.9			487.0	813.6	
Travel Time (s)	8.8			25.0	41.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	8	2	1563	889	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	8	2	1563	907	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.21	1.21	1.22	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	8	2	1563	889	18
Future Volume (Veh/h)	20	8	2	1563	889	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	20	8	2	1563	889	18
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1684	454	907			
vC1, stage 1 conf vol	898					
vC2, stage 2 conf vol	786					
vCu, unblocked vol	1684	454	907			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	99	100			
cM capacity (veh/h)	275	554	746			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	20	8	2	782	782	593	314
Volume Left	20	0	2	0	0	0	0
Volume Right	0	8	0	0	0	0	18
cSH	275	554	746	1700	1700	1700	1700
Volume to Capacity	0.07	0.01	0.00	0.46	0.46	0.35	0.18
Queue Length 95th (m)	1.9	0.4	0.1	0.0	0.0	0.0	0.0
Control Delay (s)	19.1	11.6	9.8	0.0	0.0	0.0	0.0
Lane LOS	C	B	A				
Approach Delay (s)	17.0		0.0			0.0	
Approach LOS	C						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	25	9	1345	998	16
Future Volume (vph)	42	25	9	1345	998	16
Ideal Flow (vphpl)	1640	1640	1640	1900	1900	1900
Storage Length (m)	0.0	0.0	95.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.998	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1527	1367	1527	3539	3532	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1527	1367	1527	3539	3532	0
Link Speed (k/h)	50			70	70	
Link Distance (m)	131.1			265.1	577.9	
Travel Time (s)	9.4			13.6	29.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	42	25	9	1345	998	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	42	25	9	1345	1014	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.21	1.21	1.21	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	42	25	9	1345	998	16
Future Volume (Veh/h)	42	25	9	1345	998	16
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	42	25	9	1345	998	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1696	507	1014			
vC1, stage 1 conf vol	1006					
vC2, stage 2 conf vol	690					
vCu, unblocked vol	1696	507	1014			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	84	95	99			
cM capacity (veh/h)	263	511	680			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	42	25	9	672	672	665	349
Volume Left	42	0	9	0	0	0	0
Volume Right	0	25	0	0	0	0	16
cSH	263	511	680	1700	1700	1700	1700
Volume to Capacity	0.16	0.05	0.01	0.40	0.40	0.39	0.21
Queue Length 95th (m)	4.5	1.2	0.3	0.0	0.0	0.0	0.0
Control Delay (s)	21.3	12.4	10.4	0.0	0.0	0.0	0.0
Lane LOS	C	B	B				
Approach Delay (s)	18.0		0.1			0.0	
Approach LOS	C						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1309	0	0	2189	94	223
Future Volume (vph)	1309	0	0	2189	94	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3579	0	0	3614	3362	1597
Flt Permitted					0.950	
Satd. Flow (perm)	3579	0	0	3614	3362	1597
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						110
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	1%	3%	0%
Adj. Flow (vph)	1309	0	0	2189	94	223
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1309	0	0	2189	94	223
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	127.0			127.0	33.0	33.0
Total Split (%)	79.4%			79.4%	20.6%	20.6%
Maximum Green (s)	121.0			121.0	26.0	26.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	121.2			121.2	16.6	16.6
Actuated g/C Ratio	0.80			0.80	0.11	0.11
v/c Ratio	0.46			0.75	0.25	0.82
Control Delay	5.7			10.5	62.1	55.5
Queue Delay	0.0			3.2	0.0	0.0
Total Delay	5.7			13.7	62.1	55.5
LOS	A			B	E	E
Approach Delay	5.7			13.7	57.5	
Approach LOS	A			B	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 150.8	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 100.1%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1309	2189	94	223
v/c Ratio	0.46	0.75	0.25	0.82
Control Delay	5.7	10.5	62.1	55.5
Queue Delay	0.0	3.2	0.0	0.0
Total Delay	5.7	13.7	62.1	55.5
Queue Length 50th (m)	57.4	154.7	14.1	35.7
Queue Length 95th (m)	92.2	244.3	23.5	67.2
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2875	2904	580	366
Starvation Cap Reductn	0	600	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	0.95	0.16	0.61

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1079	2142	0	309	486
Future Volume (vph)	0	1079	2142	0	309	486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3510	3614	0	3429	1597
Flt Permitted					0.950	
Satd. Flow (perm)	0	3510	3614	0	3429	1597
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						9
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	4%	1%	0%	1%	0%
Adj. Flow (vph)	0	1079	2142	0	309	486
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1079	2142	0	309	486
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		104.0	104.0		56.0	56.0
Total Split (%)		65.0%	65.0%		35.0%	35.0%
Maximum Green (s)		98.0	98.0		49.0	49.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		98.0	98.0		49.0	49.0
Actuated g/C Ratio		0.61	0.61		0.31	0.31
v/c Ratio		0.50	0.97		0.29	0.98
Control Delay		18.4	42.5		43.3	89.4
Queue Delay		0.0	37.3		0.0	0.0
Total Delay		18.4	79.9		43.3	89.4
LOS		B	E		D	F
Approach Delay		18.4	79.9		71.5	
Approach LOS		B	E		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 160	
Natural Cycle: 110	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 61.7	Intersection LOS: E
Intersection Capacity Utilization 100.1%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1079	2142	309	486
v/c Ratio	0.50	0.97	0.29	0.98
Control Delay	18.4	42.5	43.3	89.4
Queue Delay	0.0	37.3	0.0	0.0
Total Delay	18.4	79.9	43.3	89.4
Queue Length 50th (m)	102.1	344.8	40.8	159.8
Queue Length 95th (m)	119.7	#418.4	54.5	#237.5
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2149	2213	1050	495
Starvation Cap Reductn	0	244	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.50	1.09	0.29	0.98

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	213	883	366	393	1733	147	178	716	309	249	968	361
Future Volume (vph)	213	883	366	393	1733	147	178	716	309	249	968	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		50.0	110.0		110.0	60.0		70.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt		0.956			0.988				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1767	3417	0	1767	3568	0	1767	3614	1581	1785	3614	1581
Flt Permitted	0.068			0.065			0.118			0.109		
Satd. Flow (perm)	126	3417	0	121	3568	0	220	3614	1556	205	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45			8				309			172
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			813.6			145.2	
Travel Time (s)		14.1			11.0			41.8			7.5	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	3%	0%	1%	1%	2%	1%	1%	1%	0%	1%	1%
Adj. Flow (vph)	213	883	366	393	1733	147	178	716	309	249	968	361
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	1249	0	393	1880	0	178	716	309	249	968	361
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template		Thru			Thru							
Leading Detector (m)	25.0	10.0		25.0	10.0		8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0		15.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6		10.0	0.6		10.0	10.0	10.0	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1		9.5	30.1		9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	17.0	65.0		34.4	82.4		14.1	40.2	40.2	20.4	46.5	46.5
Total Split (%)	10.6%	40.6%		21.5%	51.5%		8.8%	25.1%	25.1%	12.8%	29.1%	29.1%
Maximum Green (s)	14.0	58.9		31.4	76.3		11.1	33.8	33.8	17.4	40.1	40.1
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1		3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0			15.0			14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	76.0	58.9		96.4	76.3		48.3	33.8	33.8	57.6	40.1	40.1
Actuated g/C Ratio	0.48	0.37		0.60	0.48		0.30	0.21	0.21	0.36	0.25	0.25
v/c Ratio	1.05	0.97		0.99	1.10		1.03	0.94	0.54	1.02	1.07	0.69
Control Delay	121.9	66.6		93.0	94.8		115.5	82.2	8.9	104.7	105.9	35.2
Queue Delay	0.0	8.8		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	121.9	75.4		93.0	94.8		115.5	82.2	8.9	104.7	105.9	35.2
LOS	F	E		F	F		F	F	A	F	F	D
Approach Delay		82.2			94.5			68.3			89.5	
Approach LOS		F			F			E			F	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Natural Cycle: 120
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 85.7 — Intersection LOS: F
Intersection Capacity Utilization 118.1% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 3: Ninth Line & Derry Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	213	1249	393	1880	178	716	309	249	968	361
v/c Ratio	1.05	0.97	0.99	1.10	1.03	0.94	0.54	1.02	1.07	0.69
Control Delay	121.9	66.6	93.0	94.8	115.5	82.2	8.9	104.7	105.9	35.2
Queue Delay	0.0	8.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	121.9	75.4	93.0	94.8	115.5	82.2	8.9	104.7	105.9	35.2
Queue Length 50th (m)	~59.9	210.5	115.2	~374.9	~45.0	125.4	0.0	~69.2	~188.0	59.1
Queue Length 95th (m)	#116.8	#261.4	#188.0	#417.8	#98.4	#164.7	27.6	#129.6	#232.5	98.8
Internal Link Dist (m)		210.9		158.6		789.6			121.2	
Turn Bay Length (m)	75.0		80.0		110.0		110.0	60.0		70.0
Base Capacity (vph)	203	1286	395	1705	173	763	572	245	905	525
Starvation Cap Reductn	0	53	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	1.01	0.99	1.10	1.03	0.94	0.54	1.02	1.07	0.69

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	8	32	126	13	67	52	1027	152	133	1495	53
Future Volume (vph)	79	8	32	126	13	67	52	1027	152	133	1495	53
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1860	1900	1640	1860	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.3	3.6	3.5	3.2	3.0	3.5	3.6
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		25.0	80.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor									0.97	1.00		
Frt		0.879			0.875				0.850		0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1637	0	1454	1657	0	1732	3535	1332	1649	3516	0
Flt Permitted	0.702			0.730			0.090			0.207		
Satd. Flow (perm)	1129	1637	0	1117	1657	0	164	3535	1298	359	3516	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			70				94		6	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		111.4			218.3			577.9			487.0	
Travel Time (s)		8.0			15.7			29.7			25.0	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	1%	0%	0%	1%	2%
Adj. Flow (vph)	82	8	33	131	14	70	54	1070	158	139	1557	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	41	0	131	84	0	54	1070	158	139	1612	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.04	1.03	1.01	1.28	1.12	1.01	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		7.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		-3.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		-3.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		10.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5		9.5	26.0	26.0	9.5	26.0	
Total Split (s)	28.1	28.1		28.1	28.1		9.6	60.7	60.7	11.2	62.3	
Total Split (%)	28.1%	28.1%		28.1%	28.1%		9.6%	60.7%	60.7%	11.2%	62.3%	
Maximum Green (s)	21.6	21.6		21.6	21.6		6.6	53.7	53.7	8.2	55.3	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)	8.0	8.0		7.0	7.0			8.0	8.0		8.0	
Flash Dont Walk (s)	8.0	8.0		11.0	11.0			10.0	10.0		10.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	
Act Effct Green (s)	17.1	17.1		17.1	17.1		68.7	56.5	56.5	70.9	59.5	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.73	0.60	0.60	0.75	0.63	
v/c Ratio	0.40	0.13		0.65	0.23		0.21	0.50	0.19	0.35	0.72	
Control Delay	39.5	14.3		50.5	12.1		5.8	12.5	5.0	6.2	15.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	39.5	14.3		50.5	12.1		5.8	12.5	5.0	6.2	15.6	
LOS	D	B		D	B		A	B	A	A	B	
Approach Delay		31.1			35.5			11.3			14.9	
Approach LOS		C			D			B			B	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 94
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 15.4 — Intersection LOS: B
Intersection Capacity Utilization 73.6% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 4: Ninth Line & Street "F"/Doug Leavens Boulevard

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	82	41	131	84	54	1070	158	139	1612
v/c Ratio	0.40	0.13	0.65	0.23	0.21	0.50	0.19	0.35	0.72
Control Delay	39.5	14.3	50.5	12.1	5.8	12.5	5.0	6.2	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	14.3	50.5	12.1	5.8	12.5	5.0	6.2	15.6
Queue Length 50th (m)	13.9	1.3	23.3	2.2	2.2	58.0	4.8	6.0	107.1
Queue Length 95th (m)	28.1	10.0	43.2	14.5	6.3	87.2	15.5	13.7	158.9
Internal Link Dist (m)		87.4		194.3		553.9			463.0
Turn Bay Length (m)					15.0		25.0	80.0	
Base Capacity (vph)	277	428	275	460	264	2125	818	411	2229
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.10	0.48	0.18	0.20	0.50	0.19	0.34	0.72

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	0	25	24	0	19	32	1199	65	46	1459	120
Future Volume (vph)	18	0	25	24	0	19	32	1199	65	46	1459	120
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1640	1900	1900	1640	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.0	3.6	3.5	3.5	3.0	3.5	3.6
Storage Length (m)	0.0		0.0	0.0		0.0	65.0		0.0	15.0		30.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.850			0.850			0.992				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1583	0	1454	1615	0	1527	3508	0	1426	3570	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1527	1583	0	1454	1615	0	1527	3508	0	1426	3570	1583
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		103.7			166.2			289.9			265.1	
Travel Time (s)		7.5			12.0			14.9			13.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	1%	0%	2%	0%	2%
Adj. Flow (vph)	19	0	26	25	0	20	33	1249	68	48	1520	125
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	26	0	25	20	0	33	1317	0	48	1520	125
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.09	1.21	1.01	1.01	1.31	1.01	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 59.2%	ICU Level of Service B
Analysis Period (min) 15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	0	25	24	0	19	32	1199	65	46	1459	120
Future Volume (Veh/h)	18	0	25	24	0	19	32	1199	65	46	1459	120
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	19	0	26	25	0	20	33	1249	68	48	1520	125
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								290				
pX, platoon unblocked	0.82	0.82		0.82	0.82	0.82				0.82		
vC, conflicting volume	2326	2999	760	2231	3090	658	1645			1317		
vC1, stage 1 conf vol	1616	1616		1349	1349							
vC2, stage 2 conf vol	710	1383		882	1741							
vCu, unblocked vol	2182	2999	760	2066	3109	157	1645			957		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	80	100	93	83	100	97	92			92		
cM capacity (veh/h)	95	109	349	147	85	714	389			588		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	19	26	25	20	33	833	484	48	760	760	125
Volume Left	19	0	25	0	33	0	0	48	0	0	0
Volume Right	0	26	0	20	0	0	68	0	0	0	125
cSH	95	349	147	714	389	1700	1700	588	1700	1700	1700
Volume to Capacity	0.20	0.07	0.17	0.03	0.08	0.49	0.28	0.08	0.45	0.45	0.07
Queue Length 95th (m)	5.6	1.9	4.7	0.7	2.2	0.0	0.0	2.1	0.0	0.0	0.0
Control Delay (s)	52.1	16.2	34.5	10.2	15.1	0.0	0.0	11.7	0.0	0.0	0.0
Lane LOS	F	C	D	B	C			B			
Approach Delay (s)	31.3		23.7		0.4			0.3			
Approach LOS	D		C								

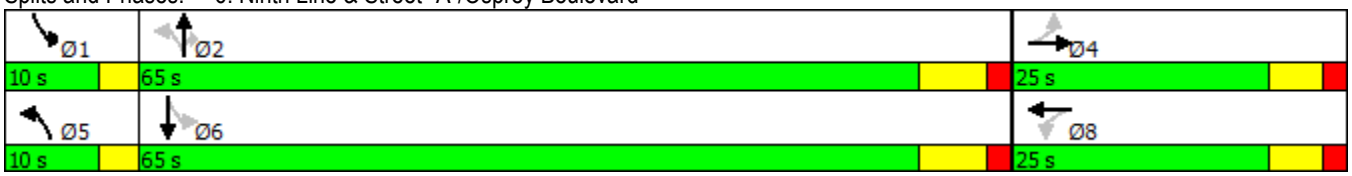
Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	0	55	75	0	32	92	1266	110	47	1433	24
Future Volume (vph)	55	0	55	75	0	32	92	1266	110	47	1433	24
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1900	1860	1900	1640	1860	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.0	3.6	3.0	3.6	3.5	3.5	3.6	3.6	3.6
Storage Length (m)	0.0		0.0	15.0		0.0	15.0		25.0	20.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			15.0			7.5			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor									0.98			
Frt		0.850			0.850				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	1583	0	1359	1568	0	1732	3535	1351	1767	3602	0
Flt Permitted	0.736			0.720			0.118			0.175		
Satd. Flow (perm)	1183	1583	0	1030	1568	0	215	3535	1321	326	3602	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		151			169				65		3	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		103.4			186.9			633.8			289.9	
Travel Time (s)		7.4			13.5			32.6			14.9	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	7%	2%	3%	2%	1%	2%	0%	0%	2%
Adj. Flow (vph)	57	0	57	78	0	33	96	1319	115	49	1493	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	57	0	78	33	0	96	1319	115	49	1518	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.21	1.00	1.00	1.31	1.00	1.09	1.03	1.01	1.22	1.03	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru			Thru		Left	Thru	Right		Thru	
Leading Detector (m)	2.0	10.0		9.0	10.0		2.0	10.0	2.0	20.0	10.0	
Trailing Detector (m)	0.0	0.0		-0.2	0.0		0.0	0.0	0.0	10.0	0.0	
Detector 1 Position(m)	0.0	0.0		-0.2	0.0		0.0	0.0	0.0	10.0	0.0	
Detector 1 Size(m)	2.0	0.6		9.2	0.6		2.0	0.6	2.0	10.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		9.5	25.0	25.0	9.5	25.0	
Total Split (s)	25.0	25.0		25.0	25.0		10.0	65.0	65.0	10.0	65.0	
Total Split (%)	25.0%	25.0%		25.0%	25.0%		10.0%	65.0%	65.0%	10.0%	65.0%	
Maximum Green (s)	19.0	19.0		19.0	19.0		7.0	58.0	58.0	7.0	58.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	2.0	3.0	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	
Act Effct Green (s)	13.6	13.6		13.2	13.2		75.4	67.8	67.8	73.3	64.9	
Actuated g/C Ratio	0.15	0.15		0.14	0.14		0.82	0.74	0.74	0.80	0.71	
v/c Ratio	0.33	0.16		0.53	0.09		0.30	0.51	0.12	0.13	0.60	
Control Delay	40.6	0.9		50.0	0.5		5.2	8.6	3.7	3.6	11.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	40.6	0.9		50.0	0.5		5.2	8.6	3.7	3.6	11.1	
LOS	D	A		D	A		A	A	A	A	B	
Approach Delay		20.7			35.2			8.0			10.9	
Approach LOS		C			D			A			B	

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 91.8	
Natural Cycle: 70	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 10.7	Intersection LOS: B
Intersection Capacity Utilization 68.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 6: Ninth Line & Street "A"/Osprey Boulevard



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	57	57	78	33	96	1319	115	49	1518
v/c Ratio	0.33	0.16	0.53	0.09	0.30	0.51	0.12	0.13	0.60
Control Delay	40.6	0.9	50.0	0.5	5.2	8.6	3.7	3.6	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.6	0.9	50.0	0.5	5.2	8.6	3.7	3.6	11.1
Queue Length 50th (m)	9.8	0.0	13.8	0.0	3.0	62.4	2.9	1.5	82.7
Queue Length 95th (m)	21.8	0.0	28.7	0.0	8.6	100.5	10.8	5.0	129.7
Internal Link Dist (m)		79.4		162.9		609.8			265.9
Turn Bay Length (m)			15.0		15.0		25.0	20.0	
Base Capacity (vph)	259	464	225	475	325	2611	993	407	2547
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.12	0.35	0.07	0.30	0.51	0.12	0.12	0.60

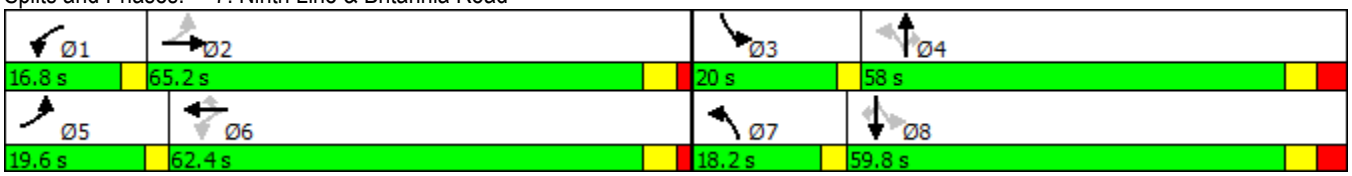
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	819	376	186	1231	232	211	1129	141	236	1101	200
Future Volume (vph)	235	819	376	186	1231	232	211	1129	141	236	1101	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		0.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt		0.953				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	3455	0	1785	3614	1551	1767	3614	1597	1716	3614	1536
Flt Permitted	0.068			0.071			0.080			0.077		
Satd. Flow (perm)	128	3455	0	133	3614	1551	149	3614	1570	139	3614	1536
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		53				106			62			98
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			633.8	
Travel Time (s)		9.7			11.0			10.0			32.6	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	1%	1%	0%	4%	1%	4%
Adj. Flow (vph)	235	819	376	186	1231	232	211	1129	141	236	1101	200
Shared Lane Traffic (%)												
Lane Group Flow (vph)	235	1195	0	186	1231	232	211	1129	141	236	1101	200
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template		Thru		Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0		2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0		0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6		2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4		4	8		8
Detector Phase	5	2		1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1		9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	19.6	65.2		16.8	62.4	62.4	18.2	58.0	58.0	20.0	59.8	59.8
Total Split (%)	12.3%	40.8%		10.5%	39.0%	39.0%	11.4%	36.3%	36.3%	12.5%	37.4%	37.4%
Maximum Green (s)	16.6	59.1		13.8	56.3	56.3	15.2	50.3	50.3	17.0	52.1	52.1
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1		0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1		3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0			7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0			11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	78.8	59.2		73.1	56.3	56.3	70.2	50.3	50.3	73.8	52.1	52.1
Actuated g/C Ratio	0.49	0.37		0.46	0.35	0.35	0.44	0.31	0.31	0.46	0.33	0.33
v/c Ratio	1.00	0.91		0.92	0.97	0.38	0.96	0.99	0.26	1.02	0.94	0.35
Control Delay	103.9	57.0		86.2	69.4	22.3	94.0	79.3	23.9	108.1	67.1	22.2
Queue Delay	0.0	12.3		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.9	69.3		86.2	69.4	22.3	94.0	79.3	23.9	108.1	67.1	22.2
LOS	F	E		F	E	C	F	E	C	F	E	C
Approach Delay		75.0			64.6			76.1			67.5	
Approach LOS		E			E			E			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 160	
Natural Cycle: 95	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 70.6	Intersection LOS: E
Intersection Capacity Utilization 109.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 7: Ninth Line & Britannia Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	235	1195	186	1231	232	211	1129	141	236	1101	200
v/c Ratio	1.00	0.91	0.92	0.97	0.38	0.96	0.99	0.26	1.02	0.94	0.35
Control Delay	103.9	57.0	86.2	69.4	22.3	94.0	79.3	23.9	108.1	67.1	22.2
Queue Delay	0.0	12.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.9	69.3	86.2	69.4	22.3	94.0	79.3	23.9	108.1	67.1	22.2
Queue Length 50th (m)	~62.3	193.2	45.1	213.3	30.6	53.2	199.2	19.2	~65.8	188.7	25.1
Queue Length 95th (m)	#123.5	#229.6	#94.9	#262.5	55.5	#109.0	#249.6	38.7	#124.8	#232.0	48.5
Internal Link Dist (m)		192.6		220.1			171.1			609.8	
Turn Bay Length (m)	60.0		60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	234	1310	203	1271	614	219	1136	536	231	1176	566
Starvation Cap Reductn	0	124	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	1.01	0.92	0.97	0.38	0.96	0.99	0.26	1.02	0.94	0.35

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1233	0	0	1624	63	200
Future Volume (vph)	1233	0	0	1624	63	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3614	0	0	3614	1750	1581
Flt Permitted					0.950	
Satd. Flow (perm)	3614	0	0	3614	1750	1581
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						117
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Adj. Flow (vph)	1233	0	0	1624	63	200
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1233	0	0	1624	63	200
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	123.0			123.0	37.0	37.0
Total Split (%)	76.9%			76.9%	23.1%	23.1%
Maximum Green (s)	117.0			117.0	30.0	30.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	117.2			117.2	13.8	13.8
Actuated g/C Ratio	0.81			0.81	0.10	0.10
v/c Ratio	0.42			0.55	0.38	0.78
Control Delay	4.7			5.9	66.6	46.8
Queue Delay	0.0			0.8	0.0	0.0
Total Delay	4.7			6.7	66.6	46.8
LOS	A			A	E	D
Approach Delay	4.7			6.7	51.5	
Approach LOS	A			A	D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 144	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 9.7	Intersection LOS: A
Intersection Capacity Utilization 77.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1233	1624	63	200
v/c Ratio	0.42	0.55	0.38	0.78
Control Delay	4.7	5.9	66.6	46.8
Queue Delay	0.0	0.8	0.0	0.0
Total Delay	4.7	6.7	66.6	46.8
Queue Length 50th (m)	44.7	70.3	18.0	24.4
Queue Length 95th (m)	75.8	118.0	33.3	53.5
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2940	2940	365	422
Starvation Cap Reductn	0	902	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	0.80	0.17	0.47

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	823	1493	0	452	70
Future Volume (vph)	0	823	1493	0	452	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3614	3614	0	1767	1536
Flt Permitted					0.950	
Satd. Flow (perm)	0	3614	3614	0	1767	1536
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						26
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	1%	4%
Adj. Flow (vph)	0	823	1493	0	452	70
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	823	1493	0	452	70
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		93.0	93.0		67.0	67.0
Total Split (%)		58.1%	58.1%		41.9%	41.9%
Maximum Green (s)		87.0	87.0		60.0	60.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		87.4	87.4		41.2	41.2
Actuated g/C Ratio		0.62	0.62		0.29	0.29
v/c Ratio		0.37	0.67		0.88	0.15
Control Delay		15.1	21.0		66.7	24.0
Queue Delay		0.0	0.4		0.0	0.0
Total Delay		15.1	21.4		66.7	24.0
LOS		B	C		E	C
Approach Delay		15.1	21.4		61.0	
Approach LOS		B	C		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 141.6	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 26.9	Intersection LOS: C
Intersection Capacity Utilization 77.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	823	1493	452	70
v/c Ratio	0.37	0.67	0.88	0.15
Control Delay	15.1	21.0	66.7	24.0
Queue Delay	0.0	0.4	0.0	0.0
Total Delay	15.1	21.4	66.7	24.0
Queue Length 50th (m)	59.6	142.2	126.9	9.5
Queue Length 95th (m)	95.3	218.6	170.5	21.4
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	2230	2230	752	668
Starvation Cap Reductn	0	271	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.37	0.76	0.60	0.10

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	512	381	0	1887	2070	0
Future Volume (vph)	512	381	0	1887	2070	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	1.00
Frt	0.975	0.850				
Flt Protected	0.960					
Satd. Flow (prot)	3065	1411	0	4980	5079	0
Flt Permitted	0.960					
Satd. Flow (perm)	3065	1411	0	4980	5079	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	8	*171				
Link Speed (k/h)	60			60	60	
Link Distance (m)	186.5			202.1	230.4	
Travel Time (s)	11.2			12.1	13.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	13%	3%	0%	3%	1%	0%
Adj. Flow (vph)	528	393	0	1945	2134	0
Shared Lane Traffic (%)		27%				
Lane Group Flow (vph)	634	287	0	1945	2134	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template				Thru	Thru	
Leading Detector (m)	9.0	9.0		10.0	10.0	
Trailing Detector (m)	-1.0	-1.0		0.0	0.0	
Detector 1 Position(m)	-1.0	-1.0		0.0	0.0	
Detector 1 Size(m)	10.0	10.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	8.0	8.0		8.0	8.0	
Minimum Split (s)	25.5	25.5		24.5	24.5	
Total Split (s)	60.0	60.0		100.0	100.0	
Total Split (%)	37.5%	37.5%		62.5%	62.5%	
Maximum Green (s)	52.5	52.5		93.5	93.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.5	3.5		2.5	2.5	
Lost Time Adjust (s)	-2.5	-2.5		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	40.2	40.2		95.3	95.3	
Actuated g/C Ratio	0.28	0.28		0.65	0.65	
v/c Ratio	0.74	0.56		0.60	0.64	
Control Delay	52.9	21.3		16.0	16.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	52.9	21.3		16.0	16.9	
LOS	D	C		B	B	
Approach Delay	43.0			16.0	16.9	
Approach LOS	D			B	B	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 145.5	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 21.4	Intersection LOS: C
Intersection Capacity Utilization 88.1%	ICU Level of Service E
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 10: Winston Churchill Boulevard & 401 EB Off-Ramp

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	634	287	1945	2134
v/c Ratio	0.74	0.56	0.60	0.64
Control Delay	52.9	21.3	16.0	16.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	52.9	21.3	16.0	16.9
Queue Length 50th (m)	89.4	32.0	115.3	133.1
Queue Length 95th (m)	111.3	65.3	159.8	182.8
Internal Link Dist (m)	162.5		178.1	206.4
Turn Bay Length (m)				
Base Capacity (vph)	1166	641	3260	3325
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.45	0.60	0.64

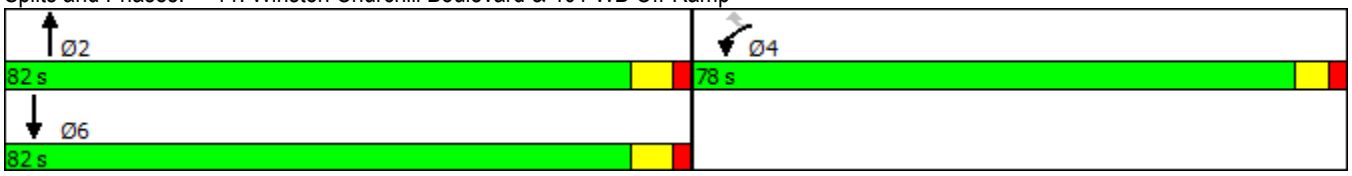
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1032	959	2082	0	0	1516
Future Volume (vph)	1032	959	2082	0	0	1516
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.91
Frt	0.963	0.850				
Flt Protected	0.964					
Satd. Flow (prot)	3334	1411	4839	0	0	4932
Flt Permitted	0.964					
Satd. Flow (perm)	3334	1411	4839	0	0	4932
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	2	*419				
Link Speed (k/h)	60		60			60
Link Distance (m)	236.3		140.6			172.2
Travel Time (s)	14.2		8.4			10.3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	3%	6%	0%	0%	4%
Adj. Flow (vph)	1064	989	2146	0	0	1563
Shared Lane Traffic (%)		35%				
Lane Group Flow (vph)	1410	643	2146	0	0	1563
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template			Thru			Thru
Leading Detector (m)	10.0	10.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	10.0	10.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	4		2			6
Permitted Phases		4				
Detector Phase	4	4	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0			8.0
Minimum Split (s)	27.5	27.5	28.5			28.5
Total Split (s)	78.0	78.0	82.0			82.0
Total Split (%)	48.8%	48.8%	51.3%			51.3%
Maximum Green (s)	71.5	71.5	74.5			74.5
Yellow Time (s)	4.0	4.0	5.0			5.0
All-Red Time (s)	2.5	2.5	2.5			2.5
Lost Time Adjust (s)	-1.5	-1.5	-2.5			-2.5
Total Lost Time (s)	5.0	5.0	5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	4.0	4.0	4.0			4.0
Recall Mode	None	None	Max			Max
Walk Time (s)	9.0	9.0	9.0			9.0
Flash Dont Walk (s)	12.0	12.0	12.0			12.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	72.7	72.7	77.0			77.0
Actuated g/C Ratio	0.46	0.46	0.48			0.48
v/c Ratio	0.93	0.74	0.92			0.66
Control Delay	52.6	17.2	46.1			33.0
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	52.6	17.2	46.1			33.0
LOS	D	B	D			C
Approach Delay	41.5		46.1			33.0
Approach LOS	D		D			C

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 159.7	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 40.9	Intersection LOS: D
Intersection Capacity Utilization 88.1%	ICU Level of Service E
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 11: Winston Churchill Boulevard & 401 WB Off-Ramp



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	1410	643	2146	1563
v/c Ratio	0.93	0.74	0.92	0.66
Control Delay	52.6	17.2	46.1	33.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	52.6	17.2	46.1	33.0
Queue Length 50th (m)	226.4	70.1	241.6	143.4
Queue Length 95th (m)	#266.7	131.0	264.9	160.3
Internal Link Dist (m)	212.3		116.6	148.2
Turn Bay Length (m)				
Base Capacity (vph)	1525	872	2333	2378
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.92	0.74	0.92	0.66

Intersection Summary

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

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	12	5	8	1166	1677	57
Future Volume (vph)	12	5	8	1166	1677	57
Ideal Flow (vphpl)	1640	1640	1640	1900	1900	1900
Storage Length (m)	0.0	0.0	25.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.995	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1527	1367	1527	3539	3522	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1527	1367	1527	3539	3522	0
Link Speed (k/h)	50			70	70	
Link Distance (m)	100.7			487.0	813.6	
Travel Time (s)	7.3			25.0	41.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	5	8	1166	1677	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	5	8	1166	1734	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.21	1.21	1.21	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.2%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	5	8	1166	1677	57
Future Volume (Veh/h)	12	5	8	1166	1677	57
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	5	8	1166	1677	57
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	2304	867	1734			
vC1, stage 1 conf vol	1706					
vC2, stage 2 conf vol	599					
vCu, unblocked vol	2304	867	1734			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	98	98			
cM capacity (veh/h)	125	296	359			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	12	5	8	583	583	1118	616
Volume Left	12	0	8	0	0	0	0
Volume Right	0	5	0	0	0	0	57
cSH	125	296	359	1700	1700	1700	1700
Volume to Capacity	0.10	0.02	0.02	0.34	0.34	0.66	0.36
Queue Length 95th (m)	2.5	0.4	0.5	0.0	0.0	0.0	0.0
Control Delay (s)	36.7	17.4	15.2	0.0	0.0	0.0	0.0
Lane LOS	E	C	C				
Approach Delay (s)	31.0		0.1			0.0	
Approach LOS	D						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	15	28	1206	1605	48
Future Volume (vph)	25	15	28	1206	1605	48
Ideal Flow (vphpl)	1640	1640	1640	1900	1900	1900
Storage Length (m)	0.0	0.0	95.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.996	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1527	1367	1527	3539	3525	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1527	1367	1527	3539	3525	0
Link Speed (k/h)	50			70	70	
Link Distance (m)	106.7			265.1	577.9	
Travel Time (s)	7.7			13.6	29.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	15	28	1206	1605	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	15	28	1206	1653	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.21	1.21	1.21	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.9%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	15	28	1206	1605	48
Future Volume (Veh/h)	25	15	28	1206	1605	48
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	25	15	28	1206	1605	48
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	2288	826	1653			
vC1, stage 1 conf vol	1629					
vC2, stage 2 conf vol	659					
vCu, unblocked vol	2288	826	1653			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	82	95	93			
cM capacity (veh/h)	136	315	386			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	25	15	28	603	603	1070	583
Volume Left	25	0	28	0	0	0	0
Volume Right	0	15	0	0	0	0	48
cSH	136	315	386	1700	1700	1700	1700
Volume to Capacity	0.18	0.05	0.07	0.35	0.35	0.63	0.34
Queue Length 95th (m)	5.2	1.2	1.9	0.0	0.0	0.0	0.0
Control Delay (s)	37.4	17.0	15.0	0.0	0.0	0.0	0.0
Lane LOS	E	C	C				
Approach Delay (s)	29.8		0.3			0.0	
Approach LOS	D						

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1979	0	0	1177	15	197
Future Volume (vph)	1979	0	0	1177	15	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	5142	0	0	5043	2935	1507
Flt Permitted					0.950	
Satd. Flow (perm)	5142	0	0	5043	2935	1507
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						16
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	4%	18%	6%
Adj. Flow (vph)	1979	0	0	1177	15	197
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1979	0	0	1177	15	197
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	109.0			109.0	51.0	51.0
Total Split (%)	68.1%			68.1%	31.9%	31.9%
Maximum Green (s)	103.0			103.0	44.0	44.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	103.2			103.2	22.0	22.0
Actuated g/C Ratio	0.75			0.75	0.16	0.16
v/c Ratio	0.52			0.31	0.03	0.78
Control Delay	8.3			6.5	47.5	71.9
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	8.3			6.5	47.5	71.9
LOS	A			A	D	E
Approach Delay	8.3			6.5	70.2	
Approach LOS	A			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 138.2	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 11.6	Intersection LOS: B
Intersection Capacity Utilization 66.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1979	1177	15	197
v/c Ratio	0.52	0.31	0.03	0.78
Control Delay	8.3	6.5	47.5	71.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.3	6.5	47.5	71.9
Queue Length 50th (m)	75.7	36.1	1.9	50.7
Queue Length 95th (m)	111.3	55.2	5.2	79.0
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3840	3766	936	491
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.52	0.31	0.02	0.40

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2566	881	0	61	64
Future Volume (vph)	0	2566	881	0	61	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	5193	5043	0	3148	1309
Flt Permitted					0.950	
Satd. Flow (perm)	0	5193	5043	0	3148	1309
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						64
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	10%	22%
Adj. Flow (vph)	0	2566	881	0	61	64
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2566	881	0	61	64
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		131.0	131.0		29.0	29.0
Total Split (%)		81.9%	81.9%		18.1%	18.1%
Maximum Green (s)		125.0	125.0		22.0	22.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		125.0	125.0		8.6	8.6
Actuated g/C Ratio		0.85	0.85		0.06	0.06
v/c Ratio		0.58	0.20		0.33	0.47
Control Delay		3.8	2.1		71.0	25.8
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		3.8	2.1		71.0	25.8
LOS		A	A		E	C
Approach Delay		3.8	2.1		47.8	
Approach LOS		A	A		D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 146.6	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 4.9	Intersection LOS: A
Intersection Capacity Utilization 66.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2566	881	61	64
v/c Ratio	0.58	0.20	0.33	0.47
Control Delay	3.8	2.1	71.0	25.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.8	2.1	71.0	25.8
Queue Length 50th (m)	63.4	13.3	9.4	0.0
Queue Length 95th (m)	82.5	18.7	17.5	15.9
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	4426	4299	472	250
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.58	0.20	0.13	0.26

Intersection Summary

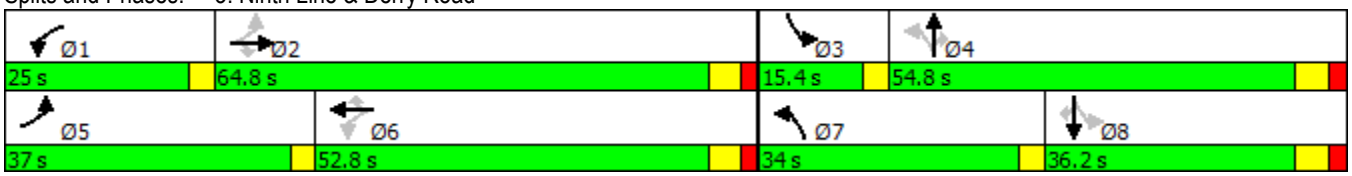
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	404	1607	166	229	763	376	341	805	430	106	568	286
Future Volume (vph)	404	1607	166	229	763	376	341	805	430	106	568	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		80.0	110.0		110.0	60.0		70.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99									
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	5193	1597	1733	5043	1566	1750	3614	1566	1716	3614	1581
Flt Permitted	0.248			0.080			0.132			0.236		
Satd. Flow (perm)	440	5193	1575	146	5043	1566	243	3614	1566	426	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			85			232			320			258
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			3067.1			145.2	
Travel Time (s)		14.1			11.0			157.7			7.5	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	1%	0%	3%	4%	2%	2%	1%	2%	4%	1%	1%
Adj. Flow (vph)	404	1607	166	229	763	376	341	805	430	106	568	286
Shared Lane Traffic (%)												
Lane Group Flow (vph)	404	1607	166	229	763	376	341	805	430	106	568	286
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template		Thru	Right		Thru	Right						
Leading Detector (m)	25.0	10.0	2.0	25.0	10.0	2.0	8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0	0.0	15.0	0.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0	0.0	15.0	0.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6	2.0	10.0	0.6	2.0	10.0	10.0	10.0	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1	30.1	9.5	30.1	30.1	9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	37.0	64.8	64.8	25.0	52.8	52.8	34.0	54.8	54.8	15.4	36.2	36.2
Total Split (%)	23.1%	40.5%	40.5%	15.6%	33.0%	33.0%	21.3%	34.3%	34.3%	9.6%	22.6%	22.6%
Maximum Green (s)	34.0	58.7	58.7	22.0	46.7	46.7	31.0	48.4	48.4	12.4	29.8	29.8
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1	2.1	0.0	2.1	2.1	0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1	6.1	3.0	6.1	6.1	3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		9.0	9.0		9.0	9.0		9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0	15.0		15.0	15.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	83.4	59.1	59.1	71.5	50.2	50.2	62.1	45.0	45.0	41.5	27.4	27.4
Actuated g/C Ratio	0.55	0.39	0.39	0.47	0.33	0.33	0.41	0.30	0.30	0.27	0.18	0.18
v/c Ratio	0.87	0.79	0.25	0.88	0.46	0.56	0.90	0.75	0.62	0.51	0.87	0.58
Control Delay	42.8	45.9	17.6	75.6	42.9	20.2	68.0	53.6	16.1	39.5	75.7	14.1
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	46.3	17.6	75.6	42.9	20.2	68.0	53.6	16.1	39.5	75.7	14.1
LOS	D	D	B	E	D	C	E	D	B	D	E	B
Approach Delay		43.4			42.1			46.5			53.3	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 151.6
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 45.5 — Intersection LOS: D
Intersection Capacity Utilization 95.4% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 3: Ninth Line & Derry Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	404	1607	166	229	763	376	341	805	430	106	568	286
v/c Ratio	0.87	0.79	0.25	0.88	0.46	0.56	0.90	0.75	0.62	0.51	0.87	0.58
Control Delay	42.8	45.9	17.6	75.6	42.9	20.2	68.0	53.6	16.1	39.5	75.7	14.1
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	46.3	17.6	75.6	42.9	20.2	68.0	53.6	16.1	39.5	75.7	14.1
Queue Length 50th (m)	79.4	178.7	17.9	57.2	74.6	38.9	90.7	125.8	29.2	21.6	97.2	7.8
Queue Length 95th (m)	#119.7	200.9	37.4	#102.1	93.2	78.4	#147.3	153.1	69.4	35.7	#122.7	38.2
Internal Link Dist (m)		210.9			158.6			3043.1			121.2	
Turn Bay Length (m)	75.0		50.0	80.0		80.0	110.0		110.0	60.0		70.0
Base Capacity (vph)	522	2023	665	304	1669	673	409	1164	721	227	714	519
Starvation Cap Reductn	0	101	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.84	0.25	0.75	0.46	0.56	0.83	0.69	0.60	0.47	0.80	0.55

Intersection Summary

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

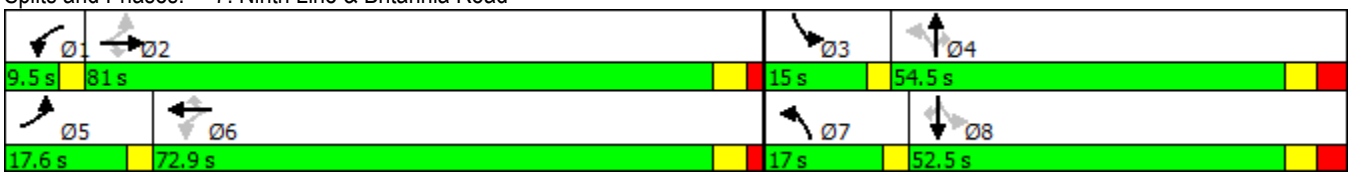
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	1641	438	83	702	195	199	802	177	130	1038	145
Future Volume (vph)	195	1641	438	83	702	195	199	802	177	130	1038	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		120.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	5193	1581	1733	5142	1439	1767	3544	1581	1608	3614	1581
Flt Permitted	0.310			0.078			0.084			0.163		
Satd. Flow (perm)	582	5193	1581	142	5142	1439	156	3544	1557	276	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			238			195			97			82
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			3067.1	
Travel Time (s)		9.7			11.0			10.0			157.7	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	3%	2%	11%	1%	3%	1%	11%	1%	1%
Adj. Flow (vph)	195	1641	438	83	702	195	199	802	177	130	1038	145
Shared Lane Traffic (%)												
Lane Group Flow (vph)	195	1641	438	83	702	195	199	802	177	130	1038	145
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template		Thru	Right	Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0	2.0	2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0	0.0	0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0	0.0	0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6	2.0	2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1	24.1	9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	17.6	81.0	81.0	9.5	72.9	72.9	17.0	54.5	54.5	15.0	52.5	52.5
Total Split (%)	11.0%	50.6%	50.6%	5.9%	45.6%	45.6%	10.6%	34.1%	34.1%	9.4%	32.8%	32.8%
Maximum Green (s)	14.6	74.9	74.9	6.5	66.8	66.8	14.0	46.8	46.8	12.0	44.8	44.8
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1	2.1	0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1	6.1	3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	87.5	74.9	74.9	78.1	68.5	68.5	65.9	47.7	47.7	60.6	44.8	44.8
Actuated g/C Ratio	0.55	0.47	0.47	0.49	0.43	0.43	0.41	0.30	0.30	0.38	0.28	0.28
v/c Ratio	0.47	0.68	0.51	0.62	0.32	0.27	0.98	0.76	0.33	0.66	1.03	0.29
Control Delay	22.4	34.8	14.7	40.7	31.0	4.4	97.1	56.6	21.4	47.2	90.8	21.4
Queue Delay	0.0	1.4	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.4	36.2	15.2	40.7	31.0	4.4	97.1	56.6	21.4	47.2	90.8	21.4
LOS	C	D	B	D	C	A	F	E	C	D	F	C
Approach Delay		31.0			26.6			58.2			78.8	
Approach LOS		C			C			E			E	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Natural Cycle: 85
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 46.7 — Intersection LOS: D
Intersection Capacity Utilization 94.2% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 7: Ninth Line & Britannia Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	195	1641	438	83	702	195	199	802	177	130	1038	145
v/c Ratio	0.47	0.68	0.51	0.62	0.32	0.27	0.98	0.76	0.33	0.66	1.03	0.29
Control Delay	22.4	34.8	14.7	40.7	31.0	4.4	97.1	56.6	21.4	47.2	90.8	21.4
Queue Delay	0.0	1.4	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.4	36.2	15.2	40.7	31.0	4.4	97.1	56.6	21.4	47.2	90.8	21.4
Queue Length 50th (m)	32.4	154.6	44.2	12.9	57.1	0.0	49.7	130.0	20.1	27.5	~194.2	15.9
Queue Length 95th (m)	47.8	171.6	76.1	#28.2	69.0	16.2	#104.6	156.0	42.8	43.7	#238.7	36.1
Internal Link Dist (m)		192.6			220.1			171.1			3043.1	
Turn Bay Length (m)	60.0		120.0	60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	428	2430	866	133	2201	727	204	1057	532	205	1011	501
Starvation Cap Reductn	0	542	139	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.87	0.60	0.62	0.32	0.27	0.98	0.76	0.33	0.63	1.03	0.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1956	0	0	876	25	280
Future Volume (vph)	1956	0	0	876	25	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	5193	0	0	5142	1608	1566
Flt Permitted					0.950	
Satd. Flow (perm)	5193	0	0	5142	1608	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						12
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	2%	11%	2%
Adj. Flow (vph)	1956	0	0	876	25	280
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1956	0	0	876	25	280
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	101.0			101.0	59.0	59.0
Total Split (%)	63.1%			63.1%	36.9%	36.9%
Maximum Green (s)	95.0			95.0	52.0	52.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	95.3			95.3	28.6	28.6
Actuated g/C Ratio	0.70			0.70	0.21	0.21
v/c Ratio	0.54			0.24	0.07	0.83
Control Delay	11.6			8.5	42.5	70.3
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	11.6			8.5	42.5	70.3
LOS	B			A	D	E
Approach Delay	11.6			8.5	68.0	
Approach LOS	B			A	E	

Intersection Summary	
Area Type:	Other
Cycle Length: 160	
Actuated Cycle Length: 136.9	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 16.2	Intersection LOS: B
Intersection Capacity Utilization 66.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1956	876	25	280
v/c Ratio	0.54	0.24	0.07	0.83
Control Delay	11.6	8.5	42.5	70.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.6	8.5	42.5	70.3
Queue Length 50th (m)	90.6	30.5	5.8	73.8
Queue Length 95th (m)	133.2	47.7	13.9	107.6
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	3613	3578	612	604
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.24	0.04	0.46

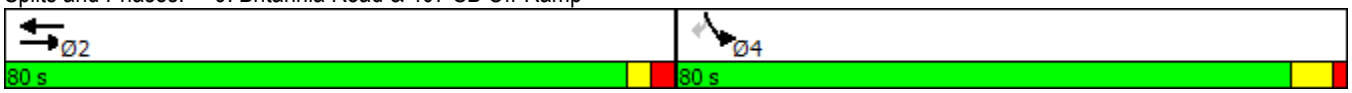
Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1547	676	0	462	27
Future Volume (vph)	0	1547	676	0	462	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	5193	5142	0	1684	1210
Flt Permitted					0.950	
Satd. Flow (perm)	0	5193	5142	0	1684	1210
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						24
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	2%	0%	6%	32%
Adj. Flow (vph)	0	1547	676	0	462	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1547	676	0	462	27
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		80.0	80.0		80.0	80.0
Total Split (%)		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)		74.0	74.0		73.0	73.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		74.4	74.4		39.6	39.6
Actuated g/C Ratio		0.59	0.59		0.31	0.31
v/c Ratio		0.51	0.22		0.88	0.07
Control Delay		17.4	13.8		60.0	11.7
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		17.4	13.8		60.0	11.7
LOS		B	B		E	B
Approach Delay		17.4	13.8		57.4	
Approach LOS		B	B		E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 127.1	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 23.7	Intersection LOS: C
Intersection Capacity Utilization 66.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1547	676	462	27
v/c Ratio	0.51	0.22	0.88	0.07
Control Delay	17.4	13.8	60.0	11.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.4	13.8	60.0	11.7
Queue Length 50th (m)	83.2	29.4	114.5	0.5
Queue Length 95th (m)	124.6	47.4	158.0	7.3
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	3040	3010	972	708
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.51	0.22	0.48	0.04

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1309	0	0	2189	94	223
Future Volume (vph)	1309	0	0	2189	94	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		210.0	120.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		90.0	
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	5142	0	0	5193	3362	1597
Flt Permitted					0.950	
Satd. Flow (perm)	5142	0	0	5193	3362	1597
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						81
Link Speed (k/h)	60			60	60	
Link Distance (m)	308.5			234.9	335.8	
Travel Time (s)	18.5			14.1	20.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	1%	3%	0%
Adj. Flow (vph)	1309	0	0	2189	94	223
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1309	0	0	2189	94	223
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	9.0	9.0
Trailing Detector (m)	0.0			0.0	-1.0	-1.0
Detector 1 Position(m)	0.0			0.0	-1.0	-1.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	24.0			24.0	25.0	25.0
Total Split (s)	113.0			113.0	47.0	47.0
Total Split (%)	70.6%			70.6%	29.4%	29.4%
Maximum Green (s)	107.0			107.0	40.0	40.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	107.2			107.2	18.3	18.3
Actuated g/C Ratio	0.77			0.77	0.13	0.13
v/c Ratio	0.33			0.54	0.21	0.80
Control Delay	5.4			7.3	53.8	56.9
Queue Delay	0.0			0.4	0.0	0.0
Total Delay	5.4			7.7	53.8	56.9
LOS	A			A	D	E
Approach Delay	5.4			7.7	56.0	
Approach LOS	A			A	E	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 138.5	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 10.9	Intersection LOS: B
Intersection Capacity Utilization 82.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: 407 NB Off-Ramp & Derry Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1309	2189	94	223
v/c Ratio	0.33	0.54	0.21	0.80
Control Delay	5.4	7.3	53.8	56.9
Queue Delay	0.0	0.4	0.0	0.0
Total Delay	5.4	7.7	53.8	56.9
Queue Length 50th (m)	36.0	77.7	12.6	40.6
Queue Length 95th (m)	56.9	118.0	21.3	70.7
Internal Link Dist (m)	284.5	210.9	311.8	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	3980	4019	973	519
Starvation Cap Reductn	0	1089	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.75	0.10	0.43

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1079	2142	0	309	486
Future Volume (vph)	0	1079	2142	0	309	486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	210.0	120.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				90.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	5043	5193	0	3429	1597
Flt Permitted					0.950	
Satd. Flow (perm)	0	5043	5193	0	3429	1597
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						3
Link Speed (k/h)		60	60		60	
Link Distance (m)		162.3	308.5		357.0	
Travel Time (s)		9.7	18.5		21.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	4%	1%	0%	1%	0%
Adj. Flow (vph)	0	1079	2142	0	309	486
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1079	2142	0	309	486
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		7.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		88.0	88.0		72.0	72.0
Total Split (%)		55.0%	55.0%		45.0%	45.0%
Maximum Green (s)		82.0	82.0		65.0	65.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		82.5	82.5		48.5	48.5
Actuated g/C Ratio		0.57	0.57		0.34	0.34
v/c Ratio		0.37	0.72		0.27	0.90
Control Delay		18.4	25.7		34.7	65.7
Queue Delay		0.0	0.2		0.0	0.0
Total Delay		18.4	25.9		34.7	65.7
LOS		B	C		C	E
Approach Delay		18.4	25.9		53.6	
Approach LOS		B	C		D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 144.1	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 29.4	Intersection LOS: C
Intersection Capacity Utilization 82.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: Derry Road & 407 SB Off-Ramp

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1079	2142	309	486
v/c Ratio	0.37	0.72	0.27	0.90
Control Delay	18.4	25.7	34.7	65.7
Queue Delay	0.0	0.2	0.0	0.0
Total Delay	18.4	25.9	34.7	65.7
Queue Length 50th (m)	62.4	165.8	34.6	137.3
Queue Length 95th (m)	92.5	233.3	46.2	185.1
Internal Link Dist (m)	138.3	284.5	333.0	
Turn Bay Length (m)			210.0	120.0
Base Capacity (vph)	2887	2973	1556	726
Starvation Cap Reductn	0	183	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.37	0.77	0.20	0.67

Intersection Summary

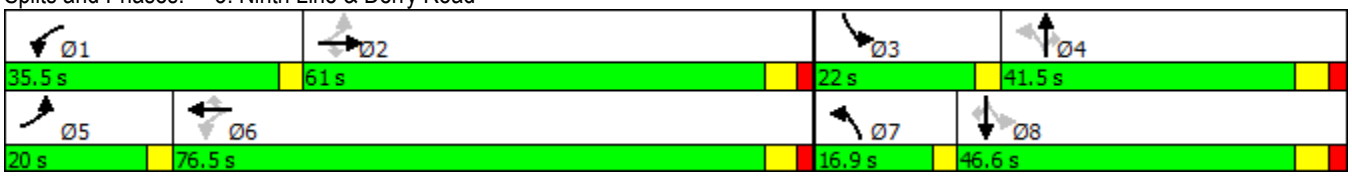
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	213	883	366	393	1733	147	178	716	309	249	968	361
Future Volume (vph)	213	883	366	393	1733	147	178	716	309	249	968	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	75.0		50.0	80.0		80.0	110.0		110.0	60.0		70.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	80.0			75.0			80.0			55.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1767	5092	1597	1767	5193	1566	1767	3614	1581	1785	3614	1581
Flt Permitted	0.065			0.222			0.114			0.105		
Satd. Flow (perm)	121	5092	1597	413	5193	1566	212	3614	1556	197	3614	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			259			102			309			208
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		234.9			182.6			3067.1			145.2	
Travel Time (s)		14.1			11.0			157.7			7.5	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	3%	0%	1%	1%	2%	1%	1%	1%	0%	1%	1%
Adj. Flow (vph)	213	883	366	393	1733	147	178	716	309	249	968	361
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	883	366	393	1733	147	178	716	309	249	968	361
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes				
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template		Thru	Right		Thru	Right						
Leading Detector (m)	25.0	10.0	2.0	25.0	10.0	2.0	8.0	10.0	8.0	8.0	10.0	8.0
Trailing Detector (m)	15.0	0.0	0.0	15.0	0.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Position(m)	15.0	0.0	0.0	15.0	0.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Detector 1 Size(m)	10.0	0.6	2.0	10.0	0.6	2.0	10.0	10.0	10.0	10.0	10.0	10.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	9.5	30.1	30.1	9.5	30.1	30.1	9.5	29.4	29.4	9.5	29.4	29.4
Total Split (s)	20.0	61.0	61.0	35.5	76.5	76.5	16.9	41.5	41.5	22.0	46.6	46.6
Total Split (%)	12.5%	38.1%	38.1%	22.2%	47.8%	47.8%	10.6%	25.9%	25.9%	13.8%	29.1%	29.1%
Maximum Green (s)	17.0	54.9	54.9	32.5	70.4	70.4	13.9	35.1	35.1	19.0	40.2	40.2
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1	2.1	0.0	2.1	2.1	0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1	6.1	3.0	6.1	6.1	3.0	6.4	6.4	3.0	6.4	6.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		9.0	9.0		9.0	9.0		9.0	9.0		9.0	9.0
Flash Dont Walk (s)		15.0	15.0		15.0	15.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	80.8	61.6	61.6	92.6	70.4	70.4	52.1	35.0	35.0	60.4	40.2	40.2
Actuated g/C Ratio	0.51	0.39	0.39	0.58	0.44	0.44	0.33	0.22	0.22	0.38	0.25	0.25
v/c Ratio	0.93	0.45	0.47	0.87	0.75	0.20	0.87	0.90	0.53	0.94	1.06	0.65
Control Delay	89.8	37.8	13.1	40.9	39.8	9.8	76.5	75.8	8.6	85.3	102.4	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.8	37.8	13.1	40.9	39.8	9.8	76.5	75.8	8.6	85.3	102.4	28.0
LOS	F	D	B	D	D	A	E	E	A	F	F	C
Approach Delay		39.2			38.1			58.6			82.7	
Approach LOS		D			D			E			F	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 159
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 52.9 — Intersection LOS: D
Intersection Capacity Utilization 99.0% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 3: Ninth Line & Derry Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	213	883	366	393	1733	147	178	716	309	249	968	361
v/c Ratio	0.93	0.45	0.47	0.87	0.75	0.20	0.87	0.90	0.53	0.94	1.06	0.65
Control Delay	89.8	37.8	13.1	40.9	39.8	9.8	76.5	75.8	8.6	85.3	102.4	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.8	37.8	13.1	40.9	39.8	9.8	76.5	75.8	8.6	85.3	102.4	28.0
Queue Length 50th (m)	53.6	79.3	23.8	68.0	176.9	8.6	41.4	124.1	0.0	65.7	~187.6	46.6
Queue Length 95th (m)	#108.5	100.9	58.9	107.0	195.8	23.5	#87.5	#159.3	27.3	#123.6	#232.1	85.1
Internal Link Dist (m)		210.9			158.6			3043.1			121.2	
Turn Bay Length (m)	75.0		50.0	80.0		80.0	110.0		110.0	60.0		70.0
Base Capacity (vph)	238	1971	777	517	2298	750	205	797	584	264	914	554
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.45	0.47	0.76	0.75	0.20	0.87	0.90	0.53	0.94	1.06	0.65

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

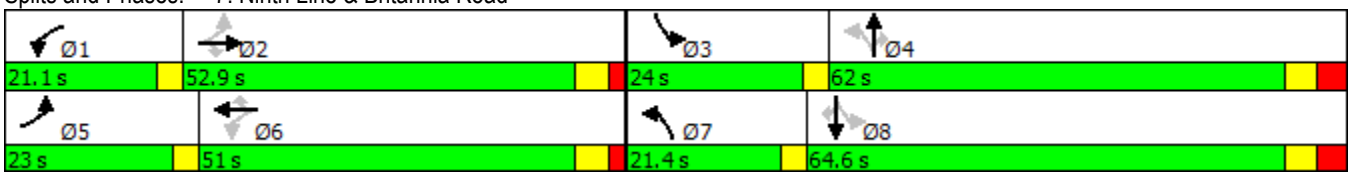
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	819	376	186	1231	232	211	1129	141	236	1101	200
Future Volume (vph)	235	819	376	186	1231	232	211	1129	141	236	1101	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	60.0		120.0	60.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	85.0			80.0			25.0			30.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	5193	1597	1785	5193	1551	1767	3614	1597	1716	3614	1536
Flt Permitted	0.083			0.245			0.077			0.074		
Satd. Flow (perm)	156	5193	1597	460	5193	1551	143	3614	1570	134	3614	1536
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			292			137			62			103
Link Speed (k/h)		80			80			70			70	
Link Distance (m)		216.6			244.1			195.1			3067.1	
Travel Time (s)		9.7			11.0			10.0			157.7	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	1%	1%	0%	4%	1%	4%
Adj. Flow (vph)	235	819	376	186	1231	232	211	1129	141	236	1101	200
Shared Lane Traffic (%)												
Lane Group Flow (vph)	235	819	376	186	1231	232	211	1129	141	236	1101	200
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					Yes			Yes			Yes	
Headway Factor	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01	1.01	0.99	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template		Thru	Right	Left	Thru	Right			Right			Right
Leading Detector (m)	25.0	10.0	2.0	2.0	10.0	2.0	25.0	10.0	2.0	25.0	10.0	2.0
Trailing Detector (m)	15.0	0.0	0.0	0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Position(m)	15.0	0.0	0.0	0.0	0.0	0.0	15.0	-3.0	0.0	15.0	-3.0	0.0
Detector 1 Size(m)	10.0	0.6	2.0	2.0	0.6	2.0	10.0	10.0	2.0	10.0	10.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	24.1	24.1	9.5	24.1	24.1	9.5	37.7	37.7	9.5	37.7	37.7
Total Split (s)	23.0	52.9	52.9	21.1	51.0	51.0	21.4	62.0	62.0	24.0	64.6	64.6
Total Split (%)	14.4%	33.1%	33.1%	13.2%	31.9%	31.9%	13.4%	38.8%	38.8%	15.0%	40.4%	40.4%
Maximum Green (s)	20.0	46.8	46.8	18.1	44.9	44.9	18.4	54.3	54.3	21.0	56.9	56.9
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1	2.1	0.0	2.1	2.1	0.0	3.7	3.7	0.0	3.7	3.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.1	6.1	3.0	6.1	6.1	3.0	7.7	7.7	3.0	7.7	7.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		12.0	12.0		12.0	12.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	69.2	48.5	48.5	63.2	45.1	45.1	73.1	51.8	51.8	78.3	54.4	54.4
Actuated g/C Ratio	0.45	0.31	0.31	0.41	0.29	0.29	0.47	0.34	0.34	0.51	0.35	0.35
v/c Ratio	0.89	0.50	0.54	0.59	0.81	0.42	0.87	0.93	0.25	0.89	0.86	0.33
Control Delay	75.6	45.5	13.7	35.2	56.8	21.2	73.3	63.8	22.0	75.3	55.2	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.6	45.5	13.7	35.2	56.8	21.2	73.3	63.8	22.0	75.3	55.2	19.0
LOS	E	D	B	D	E	C	E	E	C	E	E	B
Approach Delay		42.1			49.3			61.2			53.6	
Approach LOS		D			D			E			D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 154.4	
Natural Cycle: 85	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 51.6	Intersection LOS: D
Intersection Capacity Utilization 99.3%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 7: Ninth Line & Britannia Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	235	819	376	186	1231	232	211	1129	141	236	1101	200
v/c Ratio	0.89	0.50	0.54	0.59	0.81	0.42	0.87	0.93	0.25	0.89	0.86	0.33
Control Delay	75.6	45.5	13.7	35.2	56.8	21.2	73.3	63.8	22.0	75.3	55.2	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.6	45.5	13.7	35.2	56.8	21.2	73.3	63.8	22.0	75.3	55.2	19.0
Queue Length 50th (m)	60.2	83.0	20.7	38.3	143.3	24.9	50.9	191.5	18.4	59.6	179.8	22.5
Queue Length 95th (m)	#110.8	99.8	56.2	56.9	162.8	52.2	#95.3	#233.1	37.2	#108.0	210.3	44.8
Internal Link Dist (m)		192.6			220.1			171.1			3043.1	
Turn Bay Length (m)	60.0		120.0	60.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	281	1632	702	352	1517	549	263	1277	594	284	1338	633
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.50	0.54	0.53	0.81	0.42	0.80	0.88	0.24	0.83	0.82	0.32

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1233	0	0	1624	63	200
Future Volume (vph)	1233	0	0	1624	63	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)		0.0	0.0		0.0	70.0
Storage Lanes		0	0		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	5193	0	0	5193	1750	1581
Flt Permitted					0.950	
Satd. Flow (perm)	5193	0	0	5193	1750	1581
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						79
Link Speed (k/h)	80			80	60	
Link Distance (m)	303.1			216.6	147.8	
Travel Time (s)	13.6			9.7	8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Adj. Flow (vph)	1233	0	0	1624	63	200
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1233	0	0	1624	63	200
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2			2	1	1
Detector Template	Thru			Thru		
Leading Detector (m)	10.0			10.0	10.0	10.0
Trailing Detector (m)	0.0			0.0	0.0	0.0
Detector 1 Position(m)	0.0			0.0	0.0	0.0
Detector 1 Size(m)	0.6			0.6	10.0	10.0
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	0.0
Detector 1 Queue (s)	0.0			0.0	0.0	0.0
Detector 1 Delay (s)	0.0			0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			NA	Prot	Perm

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			2	4	
Permitted Phases						4
Detector Phase	2			2	4	4
Switch Phase						
Minimum Initial (s)	12.0			12.0	7.0	7.0
Minimum Split (s)	25.0			25.0	25.0	25.0
Total Split (s)	106.0			106.0	54.0	54.0
Total Split (%)	66.3%			66.3%	33.8%	33.8%
Maximum Green (s)	100.0			100.0	47.0	47.0
Yellow Time (s)	3.0			3.0	5.0	5.0
All-Red Time (s)	3.0			3.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	100.2			100.2	15.6	15.6
Actuated g/C Ratio	0.78			0.78	0.12	0.12
v/c Ratio	0.31			0.40	0.30	0.77
Control Delay	4.8			5.4	54.4	51.8
Queue Delay	0.0			0.2	0.0	0.0
Total Delay	4.8			5.6	54.4	51.8
LOS	A			A	D	D
Approach Delay	4.8			5.6	52.5	
Approach LOS	A			A	D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 128.8	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 9.2	Intersection LOS: A
Intersection Capacity Utilization 64.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: 407 NB Off-Ramp & Britannia Road

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1233	1624	63	200
v/c Ratio	0.31	0.40	0.30	0.77
Control Delay	4.8	5.4	54.4	51.8
Queue Delay	0.0	0.2	0.0	0.0
Total Delay	4.8	5.6	54.4	51.8
Queue Length 50th (m)	29.8	43.5	15.6	31.7
Queue Length 95th (m)	47.1	67.4	29.8	59.2
Internal Link Dist (m)	279.1	192.6	123.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	4038	4038	639	627
Starvation Cap Reductn	0	1330	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.31	0.60	0.10	0.32

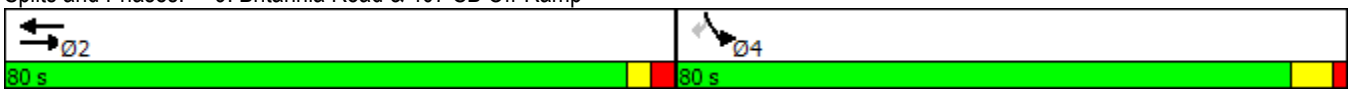
Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	823	1493	0	452	70
Future Volume (vph)	0	823	1493	0	452	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.5	3.5
Storage Length (m)	0.0			0.0	0.0	70.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	5193	5193	0	1767	1536
Flt Permitted					0.950	
Satd. Flow (perm)	0	5193	5193	0	1767	1536
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						13
Link Speed (k/h)		80	80		60	
Link Distance (m)		264.8	303.1		178.8	
Travel Time (s)		11.9	13.6		10.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	1%	4%
Adj. Flow (vph)	0	823	1493	0	452	70
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	823	1493	0	452	70
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	1.01	1.01
Turning Speed (k/h)	25			15	25	15
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru			
Leading Detector (m)		10.0	10.0		9.0	9.0
Trailing Detector (m)		0.0	0.0		-1.0	-1.0
Detector 1 Position(m)		0.0	0.0		-1.0	-1.0
Detector 1 Size(m)		0.6	0.6		10.0	10.0
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Perm

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		2	2		4	
Permitted Phases						4
Detector Phase		2	2		4	4
Switch Phase						
Minimum Initial (s)		12.0	12.0		7.0	7.0
Minimum Split (s)		24.0	24.0		25.0	25.0
Total Split (s)		80.0	80.0		80.0	80.0
Total Split (%)		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)		74.0	74.0		73.0	73.0
Yellow Time (s)		3.0	3.0		5.0	5.0
All-Red Time (s)		3.0	3.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	6.0		7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		Max	Max		None	None
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		74.4	74.4		36.7	36.7
Actuated g/C Ratio		0.60	0.60		0.30	0.30
v/c Ratio		0.26	0.48		0.87	0.15
Control Delay		13.0	15.6		58.5	26.1
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		13.0	15.6		58.5	26.1
LOS		B	B		E	C
Approach Delay		13.0	15.6		54.2	
Approach LOS		B	B		D	

Intersection Summary	
Area Type: Other	
Cycle Length: 160	
Actuated Cycle Length: 124.1	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 21.9	Intersection LOS: C
Intersection Capacity Utilization 64.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 9: Britannia Road & 407 SB Off-Ramp



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	823	1493	452	70
v/c Ratio	0.26	0.48	0.87	0.15
Control Delay	13.0	15.6	58.5	26.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.0	15.6	58.5	26.1
Queue Length 50th (m)	34.4	73.8	109.4	10.7
Queue Length 95th (m)	54.9	111.6	150.8	22.0
Internal Link Dist (m)	240.8	279.1	154.8	
Turn Bay Length (m)				70.0
Base Capacity (vph)	3111	3111	1044	913
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.26	0.48	0.43	0.08

Intersection Summary

APPENDIX G

Ninth Line Corridor Study (MMM) Excerpts

SHAPING NINTH LINE

Mississauga's Northwestern Gateway

Ninth Line Corridor Study

Transportation Assessment

City of Mississauga

16-13112-001-T01

COMMUNITIES

TRANSPORTATION

BUILDINGS

INFRASTRUCTURE

MMM GROUP

July 2017

7.0 FUTURE BACKGROUND CONDITIONS (BUSINESS AS USUAL)

7.1 Future Background Inputs

The future background (business as usual) volumes were developed based on the combination of general growth and traffic generated by background developments.

7.1.1 General Growth

Existing traffic volumes in Figures 2.3A and 2.3B were grown from the year of the count date to the horizon 2041 based on the compound growth rates provided by the City as shown below.

NORTH/ SOUTH DEMAND

	AM PEAK HOUR		PM PEAK HOUR	
	2011 vs 2041 Without		2011 vs 2041 Without	
Ninth Line	NB	SB	NB	SB
-btwn Britannia Rd and Eglinton Ave	1.17%	0.35%	0.49%	0.97%
-btwn Derry Rd and Britannia Rd	1.00%	0.00%	0.00%	1.05%
-btwn 401 and Derry Rd	1.36%	1.13%	0.80%	1.34%
Average	**1.19%**	**0.47%**	**0.46%**	**1.12%**

	2011 vs 2041 Without		2011 vs 2041 Without	
Winston Churchill Blvd	NB	SB	NB	SB
-btwn Britannia Rd and Eglinton Ave	1.72%	0.95%	1.19%	1.54%
-btwn Derry Rd and Britannia Rd	1.64%	1.65%	1.88%	1.87%
-btwn 401 and Derry Rd	1.15%	2.76%	3.37%	1.30%
Average	**1.48%**	**1.62%**	**2.02%**	**1.54%**

EAST/ WEST DEMAND

	AM PEAK HOUR		PM PEAK HOUR	
	2011 vs 2041 Without		2011 vs 2041 Without	
	EB	WB	EB	WB
Derry Rd btwn Eight Ln and Tenth Ln	1.94%	2.04%	1.67%	1.45%
Britannia Rd btwn Eight Ln and Tenth Ln	2.71%	2.04%	1.85%	2.39%
Eglinton Ave btwn Eight Ln and Tenth Ln	1.09%	2.08%	1.77%	1.14%
Dundas St btwn just west of 9th Ln to WCB	1.30%	1.69%	1.59%	1.56%
Average	**1.70%**	**1.95%**	**1.71%**	**1.67%**

The above growth rates are based on the City's EMME model projections and are applied on a compound basis. As per discussion with City staff, the growth rates do not assume the widening of Ninth Line within the City of Mississauga (from a two-lane cross-section to a four-lane cross-section). The purpose of this approach is to understand how much background general growth would materialize based on the current configuration of Ninth Line, since the widening of Ninth Line is primarily associated with the development of the Emerging Land Use Scenario under future total conditions. Documentation of this discussion is provided in **Appendix I**.

In addition to the City's growth rates, a 2% per annum growth rate has also been applied to the freeway off-ramp approaches at the following MTO off-ramps, as per MTO's input in Appendix I.

- Highway 401 WB/ Winston Churchill Blvd.;
- Highway 401 EB/ Winston Churchill Blvd.;
- Highway 403 WB/ Winston Churchill Blvd.;
- Highway 403 EB/ Winston Churchill Blvd.;
- Highway 403 NB/ Dundas St.; and
- Highway 403 SB/ Dundas St.

The weekday a.m. and p.m. peak hour general traffic volume growths are presented in **Figures 7.1A** and **7.1B**.

7.1.2 Background Developments

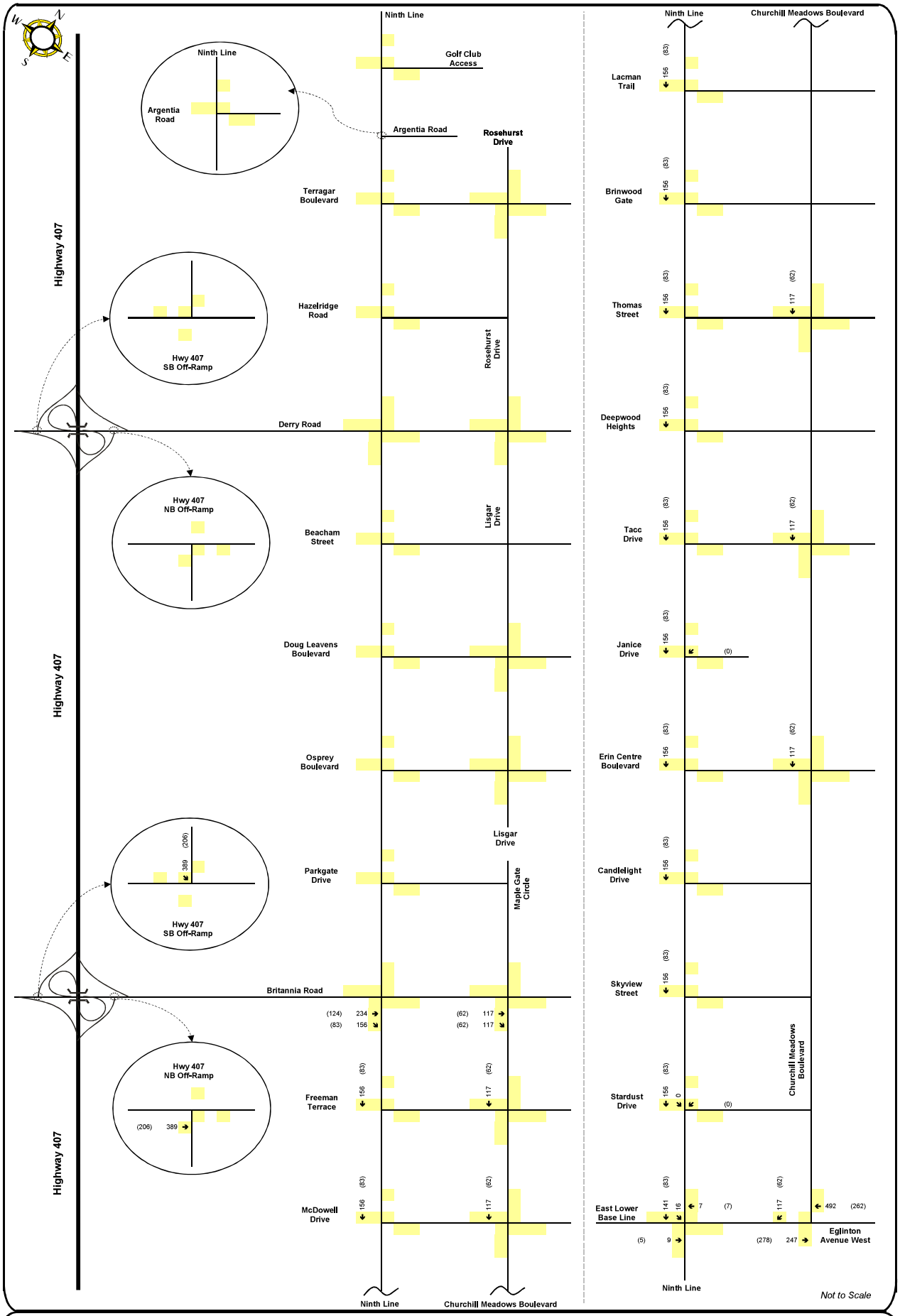
Based on discussion with City staff, the following background developments need to be considered in the future background conditions:

- Erin Mills Development – Northeast quadrant of Highway 403/407: This development comprises approximately 112,630 sq.m. of industrial park, 6,762 sq.m. of retail, and 8,074 sq.m. of office use. City staff provided a Traffic Impact Study, dated February 2014, completed by AECOM to provide context for this Ninth Line study. The site-generated traffic information was extracted and are provided in **Appendix H**. The traffic study only provides high-level site-traffic assignment information and MMM was instructed by City staff to interpret the results and incorporate the results into the future background conditions of this Ninth Line Study. The resulting site-generated traffic volumes for the Erin Mills development are shown in **Figures 7.2A** and **7.2B**.

- ProLogis Industrial Development – 10th Line at Argentia Road: This development comprises approximately 180,507 sq.m. of warehouse land use. City staff informed MMM that this background development has been incorporated in the City's EMME model and thus the growth volumes shown in Figures 7.1A and 7.1B already includes the site-generated volumes of the ProLogis development, therefore, no further forecasting was required.

7.1.3 407 Transitway Initiative

In 2008, Metrolinx's Board of Directors adopted the "Big Move", a plan that outlines a vision for a new regional transportation system, including the 407 Transitway. The Transitway is to be a separate right-of-way, located parallel to Highway 407 and includes running way, stations, platforms, parking, passenger pick-up and drop-off facilities. The Transitway will initially be implemented as bus rapid transit, with an opportunity to convert to light rail transit in the future.



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LEGEND

XX AM Peak Hour Volumes
(XX) PM Peak Hour Volumes

FIGURE 7.2A

Background Development Traffic Volumes-
Primary Study Area

Based on the 1998 Transitway Corridor Protection Study by MRC for the Ministry of Transportation Ontario (MTO), an earlier iteration of the 407 Transitway initiative consisted of three Transitway stations within the Ninth Line lands study area at Britannia Road, Derry Road and the CPR Galt station north of Derry Road. The subsequent 407 Transitway Assessment by AMEC in 2016 determined the need for only two stations within the study limits, based on comments and direction from MTO at the time of the study. The details of the two stations were not established at the time and will be determined through future Environmental Assessments (EA) in the future.

At the time of this study, Ministry of Transportation – Ontario (MTO) is in the process of initiating an EA of the 407 Transitway initiative. As a result, detailed information regarding the Transitway facilities within the Ninth Line study area is not yet available. It was confirmed with City staff that the information of the two Transitway stations at Britannia Road and Derry Road from the 1998 MRC study would be applicable for the purpose of this study. The details of the two Transitway stations based on the MRC study are provided in **Table 7.1**.

TABLE 7.1
TRANSITWAY STATION INFORMATION

Station	Interim Capacity (Spaces)	Ultimate Capacity (Spaces)
Britannia	640	640
Derry	2,160	3,360
Total	**2,800**	**4,000**

Through discussion with City staff, the ultimate parking supply shown in Table 7.1 for the Britannia and Derry Stations have been assumed to be built-out as part of the future background conditions. This provides a very conservative approach for the purpose of this assessment. It should be noted that the build-out of both stations at ultimate capacity has been assumed in both the future background and the future total conditions so as to provide an “Apples to Apples” comparison.

There are two aspects of the 407 Transitway Stations to consider for this study:

1) Auto trip generation of patrons driving to and from the stations: Based on discussion with City staff and transit experts, the following methodology has been used to forecast the trip generation associated with the 407 Transitway Stations.

   - Assume that 85% of the ultimate parking capacity is utilized during the peak periods. This would be equivalent to 0.85 auto trips per parking space.

   - Assume uniform arrival and departure rates at the stations during the morning (5:30 a.m. to 9:30 a.m.) and afternoon (3:00 p.m. to 7:00 p.m.) peak periods.

This means that the 0.85 auto trips per parking space is occupied at a rate of 0.2125 spaces per hour, or 0.2125 auto trips per hour per parking space.

- The rationale for the chosen morning and afternoon peak periods is that the majority of the trips on transit during the peak hours are work-related. Based on MMM's experience, the commuter parking lots of various transit facilities (i.e., GO Train stations) are typically near capacity well before the actual roadway morning peak hour. This is expected since those taking transit will need to account for the additional time required on transit to get to work. Similarly, commuters leaving a transit parking lot know that they can avoid the afternoon peak hour traffic congestion if they leave earlier or later. Therefore, the use of a uniform arrival and departure rate is an adequate representation of the trip generation behaviour at the future Transitway stations.

- The distribution of the 0.2125 auto trips per hour at the Transitway stations is based on information contained in the Traffic Impact Study for the Toronto Transit Commission (Proposed 650-stall Commuter Parking Lot at Downsview Subway Station – now referred to as Sheppard West Station), dated October 2002. There are many similar characteristics between the proposed parking facilities between the subway and the higher order 407 Transitway stations. For example, many of the motorists who could use this parking lot are already driving past this site on the adjacent roadways and share similar arrival and departure patterns for work-home purposes. In this study, the inbound and outbound distributions during the AM and PM peak hours were determined through parking surveys at the TTC Wilson Subway Station parking lots. The survey indicated that during the AM peak periods, all of the trips generated at the parking lot were inbound. During the PM peak periods, 90% of the trips were outbound and 10% of the trips were inbound. Based on the similarity in parking lot purposes, it was confirmed with City staff that these in/out distributions have been applied for the trips related to the 407 Transitway station parking facilities.

- Based on an arrival and departure rate of 0.2125 trips per hour per parking space, **the two Transitway stations with an ultimate parking capacity of 4,000 spaces would generate 850 inbound vehicle trips during the morning peak hour, and 85 inbound plus 765 outbound vehicle trips during the afternoon peak hour**.

- Based on the Emerging Land Use Concept and the location of the two Transitway stations, two driveways have been assumed for each station as shown in **Figure 7.5A**. It should be noted that these driveways are preliminary locations chosen for the purpose of this study. The location of the final driveways will be pending further studies as part of the Transitway evaluation.

- The Transitway trips were assigned based on the combined consideration of the distribution information extracted from the City's EMME model for the 2041 horizon year for both the AM and PM peak periods, as well as assumptions made on the forecast demographics of rider. For instance, the majority of riders were assumed to enter the study area via the easterly and westerly gateways of Derry Road and Britannia Road, the northerly and southerly gateways of Ninth Line, the residential uses on the east side of Ninth Line. The rationale is that the Transitway stations would attract riders from residential uses within a manageable distance of the stations. For example, people living in Mississauga but who are located closer to Oakville would not likely access the Derry or Britannia Transitway stations because there would likely be another Transitway station that is closer and more convenient.

- The resulting Transitway-related trip generation and assignment are shown in **Figures 7.3A** and **7.3B**.

The documentation of the confirmation on the above methodology from City Staff is provided in **Appendix I**.

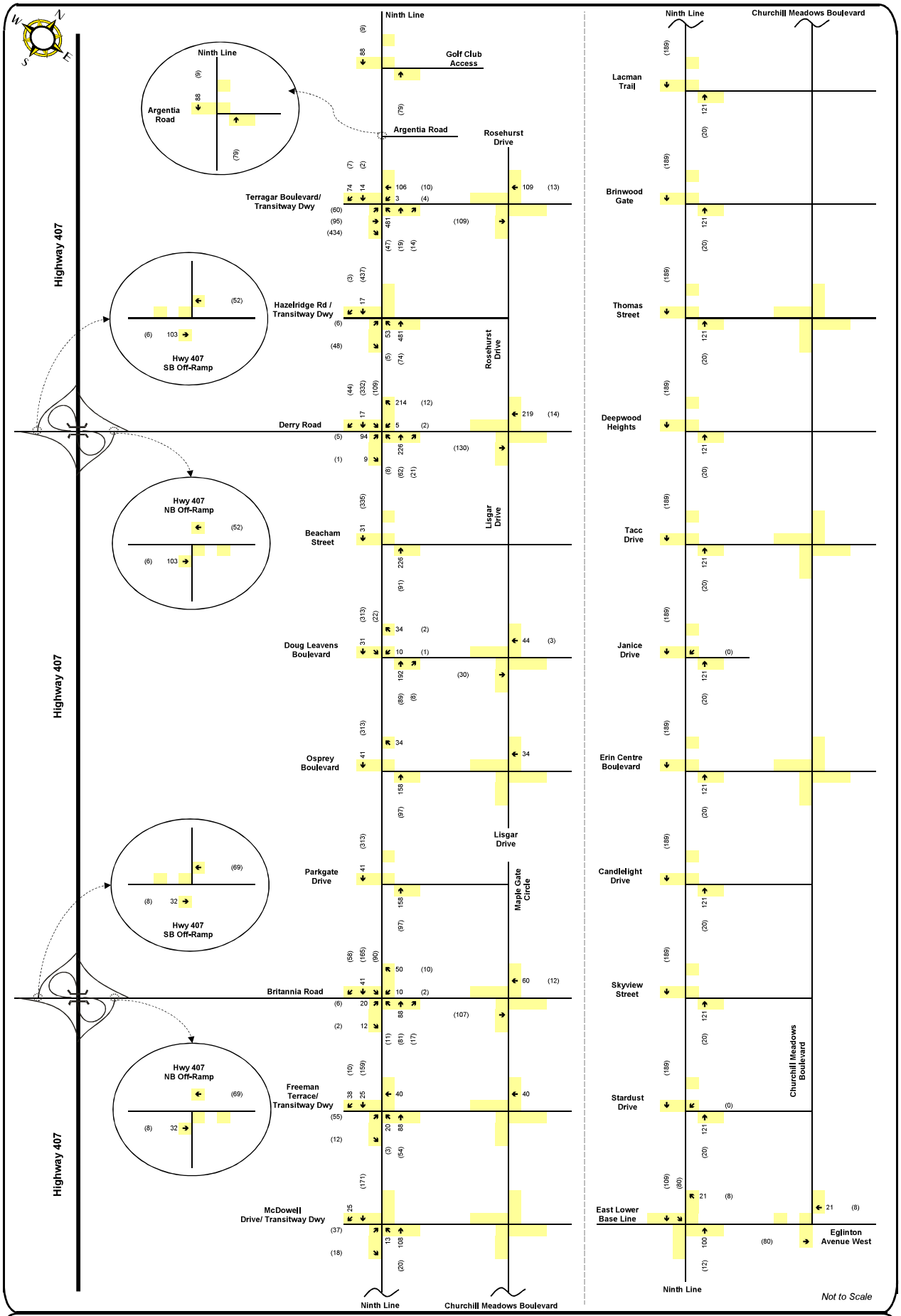
2) Influence on non-auto modal split of the land uses in the vicinity of the stations.
The non-auto modal split impacts of the two 407 Transitway stations will be discussed further in **Section 8.2** as part of the trip generation of the Emerging Land Use Concept. It should be noted that a conservative approach has been adopted where the future background non-auto modal splits have been assumed to remain the same as existing splits despite the implementation of the 407 Transitway initiative.

7.2 Future Background Volumes

The 2041 future background volumes were derived by superimposing Figures 7.1A-B, Figures 7.2A-B, and Figures 7.3A-B onto the existing volumes in Figures 2.3A-B. The resulting weekday a.m. and p.m. future background volumes are shown in **Figures 7.4A** and **7.4B**.

7.3 Future Background Improvements

There are two types of future background improvements that were incorporated in the evaluation of the business as usual conditions. The first type are those that are planned and incorporated in the City's EMME model as shown in **Appendix J**. For the second type, City staff asked MMM to identify improvements that are not planned but required to support the future background traffic volumes. Both of these types of improvements are documented below and illustrated in **Figures 7.5A** and **7.5B**.



MMM GROUP

LEGEND

XX AM Peak Hour Volumes
(XX) PM Peak Hour Volumes

FIGURE 7.3A

407 Transitway Traffic Volumes- Primary Study Area

Use has at the intersection. Further discussion of the future evaluation of this off-ramp intersection are provided in Section 9.0; and

- MTO has indicated that the intersection of Highway 401 Westbound off-ramp at Winston Churchill Boulevard is proposed to be improved in the future. Specifically, the intersection is proposed to be converted from a 3-legged intersection to a 4-legged intersection, with the new leg connecting to a new carpool lot. Upon consultation with City staff, the approach this study takes is to continue evaluating the future forecast volumes based on the current configuration of the off-ramp intersection. Since this intersection is a secondary study intersection, the focus will be on the incremental impact the Emerging Land Use has at the intersection. Further discussion of the future evaluation of this off-ramp intersection are provided in Section 9.0.

7.3.2 Additional Required Improvements

The following additional improvements have been identified by MMM to be required in order to accommodate the future background traffic volumes.

Road Widening:

- Widening of Derry Road from 4 lanes to 6 lanes from the City's westmost limit east to Winston Churchill Boulevard. This improvement is critical because the EMME model has forecast high-levels of growth on Derry Road as a result of the widening of this road within Halton Region (from 2 lanes in each direction to 3 lanes). Without this widening, traffic volumes bottleneck in the vicinity of Ninth Line creating significantly over-capacity movements at the intersections of Derry Road/Ninth Line, and Derry Road/ Rosehurst Drive/Lisgar Drive. This is further detailed in Section 7.4.

- Widening of Britannia Road from 4 lanes to 6 lanes from the City's westmost limit east to Winston Churchill Boulevard. This improvement is critical because the EMME model has forecast high-levels of growth on Britannia Road as a result of the widening of this road within Halton Region (from 1 lane in each direction to 3 lanes). Without this widening, traffic volumes bottleneck in the vicinity of Ninth Line creating significantly over-capacity movements at the intersections of Britannia Road/Ninth Line, and Britannia Road/Maple Gate Circle/Churchill Meadows Boulevard. This is further detailed in Section 7.4.

The above recommendations to Regional roads were based on findings in Section 7.4 that showed the future forecasted traffic volumes would exceed the current capacity without these additional widenings. Regional staff noted that the Region of Peel takes a more strategic and holistic approach to addressing Regional road improvements such as road widening issues, and this is articulated in the Long Range Transportation Plan (LRTP). This approach includes exploring if the Ninth

8.0 EMERGING LAND USE CONCEPT TRIP GENERATION

8.1 Land Uses

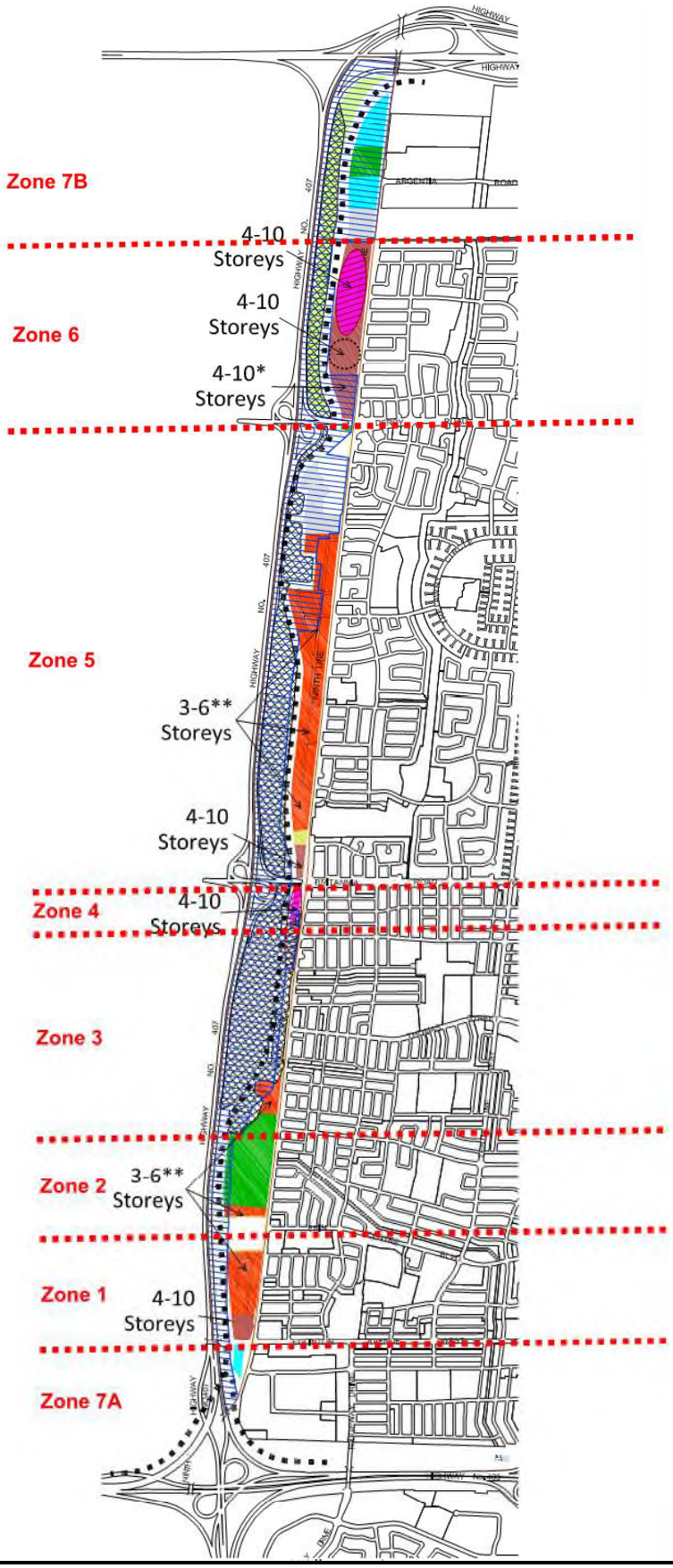
The site statistics associated with the Emerging Land Use Concept, dated September 18 2016, are provided in **Appendix N**. MMM was advised by the project team to use a population and employment forecast based on a density of a minimum 80 persons plus jobs/hectare for the purpose of this Transportation Assessment. This density is based on the most recent Provincial review of the Growth Plan and represents the planned direction for new Greenfield communities such as the Ninth Line lands. Therefore, the Ninth Line Lands have been subdivided into seven zones, as shown in **Figure 8.1**. **Table 8.1** summarizes the land uses within each zone.

Table 8.1
Emerging Land Use Concept Land Uses

Zone	Residential (units)	Commercial Retail (sq.ft. GFA)	General Office (sq.ft. GFA)	General Light Industrial (sq.ft. GFA)	Transitway Station (spaces)
1	470	--	--	–	–
2	92	--	--	--	–
3	103	--	--	–	–
4	43	1,625	--	–	640
5	1,739	26,673	--	–	–
6	1,096	7,169	--	–	3360
7A (southerly area)	--	--	3,638	26,921	--
7B (northerly area)	--	--	36,371	269,270	--
Total	**3,543**	**35,467**	**40,009**	**296,191**	**4,000**

8.2 Non-Auto Modal Splits

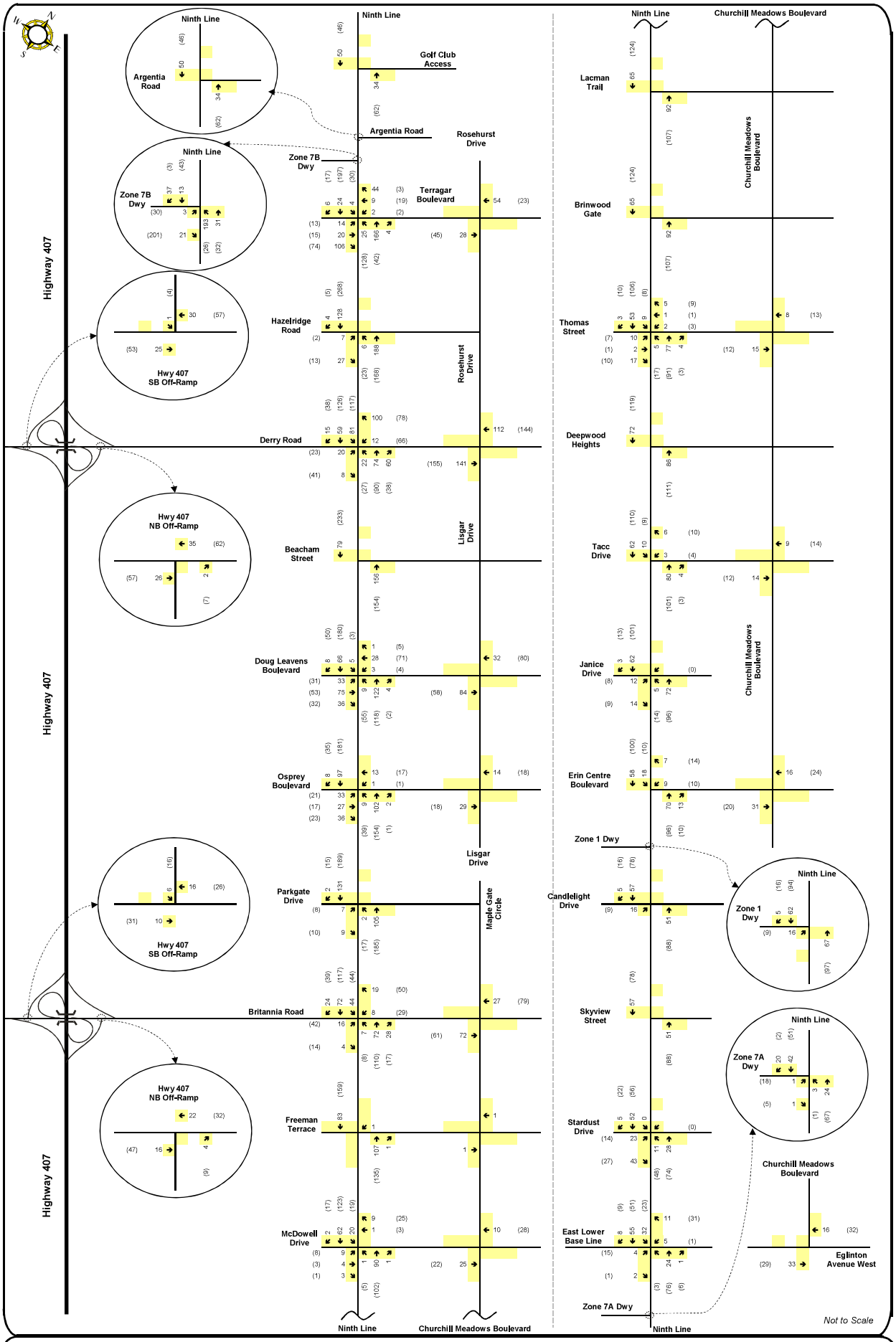
The existing non-auto modal splits for the study area (zones 3615-3617, 3809, 3637-3638, 3810-3811, 3634-3636, 3812, and 4024) for home-work trips were determined from the 2011 Transportation Tomorrow Survey (TTS). The non-auto modal split includes the percentages of public transit, cycling and walking during the weekday morning (7:00 to 9:00 a.m.) and afternoon (4:00 to 6:00 p.m.) peak periods. The existing modal split information is presented in **Table 8.2**.



MMM GROUP

FIGURE 8.1

Ninth Line Land Use Concept
Study Zones



LEGEND

XX AM Peak Hour Volumes
(XX) PM Peak Hour Volumes

MMM GROUP

FIGURE 8.2A

Emerging Land Use-Generated Volumes
(5% Non-Auto Transitway Scenario)
Primary Study Area

APPENDIX H

Ninth Line Widening Preliminary Design Drawings (CIMA+)

Class Environmental Assessment Study
Ninth Line (Regional Road 13)
Transportation Corridor Improvements
Dundas (Regional Road 5) to 407 ETR
Preliminary Preferred Plan
Dundas Street to Willam Halton Parkway

Halton REGION

June 22, 2017

CIMA

APPENDIX I

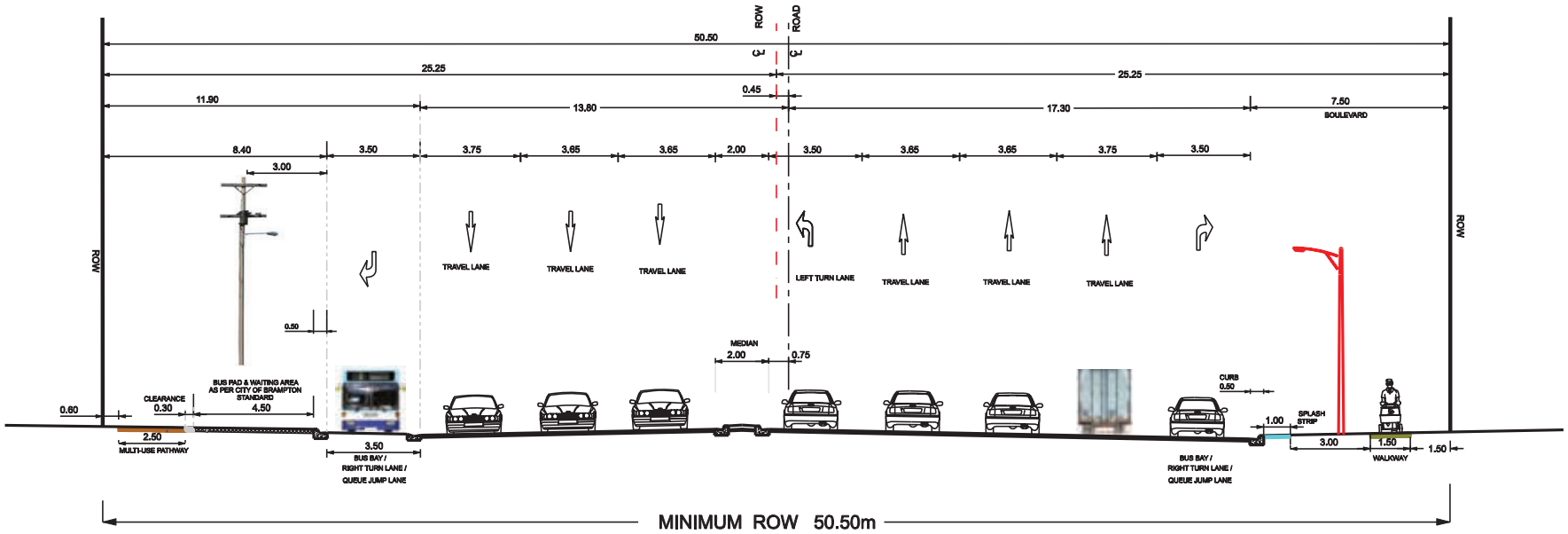
Future Roadway Improvement Information

PEEL LONG RANGE TRANSPORTATION PLAN

Update 2012

Region of Peel
Working for you

Figure 4.13: Right-of-Way Requirement for Six-Lane Road with Single Left Turn Lane



CROSS - SECTION A-A

Note:

1) Additional property / easements may be required at major culverts & stream crossings.
2) Additional property / easements may be required for grading & guide poles.
3) Traffic impact study (TIS) will determine storage requirements.

Region of Peel
Working for you

MINIMUM ROW REQUIREMENTS FOR REGIONAL ROADS
TYPICAL INTERSECTION CROSS SECTION
SIX LANE ROAD WITH SINGLE LEFT TURN LANE

December, 2010 | DRAWING No: 2A

Source: Peel Region, 2010

Figure 4.15: Planned Number of Lanes for Regional Roads for 2021

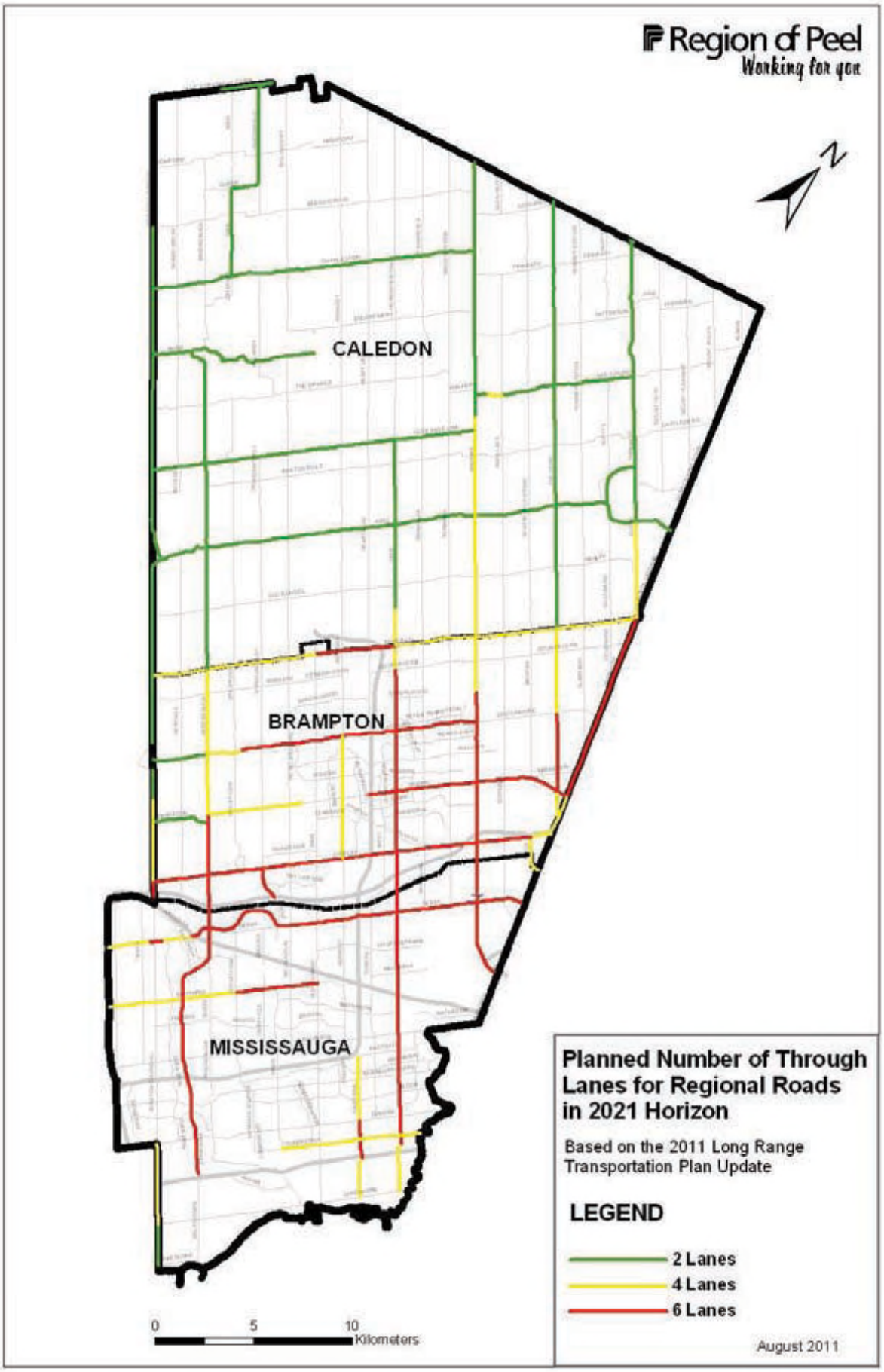
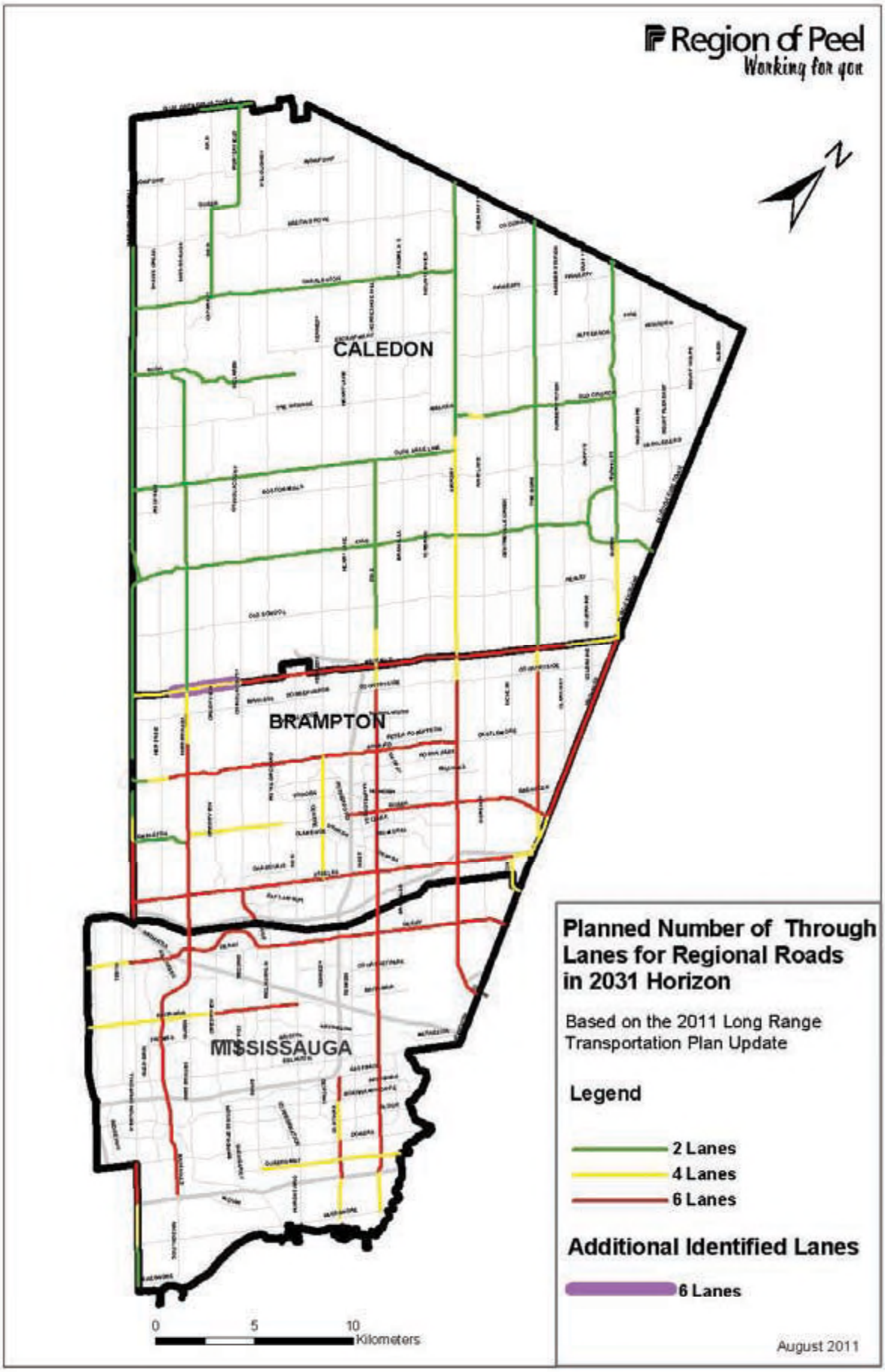


Figure 4.16: Regional Road Identified Needs for 2031



The **Road** to ***Change***

Halton Region Transportation Master Plan

2031

Halton REGION

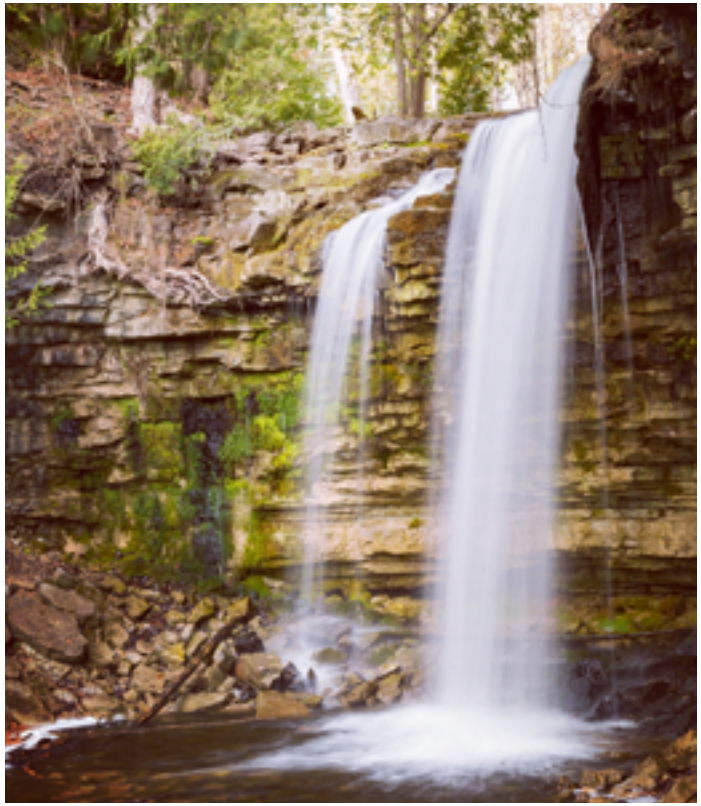
September 2011

Table 7.4 – Regional Road Infrastructure Requirements (2021 to 2031)

Project ID	RR No.	Regional Road	From	To	Improvement
6757	TBD	"5 1/2 Line"	Britannia Road	Steeles Avenue	New 6 lane construction + Interchange
6810	TBD	North Service Road	Burloak Drive	Bronte Road	New 4 lane link across Bronte Creek
6805	1	Guelph Line	Upper Middle Road	Dundas Street	Widening from 4 to 6 lanes
6823	3	Trafalgar Road	Highway 407	Britannia Road	Widening from 4 to 6 lanes
6827	3	Trafalgar Road	Britannia Road	Steeles Avenue	Widening from 4 to 6 lanes
6806	4	James Snow Parkway	Highway 407	Britannia Road	New 6 lane construction
6807	4	James Snow Parkway	Highway 401 (east)	Tremaine Road	Widening from 4 to 6 lanes
6802	6	Britannia Road	Tremaine Road	Highway 407	Widening from 4 to 6 lanes
6804	7	Derry Road	Tremaine Road	Highway 407	Widening from 4 to 6 lanes
6821	8	Steeles Avenue	Regional Road 25	Trafalgar Road	Widening from 4 to 6 lanes
6819	8	Steeles Avenue	Tremaine Road	Industrial Road	Widening from 2 to 4 lanes
6808	13	Ninth Line	Burnhamthorpe Road	Highway 407	Widening from 2 to 4 lanes
6809	13	Ninth Line	Dundas Street	Burnhamthorpe Road	Widening from 2 to 4 lanes
6824	18	Brant Street	North Service Road	Dundas Street	Widening from 4 to 6 lanes
6812	20	Appleby Line	Fairview Street	Taywood Drive	Widening from 4 to 6 lanes
6803	21	Burloak Drive	Harvester Road	Upper Middle Road	Widening from 4 to 6 lanes
6830	22	Tremaine Road	Dundas Street	Lower Base Line	Widening from 2 to 4 lanes
6834	22	Tremaine Road	Lower Base Line	Britannia Road	Widening from 2 to 4 lanes
6818	25	Regional Road 25	Speers Road	Highway 407	Widening from 4 to 6 lanes
6814	25	Regional Road 25	Highway 407	Britannia Road	Widening from 4 to 6 lanes
6815	25	Regional Road 25	Britannia Road	Derry Road	Widening from 4 to 6 lanes
6817	25	Regional Road 25	Steeles Avenue	5 Side Road	Widening from 4 to 6 lanes
6811	25	Regional Road 25	5 Side Road	10 Side Road	Widening from 2 to 4 lanes
6825	38	Upper Middle Road	Appleby Line	Burloak Drive	Widening from 4 to 6 lanes
6828	38	Upper Middle Road	Bronte Road	Neyagawa Boulevard	Widening from 4 to 6 lanes
6826	38	Upper Middle Road	Trafalgar Road	Grand Boulevard	Widening from 4 to 6 lanes
6829	38	Upper Middle Road	Ninth Line	Winston Churchill Boulevard	Widening from 4 to 6 lanes

Halton Region

Budget and Business Plan 2019



Halton REGION

Budget Report

2019-2028 TRANSPORTATION FORECAST

PROJECT FORECAST LISTING 2019 (000 DOLLARS)

PR NO	UNIQ ID#	PROJECT DESCRIPTION	Gross Cost	GROSS EXPENDITURE BY YEAR									
				2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	6802	Britannia Road - Widening from 4 to 6 lanes from Regional Road 25 to Highway 407 (MIL) (Regional Road 6)	17,254	17,254									
		EA											
		Design											
		Property											
		Utility Relocate											
		Construction	17,254	17,254									
	6804	Derry Road - Widening from 4 to 6 lanes from Tremaine Rd. to Highway 407 (MIL) (Regional Road 7)	11,315								825		10,490
		EA	825								825		
		Design	10,490										10,490
		Property											
		Utility Relocate											
		Construction											
	6819	Steeles Avenue - Widening from 2 to 4 lanes from Tremaine Road to Industrial Drive (MIL) (Regional Road 8)	15,564	1,498	3,325	226	10,515						
		EA											
		Design	1,498	1,498									
		Property	3,325		3,325								
		Utility Relocate	226			226							
		Construction	10,515				10,515						
	6821	Steeles Avenue - Widening from 4 to 6 lanes from Regional Road 25 to Trafalgar (MIL/HHS) (Regional Road 8)	62,278		825		6,561	8,476	46,416				
		EA	825		825								
		Design	6,561				6,561						
		Property	7,407					7,407					
		Utility Relocate	1,069					1,069					
		Construction	46,416						46,416				

APPENDIX J

TTS Data

Fri Mar 29 2019 12:16:44 GMT-0400 (Eastern Daylight Time) - Run Time: 1731ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of destination - pd_dest
Column: Use of Hwy 407 - hwy407

Filters:
2006 GTA zone of origin - gta06_orig In 3615, 3616, 3809, 3810, 3811
and
Start time of trip - start_time In 600-900
and
Primary travel mode of trip - mode_prime In D

Trip 2016
Table:

	Unknown	No	Yes	Sum	% use of 407	% total of trips		Route w/407	Route w/o 407
PD 1 of Toronto	77	342	0	419	0.0%	1.7%		North 407	East Derry
PD 2 of Toronto	18	76	0	94	0.0%	0.4%		North 407	East Derry
PD 3 of Toronto	92	124	17	233	12.1%	1.0%		North 407	East Derry
PD 4 of Toronto	169	53	11	233	17.2%	1.0%		North 407	East Derry
PD 5 of Toronto	81	80	18	179	18.4%	0.7%		North 407	East Derry
PD 6 of Toronto	0	25	0	25	0.0%	0.1%		North 407	East Derry
PD 7 of Toronto	164	82	0	246	0.0%	1.0%		North 407	East Derry
PD 8 of Toronto	222	225	50	497	18.2%	2.0%		North 407	East Derry
PD 9 of Toronto	229	154	88	471	36.4%	1.9%		North 407	East Derry
PD 10 of Toronto	52	218	0	270	0.0%	1.1%		North 407	East Derry
PD 11 of Toronto	35	88	0	123	0.0%	0.5%		North 407	East Derry
PD 12 of Toronto	21	22	0	43	0.0%	0.2%		North 407	East Derry
PD 13 of Toronto	40	85	0	125	0.0%	0.5%		North 407	East Derry
PD 16 of Toronto	55	75	0	130	0.0%	0.5%		North 407	East Derry
Clarington	18	0	0	18	0.0%	0.1%		North 407	East Derry
Aurora	14	0	0	14	0.0%	0.1%		North 407	East Derry
Richmond Hill	32	10	0	42	0.0%	0.2%		North 407	East Derry
Markham	76	122	10	208	7.6%	0.9%		North 407	East Derry
Vaughan	146	188	181	515	49.1%	2.1%		North 407	East Derry
Caledon	26	20	0	46	0.0%	0.2%		North 407	East Derry
Brampton	425	874	133	1432	13.2%	5.9%		North 407	East Derry
Mississauga	7942	7710	228	15880	2.9%	65.4%		micro analysis	
Halton Hills	56	140	0	196	0.0%	0.8%	AVERAGE	North 407	West Derry
Milton	106	368	0	474	0.0%	2.0%	6.6%	North 407	West Derry
Oakville	430	770	18	1218	2.3%	5.0%		South 407	South Ninth
Burlington	174	151	10	335	6.2%	1.4%		South 407	South Ninth
Dundas	0	33	0	33	0.0%	0.1%		South 407	South Ninth
Ancaster	53	0	0	53	0.0%	0.2%		South 407	South Ninth
Hamilton	134	156	0	290	0.0%	1.2%		South 407	South Ninth
St. Catharines	15	0	0	15	0.0%	0.1%		South 407	South Ninth
Waterloo	60	12	0	72	0.0%	0.3%		North 407	West Derry
Cambridge	14	111	0	125	0.0%	0.5%		North 407	West Derry
City of Guelph	106	68	0	174	0.0%	0.7%		North 407	West Derry
Haliburton	8	0	0	8	0.0%	0.0%			
Brantford	0	19	0	19	0.0%	0.1%	AVERAGE	South 407	South Ninth
External	29	0	0	29	0.0%	0.1%	1.2%	South 407	South Ninth
Sum	11119	12401	764	24284	5.8%	100.0%			

EXTERNAL TO MISSISSAUGA		
Route		
East Derry	11.5%	
North 407	6.6%	
West Derry	4.3%	
South Ninth	6.8%	
South 407	1.2%	
North Ninth	4.0%	
	34.4%	

INTERNAL TO MISSISSAUGA	
Route	
East Derry	15.0%
North 407	5.0%
West Derry	0.0%
South Ninth	25.0%
South 407	5.0%
East Doug Leavens	5.0%
East Britannia	5.0%
North Ninth	5.0%
	65.0%

TOTAL		
Route		
East Derry	26.5%	30%
North 407	11.6%	10%
West Derry	4.3%	5%
South Ninth	31.8%	30%
South 407	6.2%	5%
East Doug Leaven	5.0%	5%
East Britannia	5.0%	5%
North Ninth	9.0%	10%
	99.4%	100.0%

APPENDIX K

Signal Warrant Analysis Worksheets

Input Data Sheet

Analysis Shee | **Proposed Collision**

What are the intersecting roadways? Ninth Line and Str

What is the direction of the Main Road street? North-Sou

2036 (Future Total)

Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road? 2 or more

b.- Number of lanes on the Minor Road? 1

c.- How many approaches? 3

d.- What is the operating environment? Urban opulation >= 10,000 AND Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
7:00	3	682	0	8	0	3	0	642	19	0	0	0	0
8:00	3	682	0	8	0	3	0	642	19	0	0	0	0
9:00	3	682	0	8	0	3	0	642	19	0	0	0	0
12:00	3	682	0	8	0	3	0	642	19	0	0	0	0
13:00	3	682	0	8	0	3	0	642	19	0	0	0	0
16:00	3	682	0	8	0	3	0	642	19	0	0	0	0
17:00	3	682	0	8	0	3	0	642	19	0	0	0	0
18:00	3	682	0	8	0	3	0	642	19	0	0	0	0
Total	**24**	**5,456**	**0**	**64**	**0**	**24**	**0**	**5,136**	**152**	**0**	**0**	**0**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	0
13-24	0
25-36	0

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	10,000	5	10	5	0	0	0	0	
Factored 8 hour pedestrian volume	20,005		25		0		0		
% Assigned to crossing rate	23%		34%		30%		100%		
Net 8 Hour Pedestrian Volume at Crossing									4,610
Net 8 Hour Vehicular Volume on Street Being Crossed									2,000

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	10,000	5	10	5	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds	10	10	1	6	2	4	0	0	
Factored volume of total pedestrians	20,005		25		0		0		
Factored volume of delayed pedestrians	30		8		8		0		
% Assigned to Crossing Rate	23%		34%		30%		100%		
Net 8 Hour Volume of Total Pedestrians									4,610
Net 8 Hour Volume of Delayed Pedestrians									12

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Ninth Line and Street "B"

Count Date: 2036 (Future Total)

Justification 1: Minimum Vehicle Volumes

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 Lanes		2 or More Lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☐	FREE FLOW ☐	RESTR. FLOW ☑	7:00	8:00	9:00	12:00	13:00	16:00	17:00	18:00		
1A	480	720	600	900	1,357	1,357	1,357	1,357	1,357	1,357	1,357	1,357		
	COMPLIANCE %				100	100	100	100	100	100	100	100	800	100
1B	180	255	180	255	11	11	11	11	11	11	11	11		
	COMPLIANCE %				4	4	4	4	4	4	4	4	35	4

Restricted Flow Signal Justification 1:			
Both 1A and 1B 100% Fullfilled each of 8 hours	Yes ☐	No ☑	
Lesser of 1A or 1B at least 80% fulfilled each of 8 hours	Yes ☐	No ☑	

Justification 2: Delay to Cross Traffic

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 lanes		2 or More lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☐	FREE FLOW ☐	RESTR. FLOW ☑	7:00	8:00	9:00	12:00	13:00	16:00	17:00	18:00		
2A	480	720	600	900	1,346	1,346	1,346	1,346	1,346	1,346	1,346	1,346		
	COMPLIANCE %				100	100	100	100	100	100	100	100	800	100
2B	50	75	50	75	8	8	8	8	8	8	8	8		
	COMPLIANCE %				11	11	11	11	11	11	11	11	85	11

Restricted Flow Signal Justification 2:			
Both 2A and 2B 100% Fullfilled each of 8 hours	Yes ☐	No ☑	
Lesser of 2A or 2B at least 80% fulfilled each of 8 hours	Yes ☐	No ☑	

Justification 3: Combination

Combination Justification 1 and 2

Justification Satisfied 80% or More				Two Justifications Satisfied 80% or More	
Justification 1	Minimun Vehicular Volume	YES ☐	NO ☑	YES ☐	NO ☑
Justification 2	Delay Cross Traffic	YES ☐	NO ☑		NOT JUSTIFIED

Justification 4: Four Hour Volume

Justification	Time Period	Total Volume of Both Approaches (Main) X	Heaviest Minor Approach Y (actual)	Required Value Y (warrant threshold)	Average % Compliance	Overall % Compliance
Justification 4	7:00	1,317	14	116	12 %	12 %
	8:00	1,317	14	116	12 %	
	9:00	1,317	14	116	12 %	
	12:00	1,317	14	116	12 %	

Intersection: Ninth Line and Street "B" Count Date: 2036 (Future Total)

Justification 5: Collision Experience

Justification	Preceding Months	% Fulfillment	Overall % Compliance
Justification 5	1-12	0 %	0 %
	13-24	0 %	
	25-36	0 %	

Justification 6: Pedestrian Volume

Pedestrian Volume Analysis

8 Hour Vehicular Volume V_8		Net 8 Hour Pedestrian Volume				
		< 200	200 - 275	276 - 475	476 - 1000	>1000
Justification 6A	< 1440					
	1440 - 2600					Justified
	2601 - 7000					
	> 7000					

Pedestrian Delay Analysis

Net Total 8 Hour Volume of Total Pedestrians		Net Total 8 Hour Volume of Delayed Pedestrians		
		< 75	75 - 130	> 130
Justification 6B	< 200			
	200 - 300			
	> 300	Not Justified		

Results Sheet

Intersection: Ninth Line and Street "B"

Analysis Sheet | Proposed Collision

Input Sheet

Summary Results

Justification			Compliance	Signal Justified? YES	Signal Justified? NO
1. Minimum Vehicular Volume	A	Total Volume	100 %	☐	☑
	B	Crossing Volume	4 %		
2. Delay to Cross Traffic	A	Main Road	100 %	☐	☑
	B	Crossing Road	11 %		
3. Combination	A	Justificaton 1	4 %	☐	☑
	B	Justification 2	11 %		
4. 4-Hr Volume			12 %	☐	☑
5. Collision Experience			0 %	☐	☑
6. Pedestrians	A	Volume	Justification met	☐	☑
	B	Delay	Justification not met		

Proposed Collision Justification (Justification 5A)

Return to Justifications 1- 6

INPUT

a.- Intersection type (no input required): 3

b.- What year is the intersection being considered for traffic signals? 2004

c.- What is the collision history and annual average daily traffic over the past few years? (Please fill in table below)

Year	Traffic Volume		Impact Type/Year						
	Major AADT	Minor AADT	Approach-ing	Angle	Rear end	Sideswipe	Turning movement	SMV	Other
2000	21626	3893	0	4	5	1	4	0	0
2001	22059	3971	0	6	4	1	3	1	1
2002	22500	4050	0	7	5	2	2	1	0
2003	23300	4200	0	8	3	3	2	1	0
2004	23648	6528	0	9	0	4	1	0	0

d.- If known, please enter the expected traffic volume after signals are introduced. Otherwise, leave the cell blank.

Year	Main AADT	Minor AADT
2004		

ANALYSIS

Reducible Collisions

	2000	2001	2002	2003	2004		2004 (Signal)
Total Number of Crashes Per Year	8	9	9	10	10		---
Parameter k	0.81	0.81	0.81	0.81	0.81		0.60
Model Prediction	1.46	1.50	1.53	1.59	2.15		2.15
Ci,y	0.680	0.696	0.712	0.741	1.000		1.000
Comp. Ratio for Period	3.829						1.000

Non-reducible Collisions

	2000	2001	2002	2003	2004		2004 (Signal)
Total Number of Crashes Per Year	6	7	8	7	4		---
Parameter k	1.47	1.47	1.47	1.47	1.47		1.19
Model Prediction	1.17	1.18	1.20	1.23	1.38		1.38
$C_{i,y}$	0.849	0.860	0.870	0.890	1.000		1.000
Comp. Ratio for Period	4.469						1.000

	Reducible Collisions	Non-reducible Collisions
Total Number of Historical Crashes	46	32
Expected Annual Crashes without Signalization based on SPF	2.150	1.377
Expected Annual Crashes without Signalization	11.131	6.046
Variance of Expected Annual Crashes without Signalization	2.647	1.092
Expected Annual Crashes after Signalization based on SPF	2.089	3.286
Expected Annual Crashes after Signalization	10.813	14.425
Variance of Expected Annual Crashes after Signalization	194.857	174.867

	Reducible Collisions	Non-reducible Collisions
Weights for Unsignalized Intersections	0.27	0.18
Weights for Signalized Intersections	0.29	0.25

RESULTS

Justification	Compliance		Signal Justified? YES	Signal Justified? NO
5. Collision Experience	Net Safety Change	2.648		
	Total Collisions will after this intersection is signalized	*Increase*	☐	☑

Input Data Sheet

What are the intersecting roadways? Nin

What is the direction of the Main Road street?

Proposed Collision

Results Sheet

2036 (Future Total)

Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road? 2 or more

b.- Number of lanes on the Minor Road? 1

c.- How many approaches? 3

d.- What is the operating environment? Urban **Population >= 10,000 AND Speed < 70 km/hr**

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
7:00	9	638	0	17	0	10	0	651	16	0	0	0	0
8:00	9	638	0	17	0	10	0	651	16	0	0	0	0
9:00	9	638	0	17	0	10	0	651	16	0	0	0	0
12:00	9	638	0	17	0	10	0	651	16	0	0	0	0
13:00	9	638	0	17	0	10	0	651	16	0	0	0	0
16:00	9	638	0	17	0	10	0	651	16	0	0	0	0
17:00	9	638	0	17	0	10	0	651	16	0	0	0	0
18:00	9	638	0	17	0	10	0	651	16	0	0	0	0
Total	**72**	**5,104**	**0**	**136**	**0**	**80**	**0**	**5,208**	**128**	**0**	**0**	**0**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	0
13-24	0
25-36	0

***** Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	10,000	5	10	5	0	0	0	0	
Factored 8 hour pedestrian volume	20,005		25		0		0		
% Assigned to crossing rate	23%		34%		30%		100%		
Net 8 Hour Pedestrian Volume at Crossing									4,610
Net 8 Hour Vehicular Volume on Street Being Crossed									2,000

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	10,000	5	10	5	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds	10	10	1	6	2	4	0	0	
Factored volume of total pedestrians	20,005		25		0		0		
Factored volume of delayed pedestrians	30		8		8		0		
% Assigned to Crossing Rate	23%		34%		30%		100%		
Net 8 Hour Volume of Total Pedestrians									4,610
Net 8 Hour Volume of Delayed Pedestrians									12

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Ninth Line and Street "K"

Count Date: 2036 (Future Total)

Justification 1: Minimum Vehicle Volumes

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 Lanes		2 or More Lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☐	FREE FLOW ☐	RESTR. FLOW ☑	7:00	8:00	9:00	12:00	13:00	16:00	17:00	18:00		
1A	480	720	600	900	1,341	1,341	1,341	1,341	1,341	1,341	1,341	1,341		
	COMPLIANCE %				100	100	100	100	100	100	100	100	800	100
1B	180	255	180	255	27	27	27	27	27	27	27	27		
	COMPLIANCE %				11	11	11	11	11	11	11	11	85	11

Restricted Flow Signal Justification 1:			
Both 1A and 1B 100% Fullfilled each of 8 hours	Yes ☐	No ☑
Lesser of 1A or 1B at least 80% fulfilled each of 8 hours	Yes ☐	No ☑

Justification 2: Delay to Cross Traffic

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 lanes		2 or More lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☐	FREE FLOW ☐	RESTR. FLOW ☑	7:00	8:00	9:00	12:00	13:00	16:00	17:00	18:00		
2A	480	720	600	900	1,314	1,314	1,314	1,314	1,314	1,314	1,314	1,314		
	COMPLIANCE %				100	100	100	100	100	100	100	100	800	100
2B	50	75	50	75	17	17	17	17	17	17	17	17		
	COMPLIANCE %				23	23	23	23	23	23	23	23	181	23

Restricted Flow Signal Justification 2:		
Both 2A and 2B 100% Fullfilled each of 8 hours	Yes ☐	No ☑
Lesser of 2A or 2B at least 80% fulfilled each of 8 hours	Yes ☐	No ☑

Justification 3: Combination

Combination Justification 1 and 2

Justification Satisfied 80% or More				Two Justifications Satisfied 80% or More	
Justification 1	Minimun Vehicular Volume	YES ☐	NO ☑	YES ☐	NO ☑
Justification 2	Delay Cross Traffic	YES ☐	NO ☑		NOT JUSTIFIED

Justification 4: Four Hour Volume

Justification	Time Period	Total Volume of Both Approaches (Main) X	Heaviest Minor Approach Y (actual)	Required Value Y (warrant threshold)	Average % Compliance	Overall % Compliance
Justification 4	7:00	1,300	28	118	24 %	24 %
	8:00	1,300	28	118	24 %	
	9:00	1,300	28	118	24 %	
	12:00	1,300	28	118	24 %	

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Ninth Line and Street "K"

Count Date: 2036 (Future Total)

Justification 5: Collision Experience

Justification	Preceding Months	% Fulfillment	Overall % Compliance
Justification 5	1-12	0 %	0 %
	13-24	0 %	
	25-36	0 %	

Justification 6: Pedestrian Volume

Pedestrian Volume Analysis

8 Hour Vehicular Volume V_8		Net 8 Hour Pedestrian Volume				
		< 200	200 - 275	276 - 475	476 - 1000	>1000
Justification 6A	< 1440					
	1440 - 2600					Justified
	2601 - 7000					
	> 7000					

Pedestrian Delay Analysis

Net Total 8 Hour Volume of Total Pedestrians		Net Total 8 Hour Volume of Delayed Pedestrians		
		< 75	75 - 130	> 130
Justification 6B	< 200			
	200 - 300			
	> 300	Not Justified		

Results Sheet

Analysis Sheet | Input Sheet | Proposed Collision

Intersection: Ninth Line and Street "K" ure Total)

Summary Results

Justification			Compliance	Signal Justified? YES	Signal Justified? NO
1. Minimum Vehicular Volume	A	Total Volume	100 %	☐	☑
	B	Crossing Volume	11 %		
2. Delay to Cross Traffic	A	Main Road	100 %	☐	☑
	B	Crossing Road	23 %		
3. Combination	A	Justificaton 1	11 %	☐	☑
	B	Justification 2	23 %		
4. 4-Hr Volume			24 %	☐	☑
5. Collision Experience			0 %	☐	☑
6. Pedestrians	A	Volume	Justification met	☐	☑
	B	Delay	Justification not met		

Proposed Collision Justification (Justification 5A)

Return to Justifications 1- 6

INPUT

a.- Intersection type (no input required): 3

b.- What year is the intersection being considered for traffic signals? 2004

c.- What is the collision history and annual average daily traffic over the past few years? (Please fill in table below)

Year	Traffic Volume		Impact Type/Year						
	Major AADT	Minor AADT	Approach-ing	Angle	Rear end	Sideswipe	Turning movement	SMV	Other
2000	21626	3893	0	4	5	1	4	0	0
2001	22059	3971	0	6	4	1	3	1	1
2002	22500	4050	0	7	5	2	2	1	0
2003	23300	4200	0	8	3	3	2	1	0
2004	23648	6528	0	9	0	4	1	0	0

d.- If known, please enter the expected traffic volume after signals are introduced. Otherwise, leave the cell blank.

Year	Main AADT	Minor AADT
2004		

ANALYSIS

Reducible Collisions

	2000	2001	2002	2003	2004		2004 (Signal)
Total Number of Crashes Per Year	8	9	9	10	10		---
Parameter k	0.81	0.81	0.81	0.81	0.81		0.60
Model Prediction	1.46	1.50	1.53	1.59	2.15		2.15
Ci,y	0.680	0.696	0.712	0.741	1.000		1.000
Comp. Ratio for Period	3.829						1.000

Non-reducible Collisions

	2000	2001	2002	2003	2004		2004 (Signal)
Total Number of Crashes Per Year	6	7	8	7	4		---
Parameter k	1.47	1.47	1.47	1.47	1.47		1.19
Model Prediction	1.17	1.18	1.20	1.23	1.38		1.38
$C_{i,y}$	0.849	0.860	0.870	0.890	1.000		1.000
Comp. Ratio for Period	4.469						1.000

	Reducible Collisions	Non-reducible Collisions
Total Number of Historical Crashes	46	32
Expected Annual Crashes without Signalization based on SPF	2.150	1.377
Expected Annual Crashes without Signalization	11.131	6.046
Variance of Expected Annual Crashes without Signalization	2.647	1.092
Expected Annual Crashes after Signalization based on SPF	2.089	3.286
Expected Annual Crashes after Signalization	10.813	14.425
Variance of Expected Annual Crashes after Signalization	194.857	174.867

	Reducible Collisions	Non-reducible Collisions
Weights for Unsignalized Intersections	0.27	0.18
Weights for Signalized Intersections	0.29	0.25

RESULTS

Justification	Compliance		Signal Justified? YES	Signal Justified? NO
5. Collision Experience	Net Safety Change	2.648		
	Total Collisions will after this intersection is signalized	*Increase*	☐	☑

Input Data Sheet

What are the intersecting roadways? Nin

What is the direction of the Main Road street?

Proposed Collision

Results Sheet

2036 (Future Total)

Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road? 2 or more

b.- Number of lanes on the Minor Road? 1

c.- How many approaches? 4

d.- What is the operating environment? Urban **Population >= 10,000 AND Speed < 70 km/hr**

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
7:00	11	617	26	12	0	17	20	614	40	19	0	23	0
8:00	11	617	26	12	0	17	20	614	40	19	0	23	0
9:00	11	617	26	12	0	17	20	614	40	19	0	23	0
12:00	11	617	26	12	0	17	20	614	40	19	0	23	0
13:00	11	617	26	12	0	17	20	614	40	19	0	23	0
16:00	11	617	26	12	0	17	20	614	40	19	0	23	0
17:00	11	617	26	12	0	17	20	614	40	19	0	23	0
18:00	11	617	26	12	0	17	20	614	40	19	0	23	0
Total	**88**	**4,936**	**208**	**96**	**0**	**136**	**160**	**4,912**	**320**	**152**	**0**	**184**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	0
13-24	0
25-36	0

***** Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	10,000	5	10	5	0	0	0	0	
Factored 8 hour pedestrian volume	20,005		25		0		0		
% Assigned to crossing rate	23%		34%		30%		100%		
Net 8 Hour Pedestrian Volume at Crossing									4,610
Net 8 Hour Vehicular Volume on Street Being Crossed									2,000

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	10,000	5	10	5	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds	10	10	1	6	2	4	0	0	
Factored volume of total pedestrians	20,005		25		0		0		
Factored volume of delayed pedestrians	30		8		8		0		
% Assigned to Crossing Rate	23%		34%		30%		100%		
Net 8 Hour Volume of Total Pedestrians									4,610
Net 8 Hour Volume of Delayed Pedestrians									12

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Ninth Line and Street "O" / Foxwood Avenue

Count Date: 2036 (Future Total)

Justification 1: Minimum Vehicle Volumes

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 Lanes		2 or More Lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☐	FREE FLOW ☐	RESTR. FLOW ☑	7:00	8:00	9:00	12:00	13:00	16:00	17:00	18:00		
1A	480	720	600	900	1,399	1,399	1,399	1,399	1,399	1,399	1,399	1,399		
	COMPLIANCE %				100	100	100	100	100	100	100	100	800	100
1B	120	170	120	170	71	71	71	71	71	71	71	71		
	COMPLIANCE %				42	42	42	42	42	42	42	42	334	42

Restricted Flow Signal Justification 1:			
Both 1A and 1B 100% Fullfilled each of 8 hours	Yes ☐	No ☑	
Lesser of 1A or 1B at least 80% fulfilled each of 8 hours	Yes ☐	No ☑	

Justification 2: Delay to Cross Traffic

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 lanes		2 or More lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☐	FREE FLOW ☐	RESTR. FLOW ☑	7:00	8:00	9:00	12:00	13:00	16:00	17:00	18:00		
2A	480	720	600	900	1,328	1,328	1,328	1,328	1,328	1,328	1,328	1,328		
	COMPLIANCE %				100	100	100	100	100	100	100	100	800	100
2B	50	75	50	75	31	31	31	31	31	31	31	31		
	COMPLIANCE %				41	41	41	41	41	41	41	41	331	41

Restricted Flow Signal Justification 2:			
Both 2A and 2B 100% Fullfilled each of 8 hours	Yes ☐	No ☑	
Lesser of 2A or 2B at least 80% fulfilled each of 8 hours	Yes ☐	No ☑	

Justification 3: Combination

Combination Justification 1 and 2

Justification Satisfied 80% or More				Two Justifications Satisfied 80% or More	
Justification 1	Minimun Vehicular Volume	YES ☐	NO ☑	YES ☐	NO ☑
Justification 2	Delay Cross Traffic	YES ☐	NO ☑		NOT JUSTIFIED

Justification 4: Four Hour Volume

Justification	Time Period	Total Volume of Both Approaches (Main) X	Heaviest Minor Approach Y (actual)	Required Value Y (warrant threshold)	Average % Compliance	Overall % Compliance
Justification 4	7:00	1,341	42	115	37 %	37 %
	8:00	1,341	42	115	37 %	
	9:00	1,341	42	115	37 %	
	12:00	1,341	42	115	37 %	

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Ninth Line and Street "O" / Foxwood Avenue

Count Date: 2036 (Future Total)

Justification 5: Collision Experience

Justification	Preceding Months	% Fulfillment	Overall % Compliance
Justification 5	1-12	0 %	0 %
	13-24	0 %	
	25-36	0 %	

Justification 6: Pedestrian Volume

Pedestrian Volume Analysis

8 Hour Vehicular Volume V_8		Net 8 Hour Pedestrian Volume				
		< 200	200 - 275	276 - 475	476 - 1000	>1000
Justification 6A	< 1440					
	1440 - 2600					Justified
	2601 - 7000					
	> 7000					

Pedestrian Delay Analysis

Net Total 8 Hour Volume of Total Pedestrians		Net Total 8 Hour Volume of Delayed Pedestrians		
		< 75	75 - 130	> 130
Justification 6B	< 200			
	200 - 300			
	> 300	Not Justified		

Results Sheet

Analysis Sheet | Proposed Collision

Intersection: Ninth Line and Street "O" / F

Input Sheet

Summary Results

Justification					
1. Minimum Vehicular Volume	A	Total Volume	100 %	☐	☑
	B	Crossing Volume	42 %		
2. Delay to Cross Traffic	A	Main Road	100 %	☐	☑
	B	Crossing Road	41 %		
3. Combination	A	Justificaton 1	42 %	☐	☑
	B	Justification 2	41 %		
4. 4-Hr Volume			37 %	☐	☑
5. Collision Experience			0 %	☐	☑
6. Pedestrians	A	Volume	Justification met	☐	☑
	B	Delay	Justification not met		

Proposed Collision Justification (Justification 5A)

Return to Justifications 1- 6

INPUT

a.- Intersection type (no input required): 3

b.- What year is the intersection being considered for traffic signals? 2004

c.- What is the collision history and annual average daily traffic over the past few years? (Please fill in table below)

Year	Traffic Volume		Impact Type/Year						
	Major AADT	Minor AADT	Approach-ing	Angle	Rear end	Sideswipe	Turning movement	SMV	Other
2000	21626	3893	0	4	5	1	4	0	0
2001	22059	3971	0	6	4	1	3	1	1
2002	22500	4050	0	7	5	2	2	1	0
2003	23300	4200	0	8	3	3	2	1	0
2004	23648	6528	0	9	0	4	1	0	0

d.- If known, please enter the expected traffic volume after signals are introduced. Otherwise, leave the cell blank.

Year	Main AADT	Minor AADT
2004		

ANALYSIS

Reducible Collisions

	2000	2001	2002	2003	2004		2004 (Signal)
Total Number of Crashes Per Year	8	9	9	10	10		---
Parameter k	0.81	0.81	0.81	0.81	0.81		0.60
Model Prediction	1.46	1.50	1.53	1.59	2.15		2.15
Ci,y	0.680	0.696	0.712	0.741	1.000		1.000
Comp. Ratio for Period	3.829						1.000

Non-reducible Collisions

	2000	2001	2002	2003	2004		2004 (Signal)
Total Number of Crashes Per Year	6	7	8	7	4		---
Parameter k	1.47	1.47	1.47	1.47	1.47		1.19
Model Prediction	1.17	1.18	1.20	1.23	1.38		1.38
$C_{i,y}$	0.849	0.860	0.870	0.890	1.000		1.000
Comp. Ratio for Period	4.469						1.000

	Reducible Collisions	Non-reducible Collisions
Total Number of Historical Crashes	46	32
Expected Annual Crashes without Signalization based on SPF	2.150	1.377
Expected Annual Crashes without Signalization	11.131	6.046
Variance of Expected Annual Crashes without Signalization	2.647	1.092
Expected Annual Crashes after Signalization based on SPF	2.089	3.286
Expected Annual Crashes after Signalization	10.813	14.425
Variance of Expected Annual Crashes after Signalization	194.857	174.867

	Reducible Collisions	Non-reducible Collisions
Weights for Unsignalized Intersections	0.27	0.18
Weights for Signalized Intersections	0.29	0.25

RESULTS

Justification	Compliance		Signal Justified? YES	Signal Justified? NO
5. Collision Experience	Net Safety Change	2.648		
	Total Collisions will after this intersection is signalized	*Increase*	☐	☑

APPENDIX L

Left-Turn Lane Warrant Analysis Worksheets

NINTH LINE AND STREET "B"
2036 FUTURE TOTAL CONDITIONS
NORTHBOUND LEFT-TURN LANE

AM PEAK HOUR

VL = 2 veh/hr
VO = 907 veh/hr

REQ = None

PM PEAK HOUR

VL = 8 veh/hr
VO = 1734 veh/hr

REQ = 25m

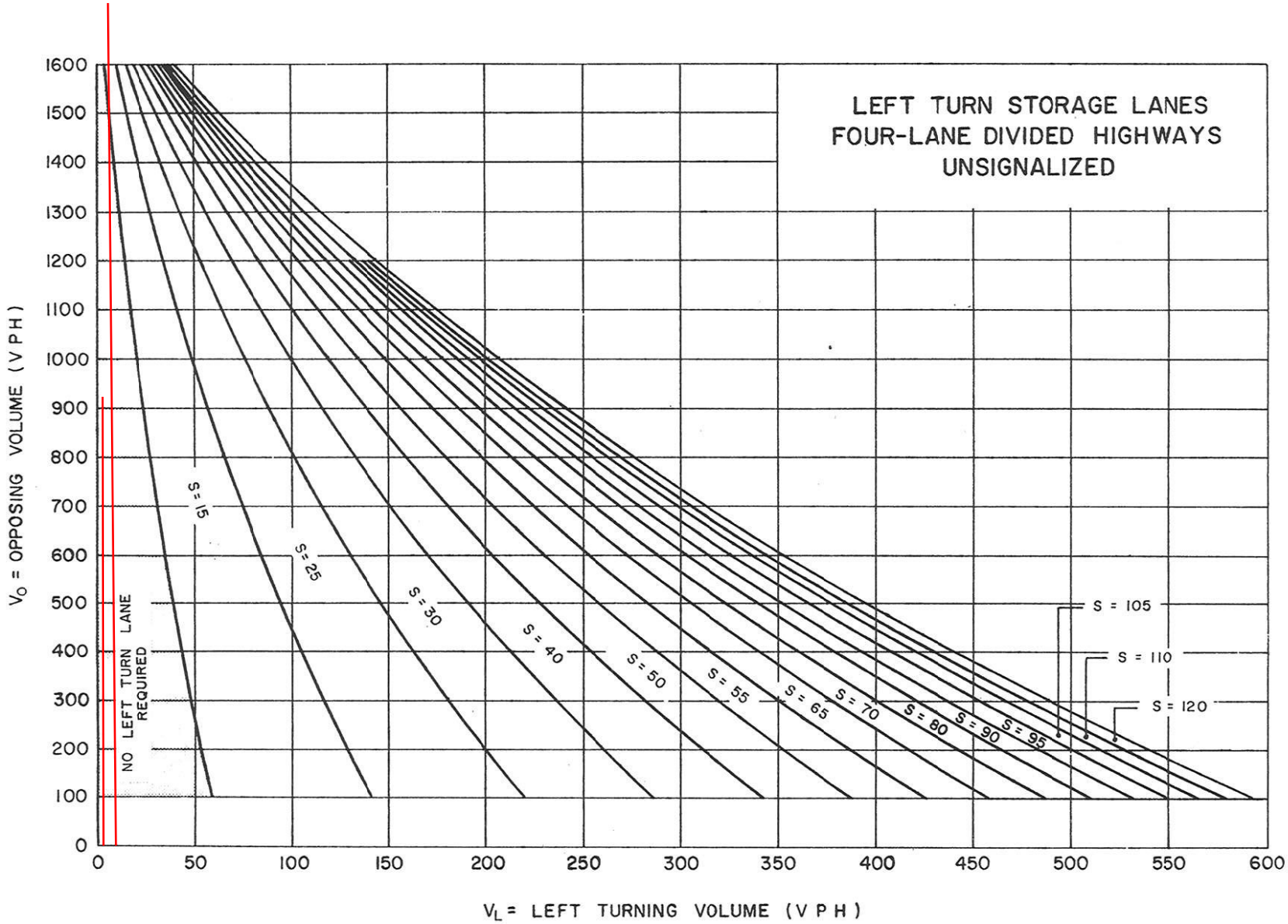


Figure EC-1

EC-2

94-06

NINTH LINE AND STREET "B"
2023 FUTURE TOTAL CONDITIONS
(TWO - LANE SCENARIO)
NORTHBOUND LEFT - TURN LANE

AM PEAK HOUR

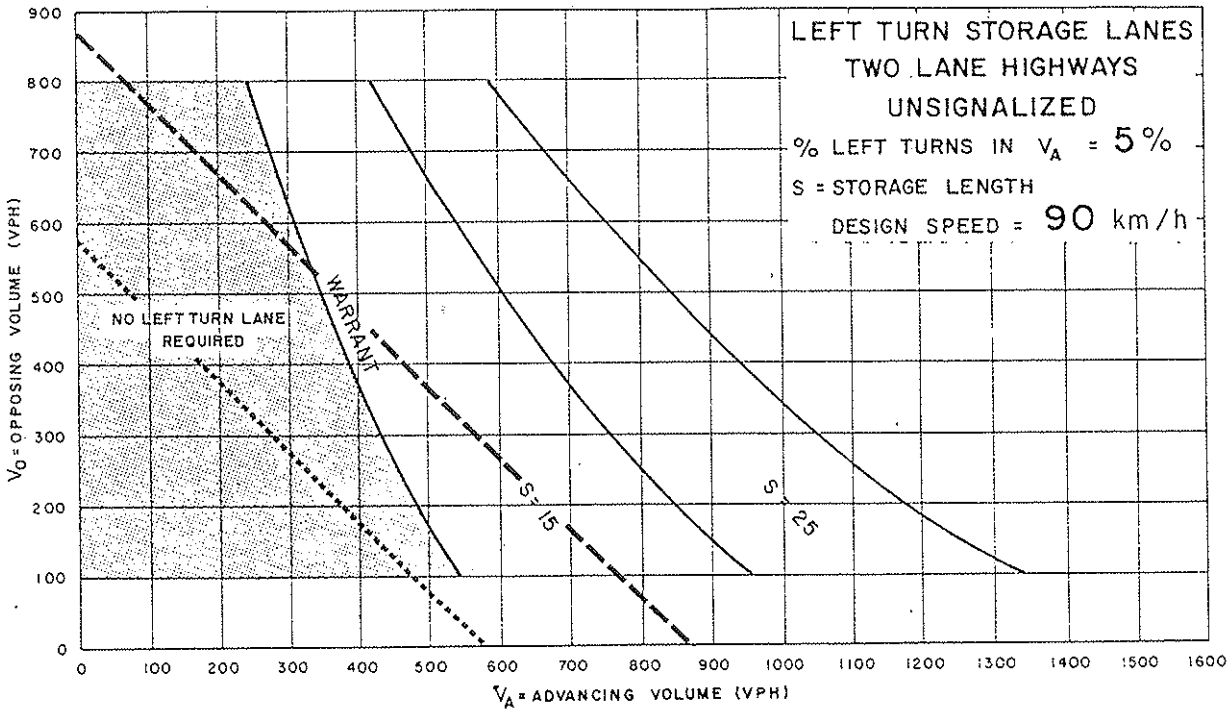
VL = 2 veh/hr

VA = 1137 veh/hr

% LT in VA = 0.18%

VO = 737 veh/hr

NO LT LANE REQ.



PM PEAK HOUR

VL = 8 veh/hr

VA = 894 veh/hr

% LT in VA = 0.89%

VO = 1265 veh/hr

NO LT LANE REQ.

TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

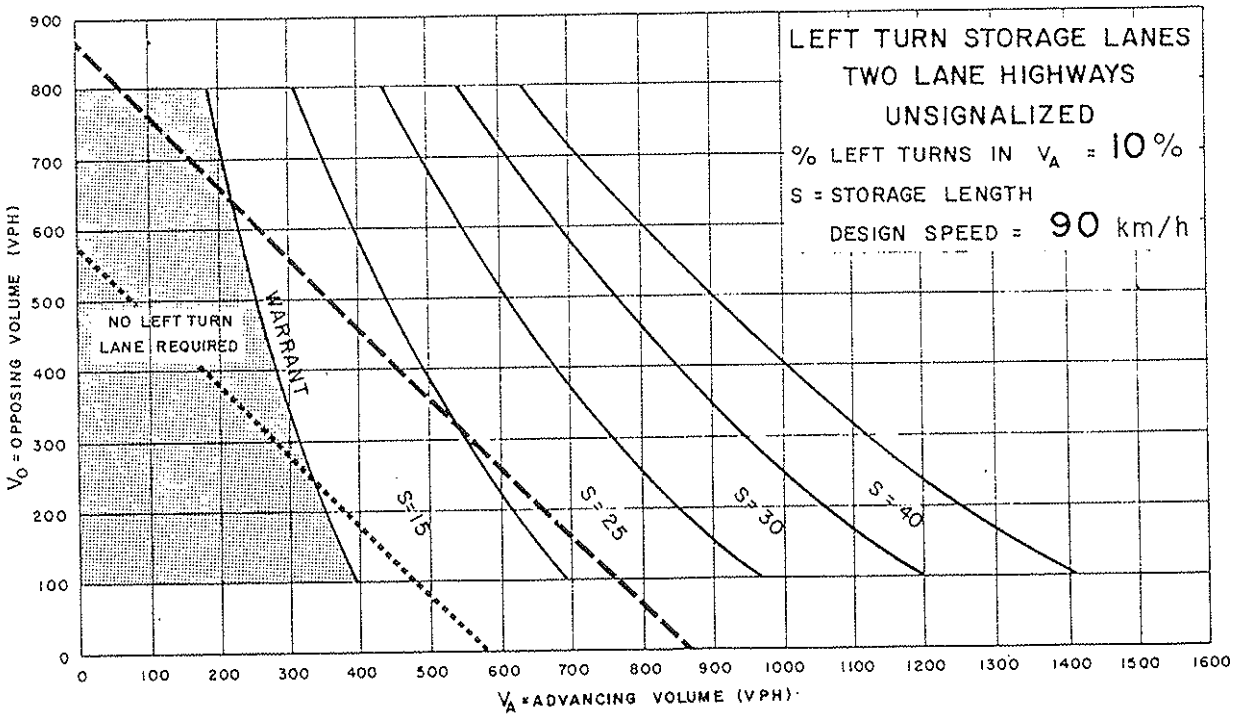


Figure EA-18

NINTH LINE AND STREET "K"
2036 FUTURE TOTAL CONDITIONS
NORTHBOUND LEFT-TURN LANE

AM PEAK HOUR

VL = 9 veh/hr
VO = 1014 veh/hr

REQ = None

PM PEAK HOUR

VL = 28 veh/hr
VO = 1653 veh/hr

REQ = approx. 95m

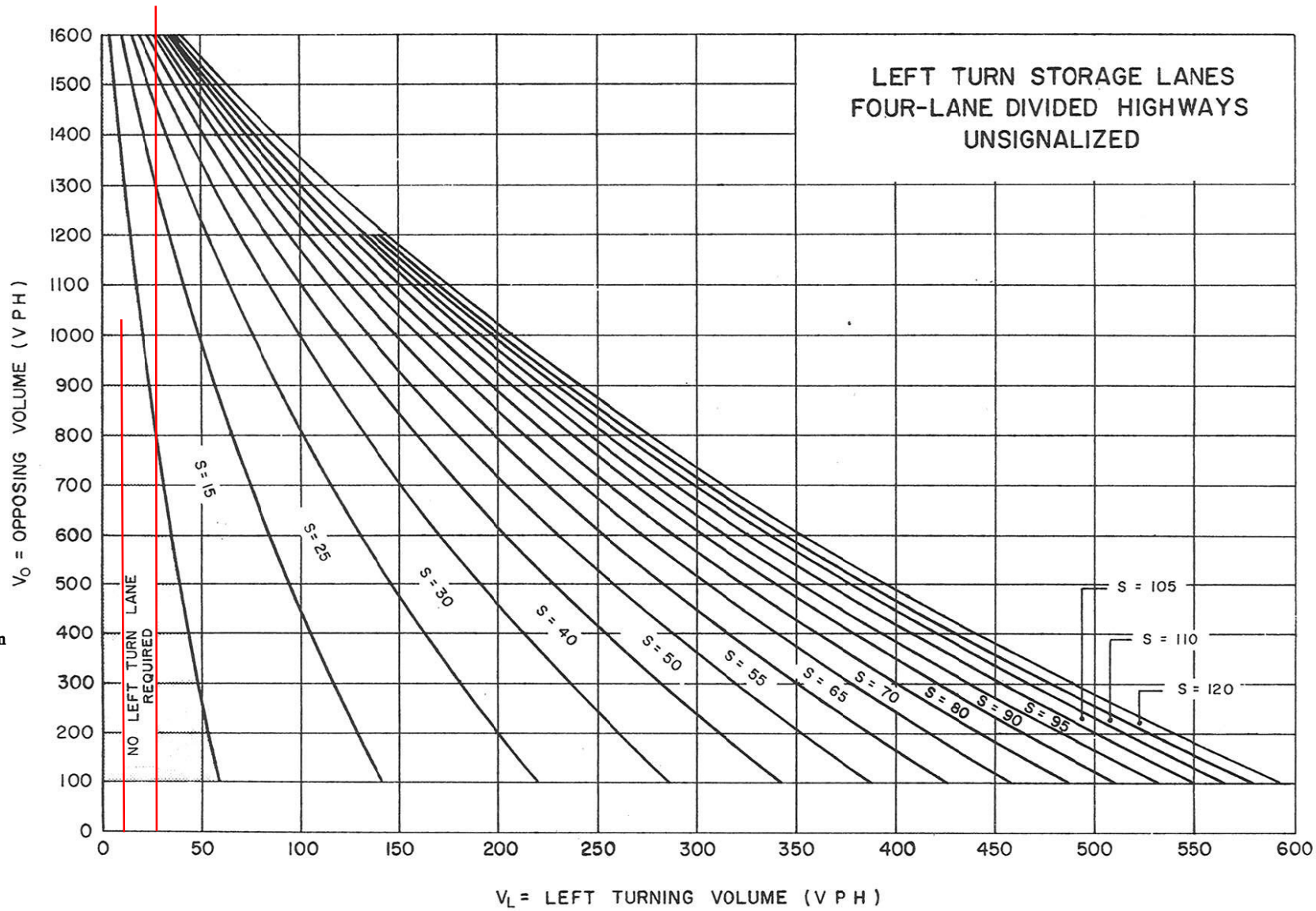


Figure EC-1

EC-2

NINTH LINE / FOXWOOD AVENUE AND STREET "O"
2036 FUTURE TOTAL CONDITIONS
NORTHBOUND LEFT - TURN LANE

AM PEAK HOUR

VL = 10 veh/hr
VO = 1067 veh/hr

REQ = None

PM PEAK HOUR

VL = 32 veh/hr
VO = 1625 veh/hr

REQ = approx. 65m

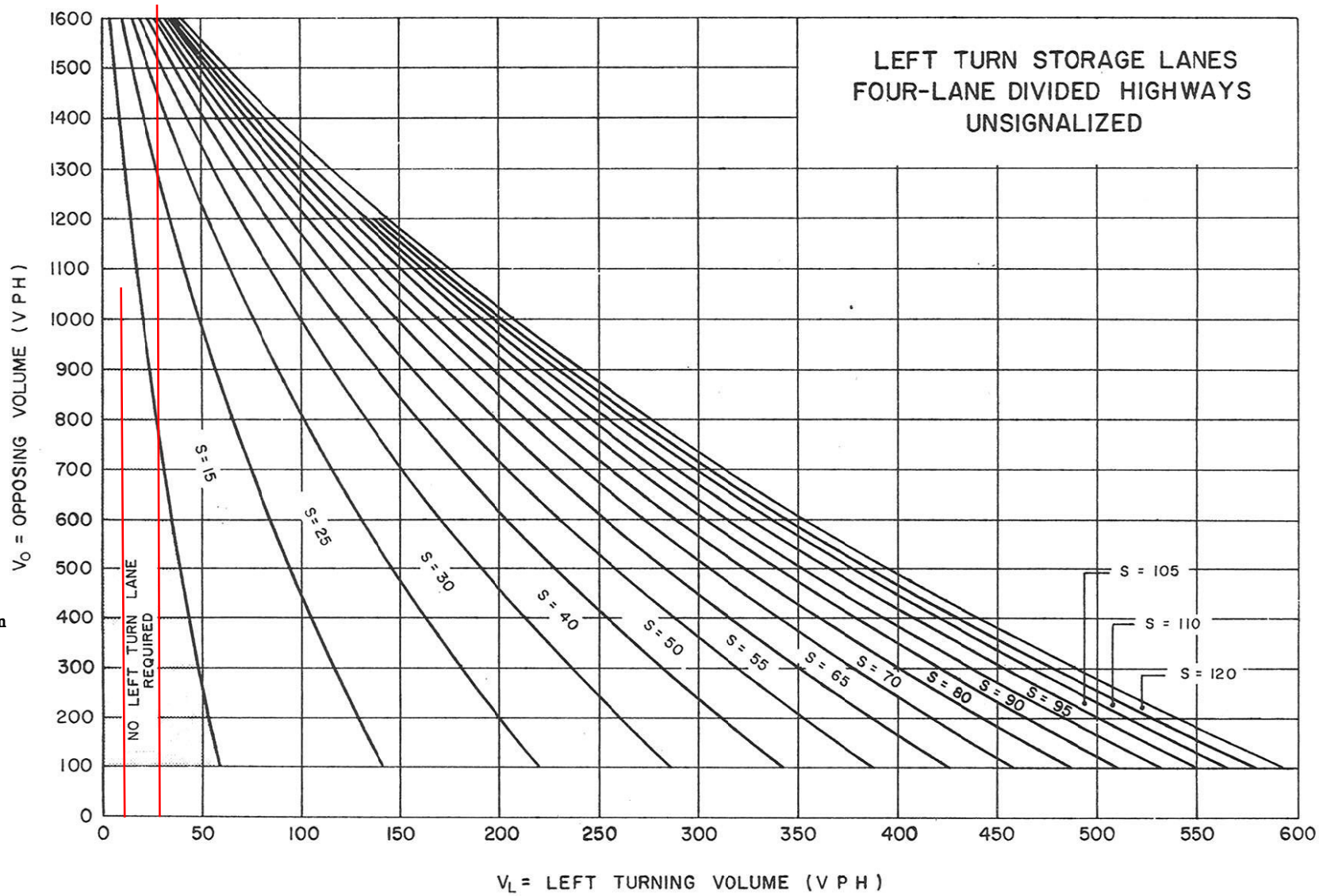


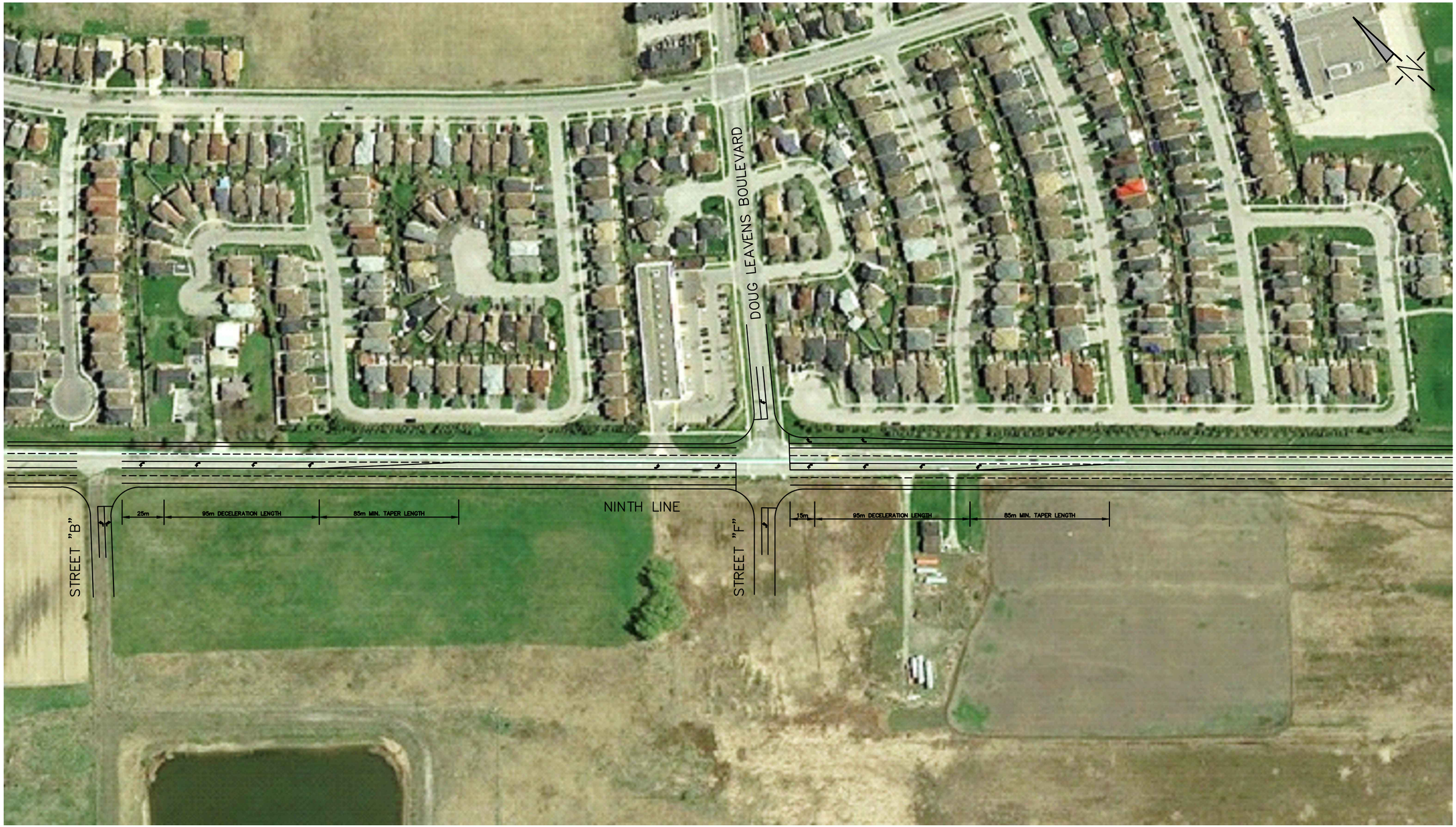
Figure EC-1

EC-2

94-06

APPENDIX M

Recommended External Roadway Improvements



Legend

NOTES:

THIS DRAWING IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.
EXACT DESIGN SPECIFICATIONS TO BE CONFIRMED DURING DETAILED DESIGN STAGE AND UPON COMPLETION OF NINTH LINE CLASS ENVIRONMENTAL ASSESSMENT.
STORAGE LENGTHS TO BE CONFIRMED DURING DETAILED DESIGN STAGE.
TRAFFIC CONTROL TO BE IN CONFORMANCE WITH ONTARIO TRAFFIC MANUAL.
ROADWAY UTILITIES TO BE RE-LOCATED WITH CONSTRUCTION OF ACCESS

Project

MATTAMY HOMES
NINTH LINE DRAFT PLAN OF SUBDIVISION

Drawing

NINTH LINE AUXILIARY TURN LANES – CONCEPTUAL DESIGN (FUTURE FOUR-LANE SCENARIO)

CROZIER & ASSOCIATES Consulting Engineers
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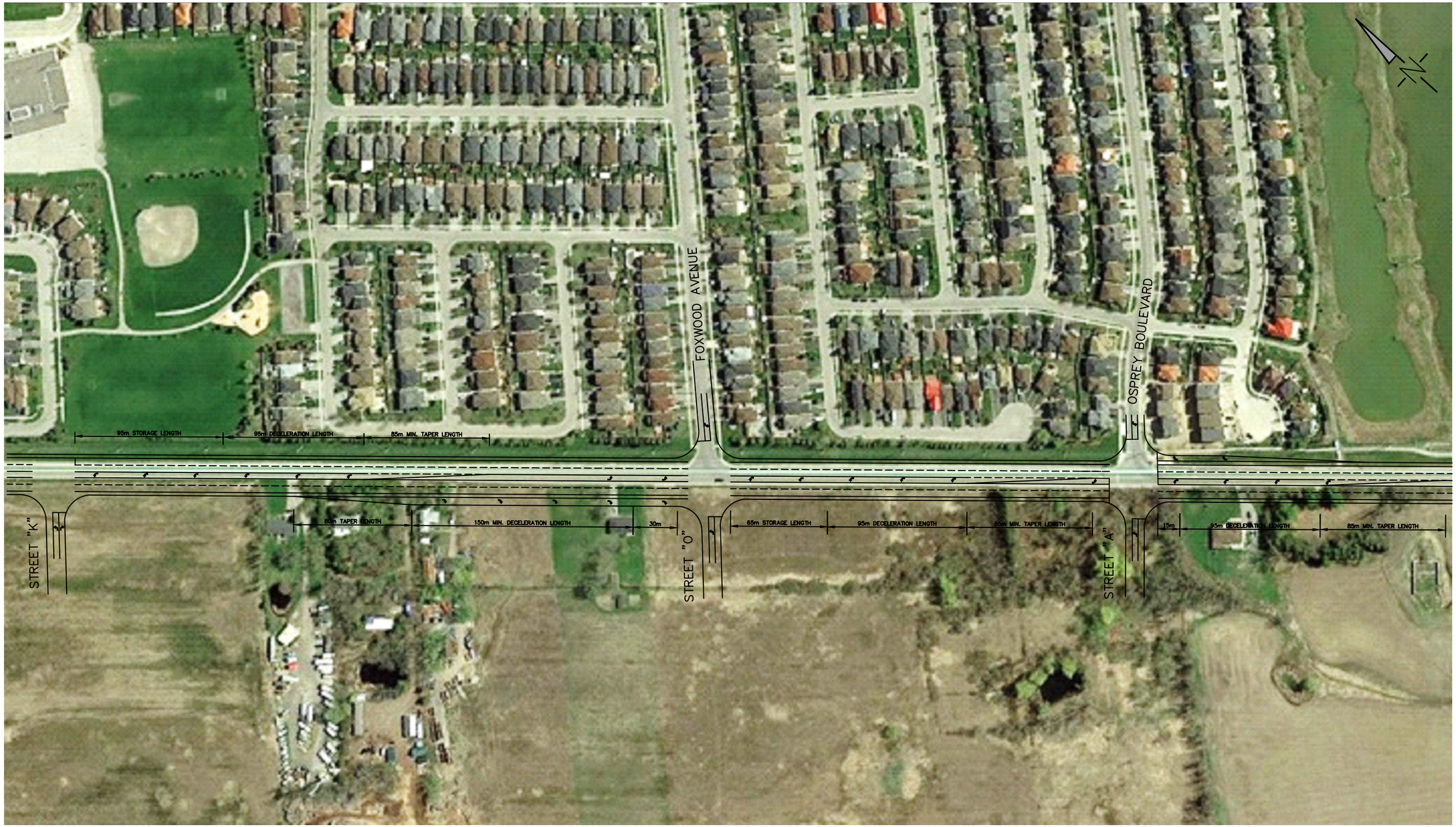
D.L.	D.L.	780-5227

Scale	Date	Check By	Drawing
N.T.S.	06/04/2019	A.F.	APP. M1



Legend

NOTES:

THIS DRAWING IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.
EXACT DESIGN SPECIFICATIONS TO BE CONFIRMED DURING DETAILED DESIGN STAGE AND UPON COMPLETION OF NINTH LINE CLASS ENVIRONMENTAL ASSESSMENT.
STORAGE LENGTHS TO BE CONFIRMED DURING DETAILED DESIGN STAGE.
TRAFFIC CONTROL TO BE IN CONFORMANCE WITH ONTARIO TRAFFIC MANUAL.
ROADWAY UTILITIES TO BE RE-LOCATED WITH CONSTRUCTION OF ACCESS

Project
MATTAMY HOMES
NINTH LINE DRAFT PLAN OF SUBDIVISION

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NINTH LINE AUXILIARY TURN LANES – CONCEPTUAL DESIGN (FUTURE FOUR-LANE SCENARIO)

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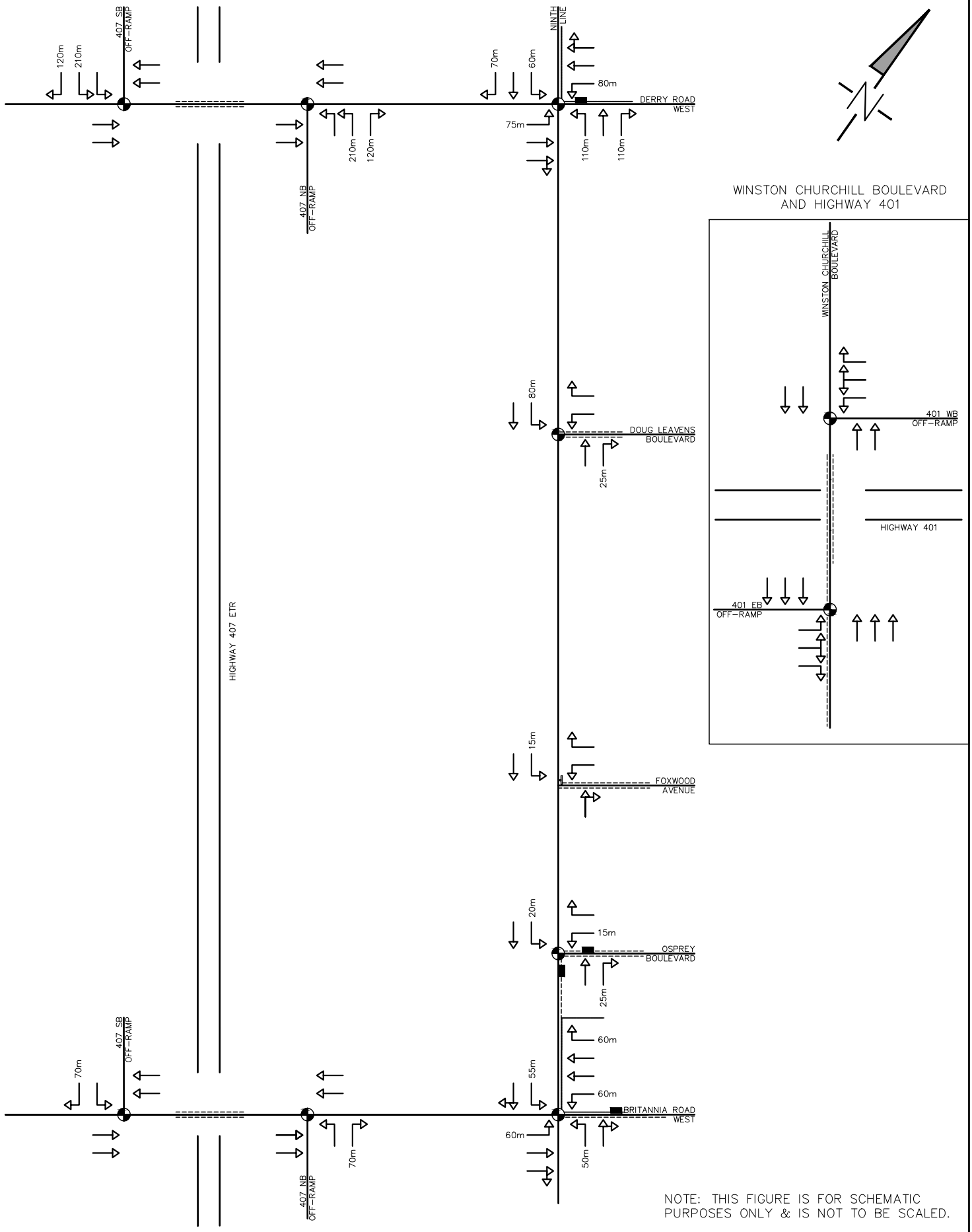
Scale	Date	Check By	Drawing
N.T.S.	06/04/2019	A.F.	APP. M2

FIGURES



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

- SIGNAL CONTROL
- STOP CONTROL
- BUS STOP
- PEDESTRIAN SIDEWALK
- MULTI-USE TRAIL

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

BOUNDARY ROAD NETWORK

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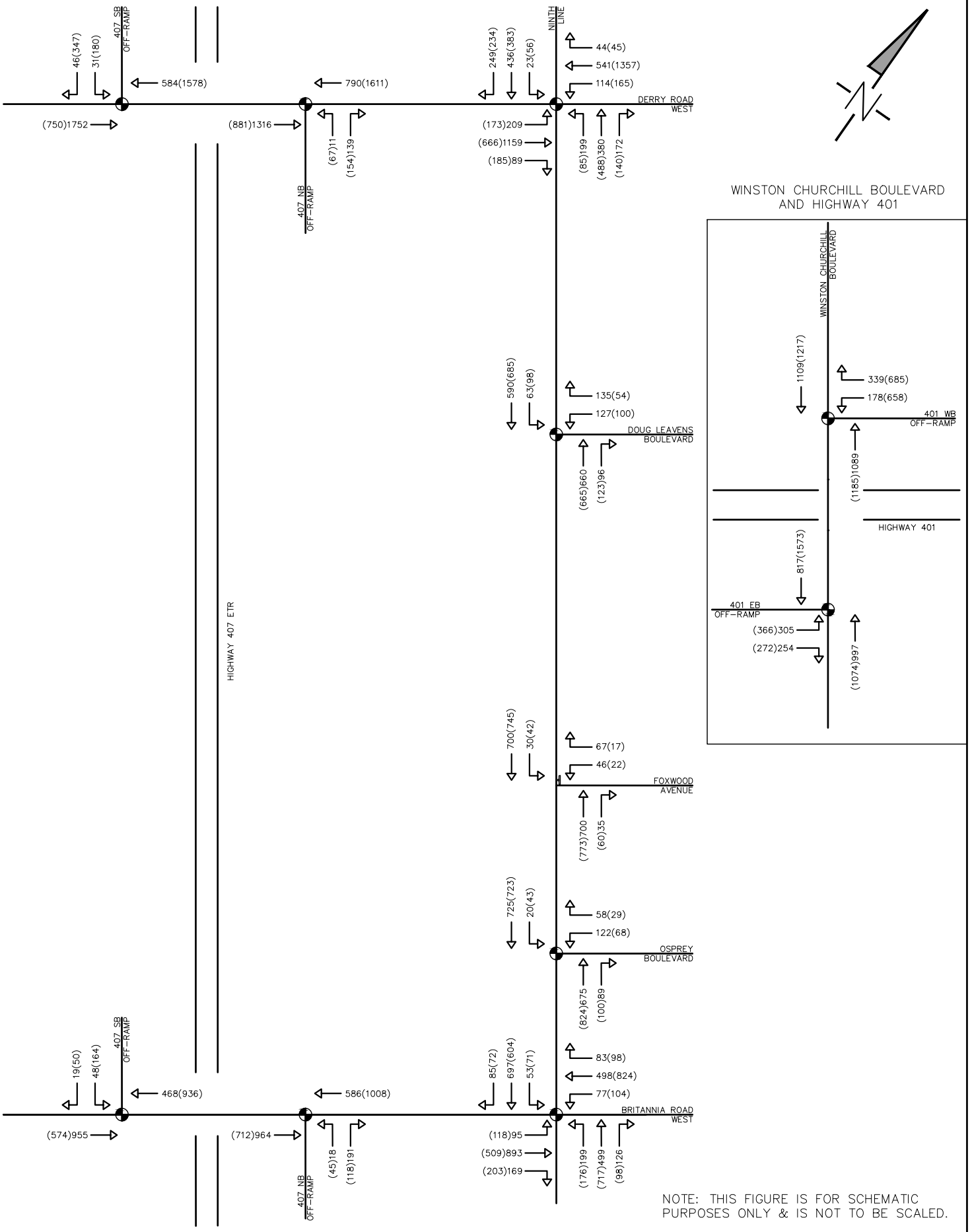
Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 1



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

2019 EXISTING TRAFFIC VOLUMES

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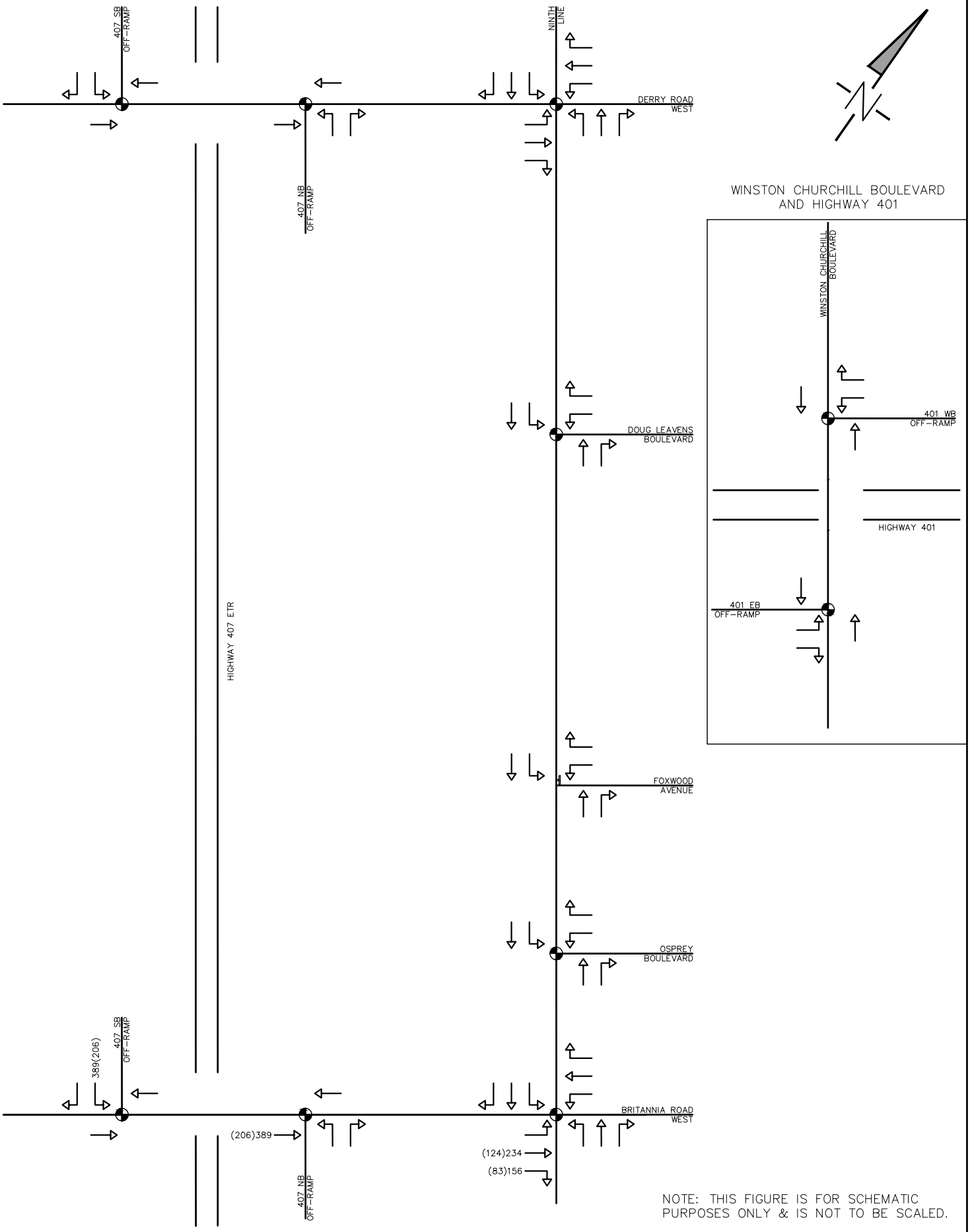
D.L.	D.L.	780-5227

Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 2



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

BACKGROUND TRAFFIC (ERIN MILLS)

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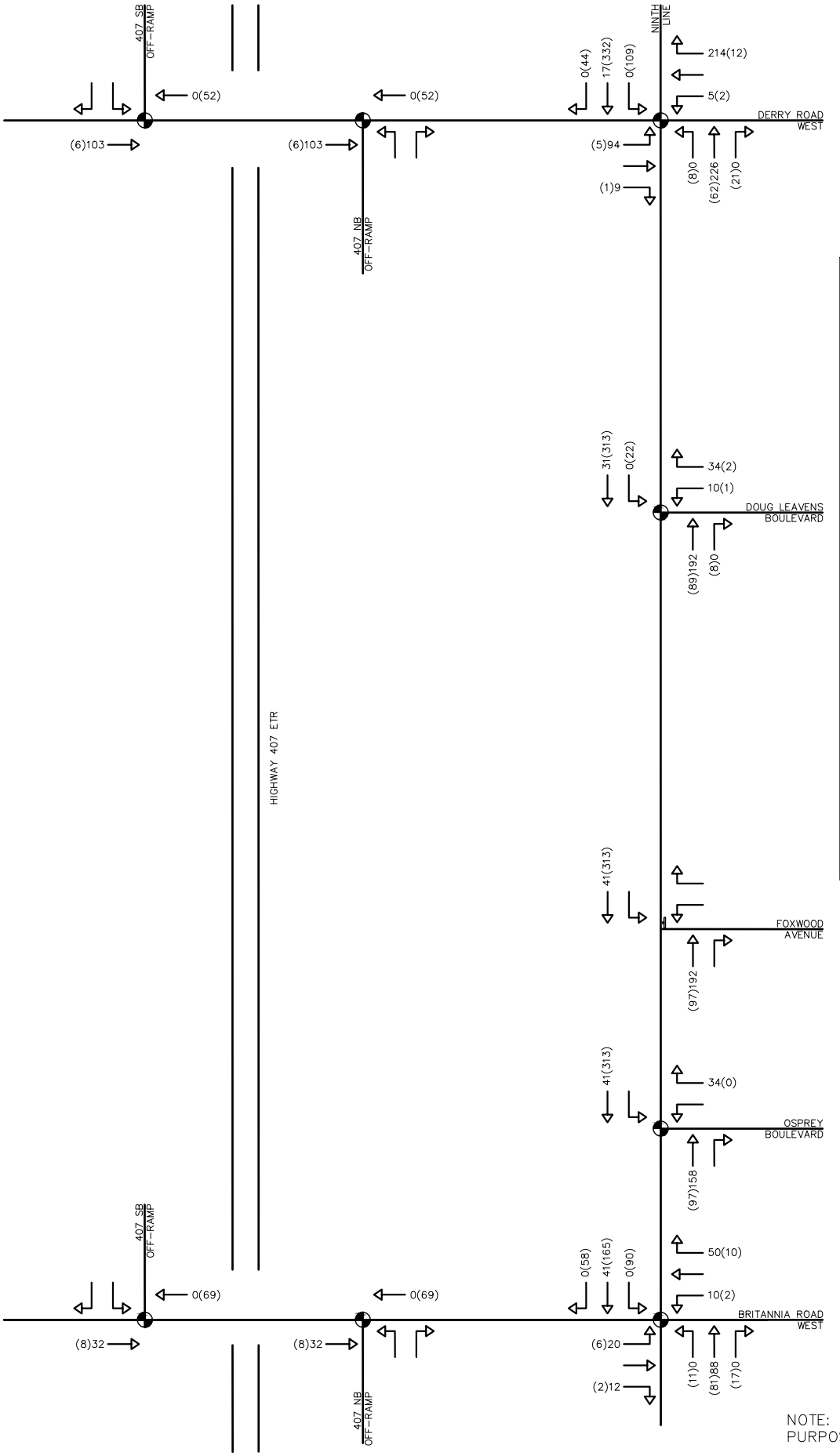
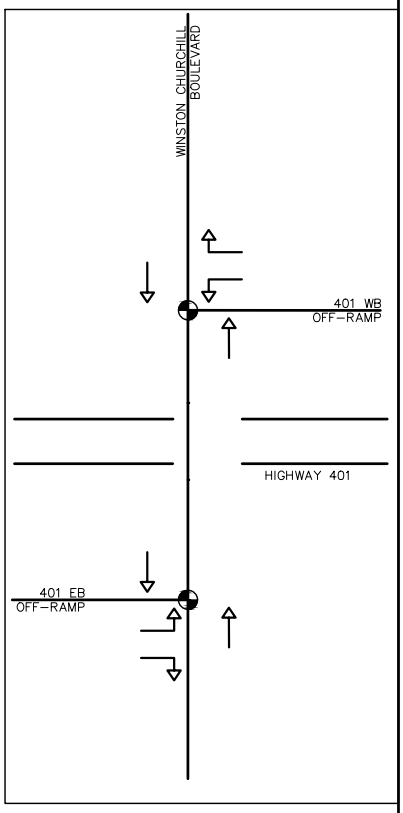
Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 3



WINSTON CHURCHILL BOULEVARD AND HIGHWAY 401



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

BACKGROUND TRAFFIC
(407 TRANSITWAY)

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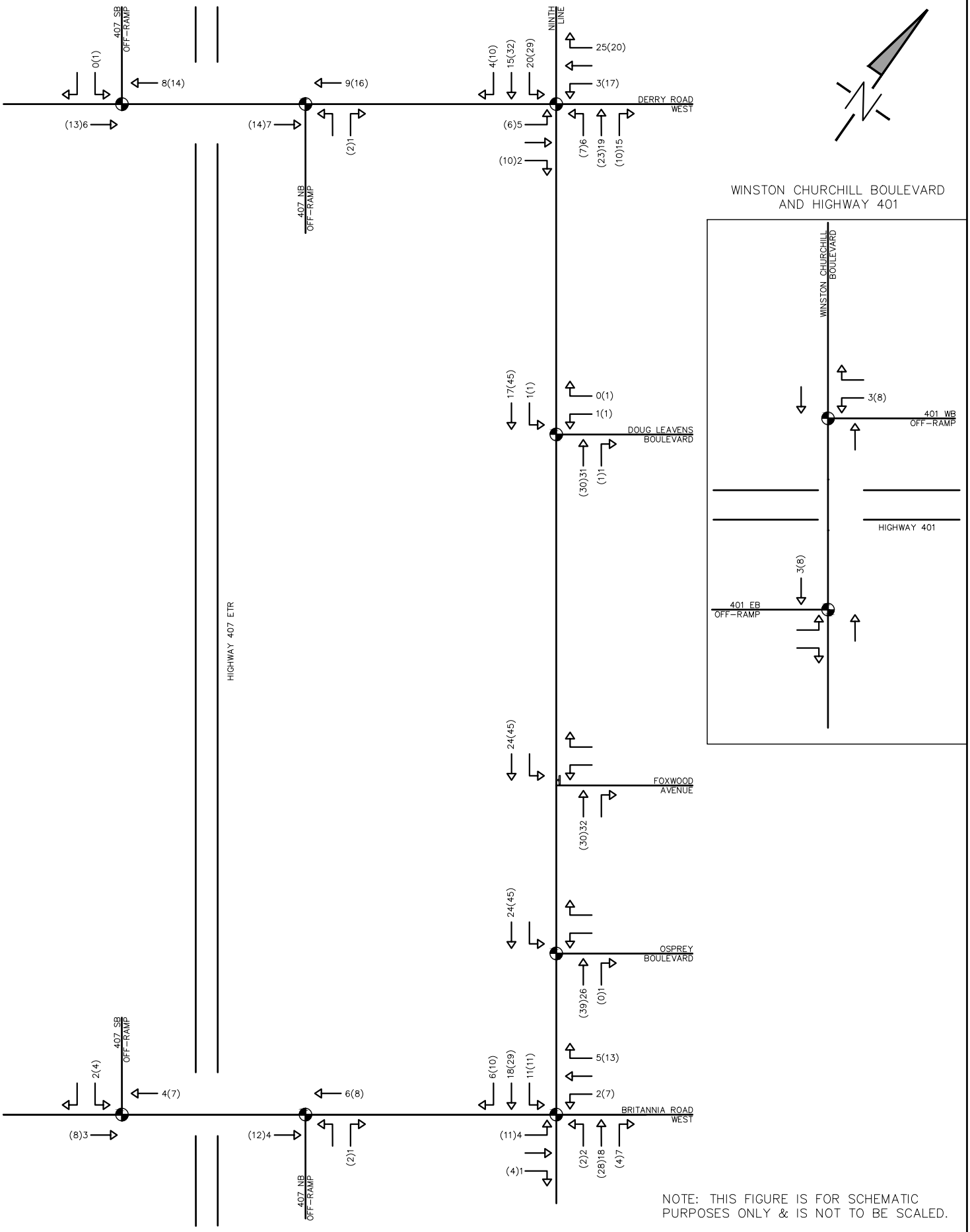
Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 4



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

BACKGROUND TRAFFIC
(EMERGING LAND USE – 2023)

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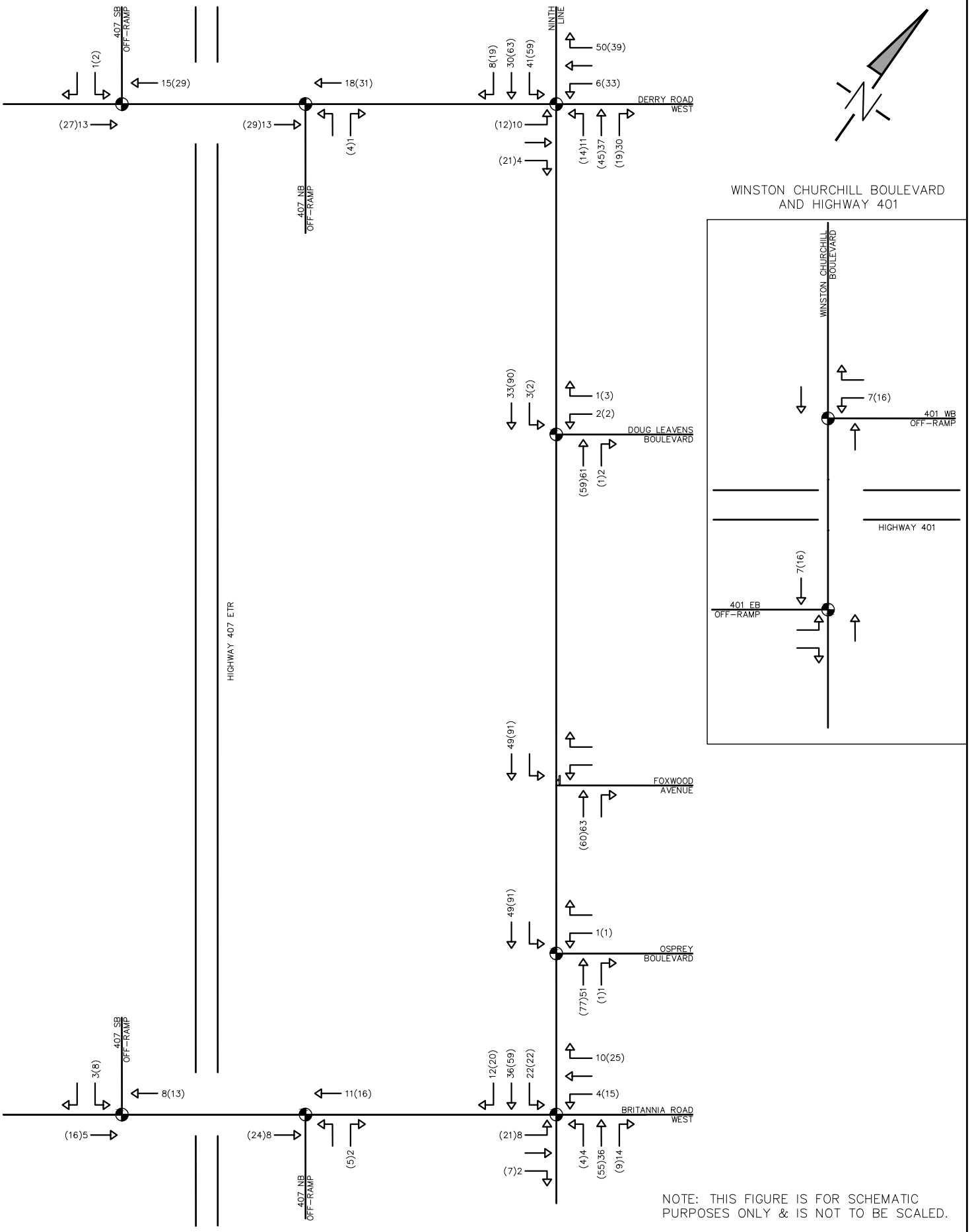
D.L.	D.L.	780–5227

Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 5



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

BACKGROUND TRAFFIC
(EMERGING LAND USE – 2026)

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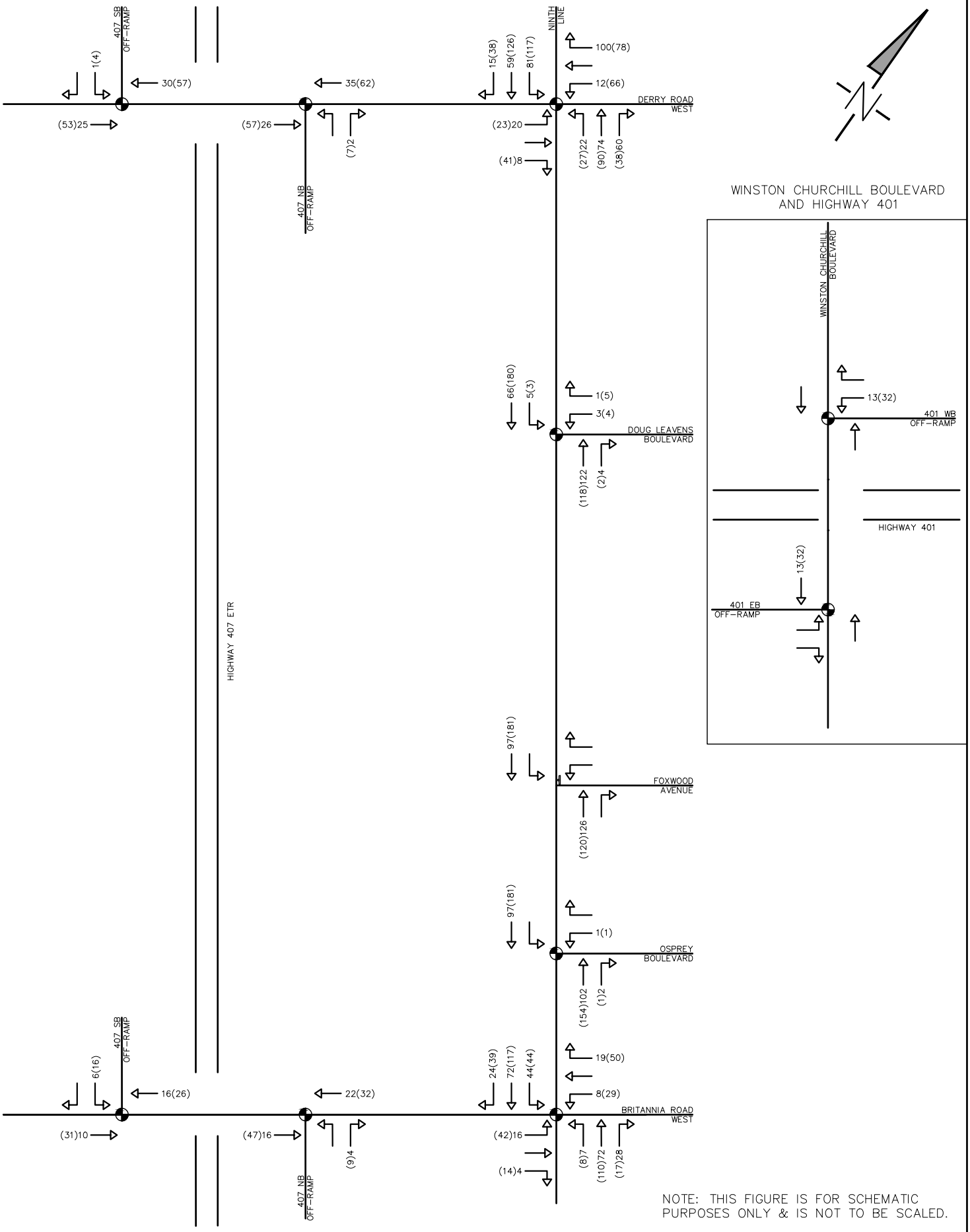
D.L.	D.L.	780-5227

Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 6



Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

BACKGROUND TRAFFIC
(EMERGING LAND USE – 2031 & 2036)

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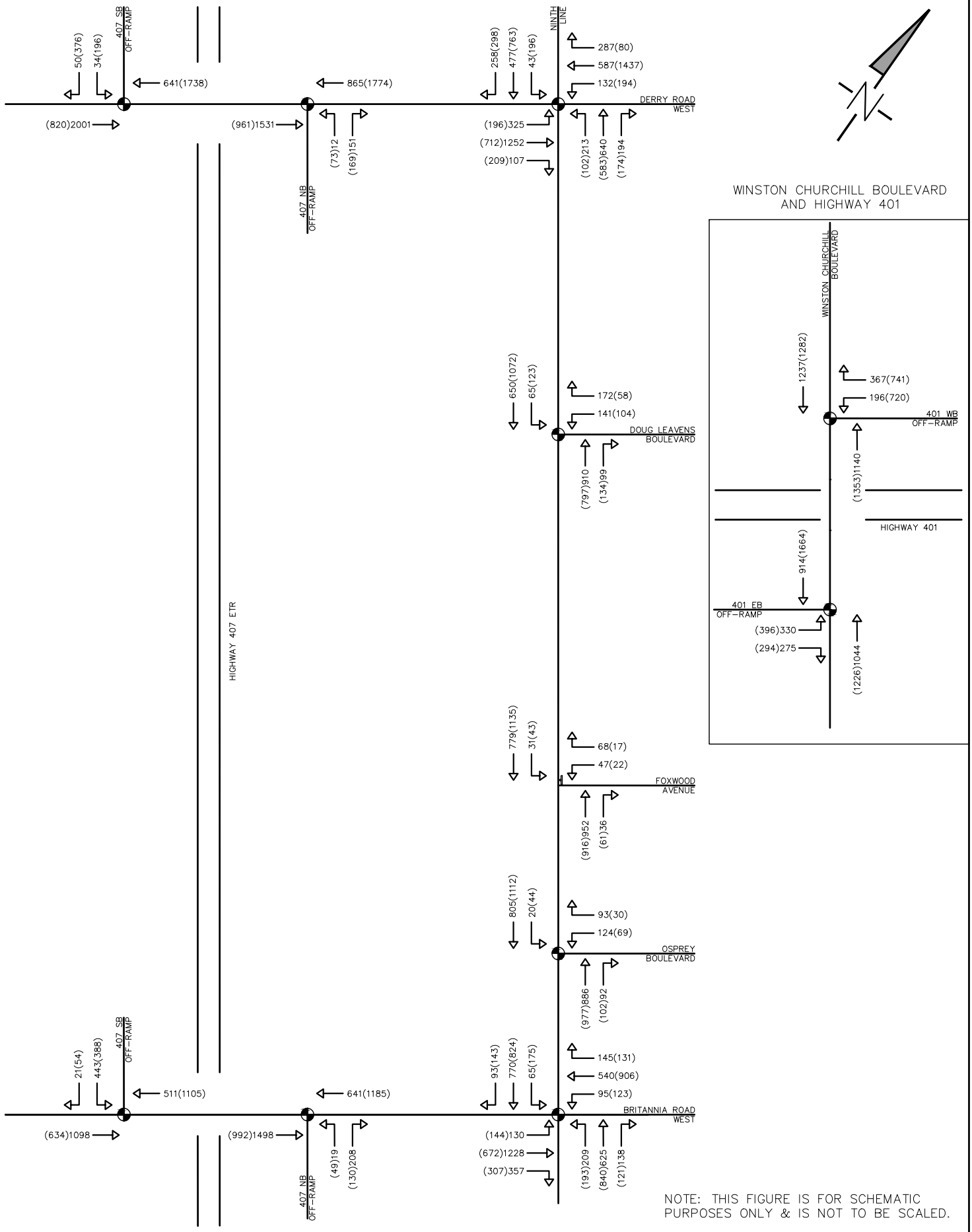
Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 7



Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

2023 FUTURE BACKGROUND TRAFFIC VOLUMES

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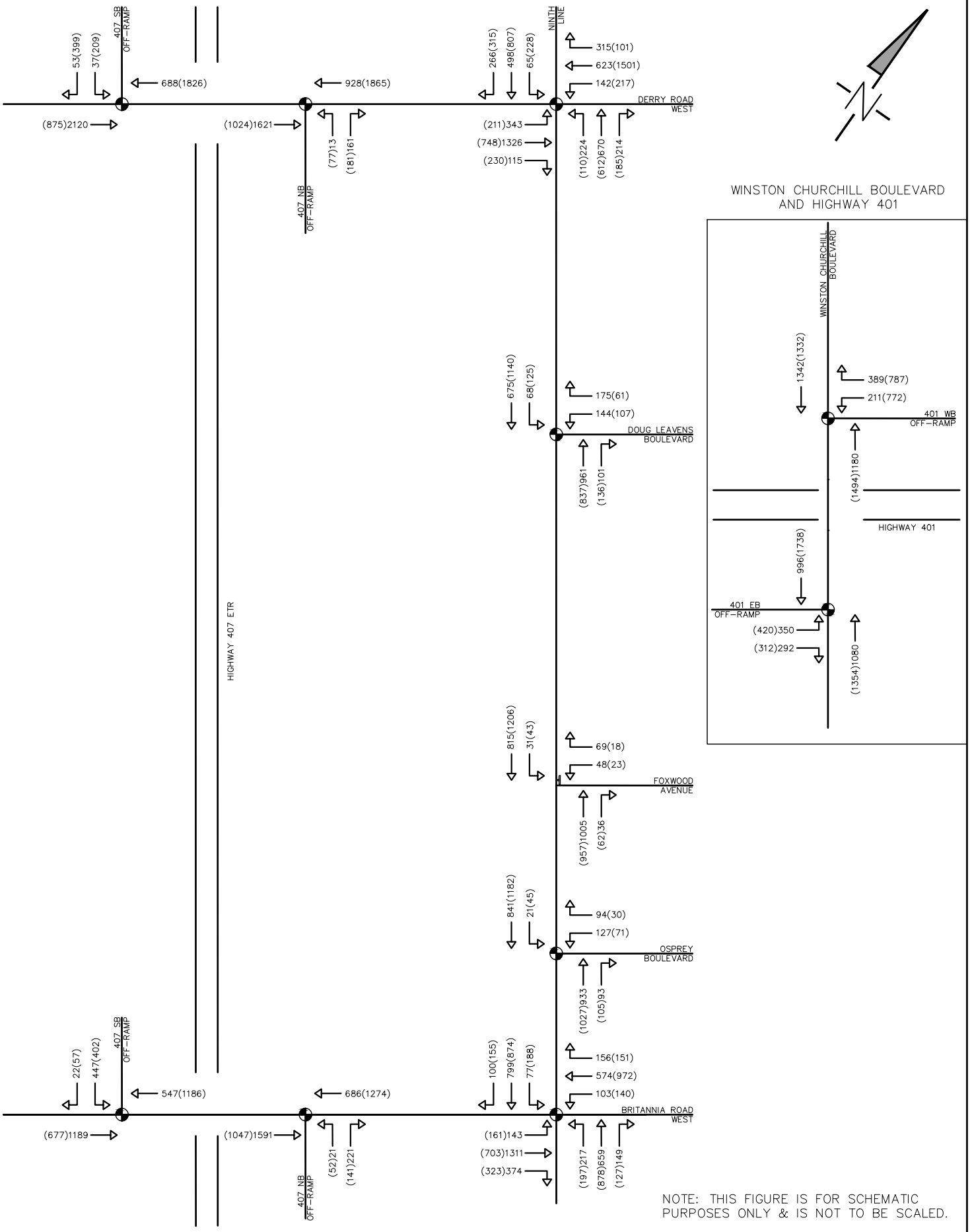
Drawn By	Design By	Project
D.L.	D.L.	780-5227

Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 8



Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

2026 FUTURE BACKGROUND TRAFFIC VOLUMES

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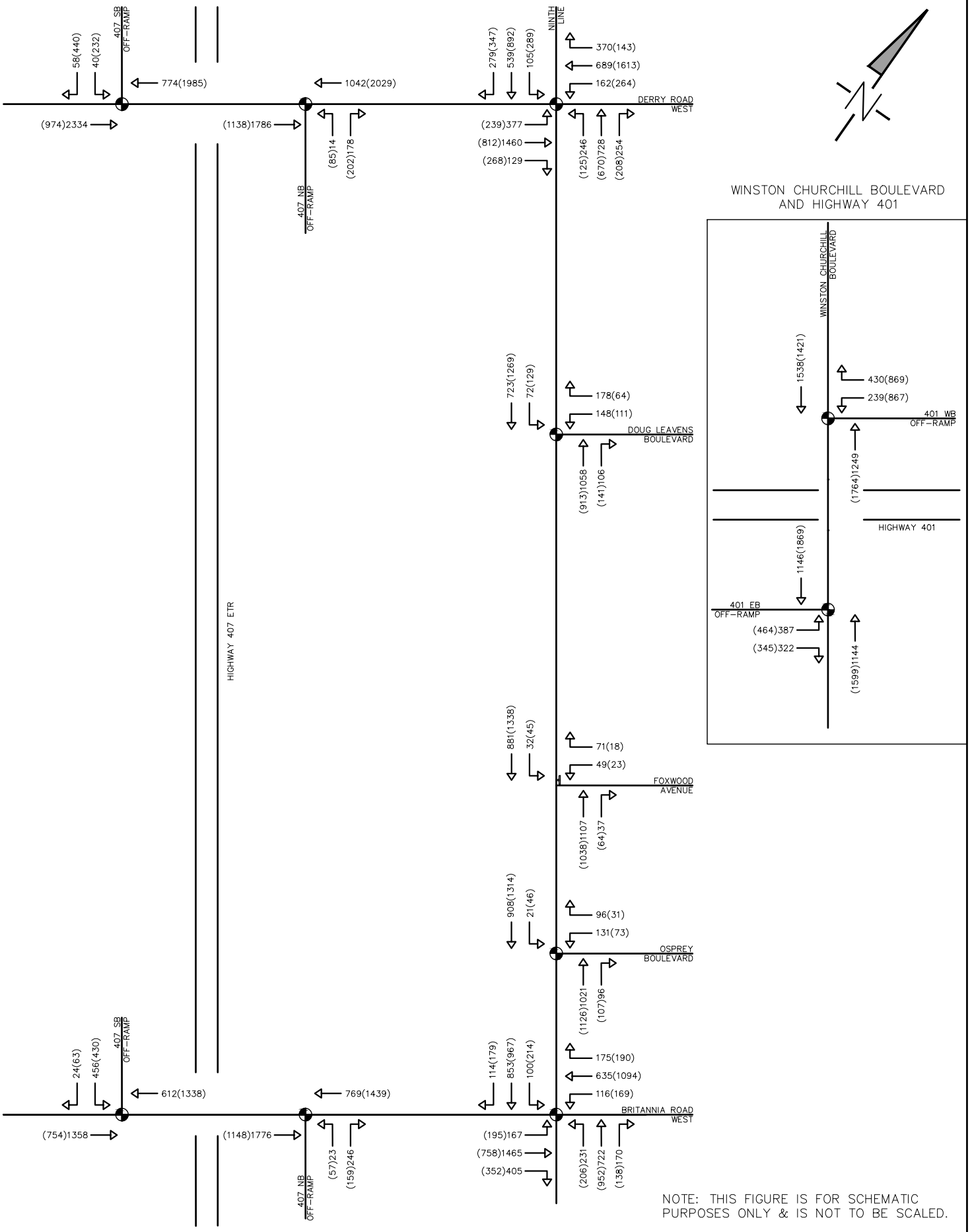
Drawn By	Design By	Project
D.L.	D.L.	780-5227

Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 9



Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

2031 FUTURE BACKGROUND TRAFFIC VOLUMES

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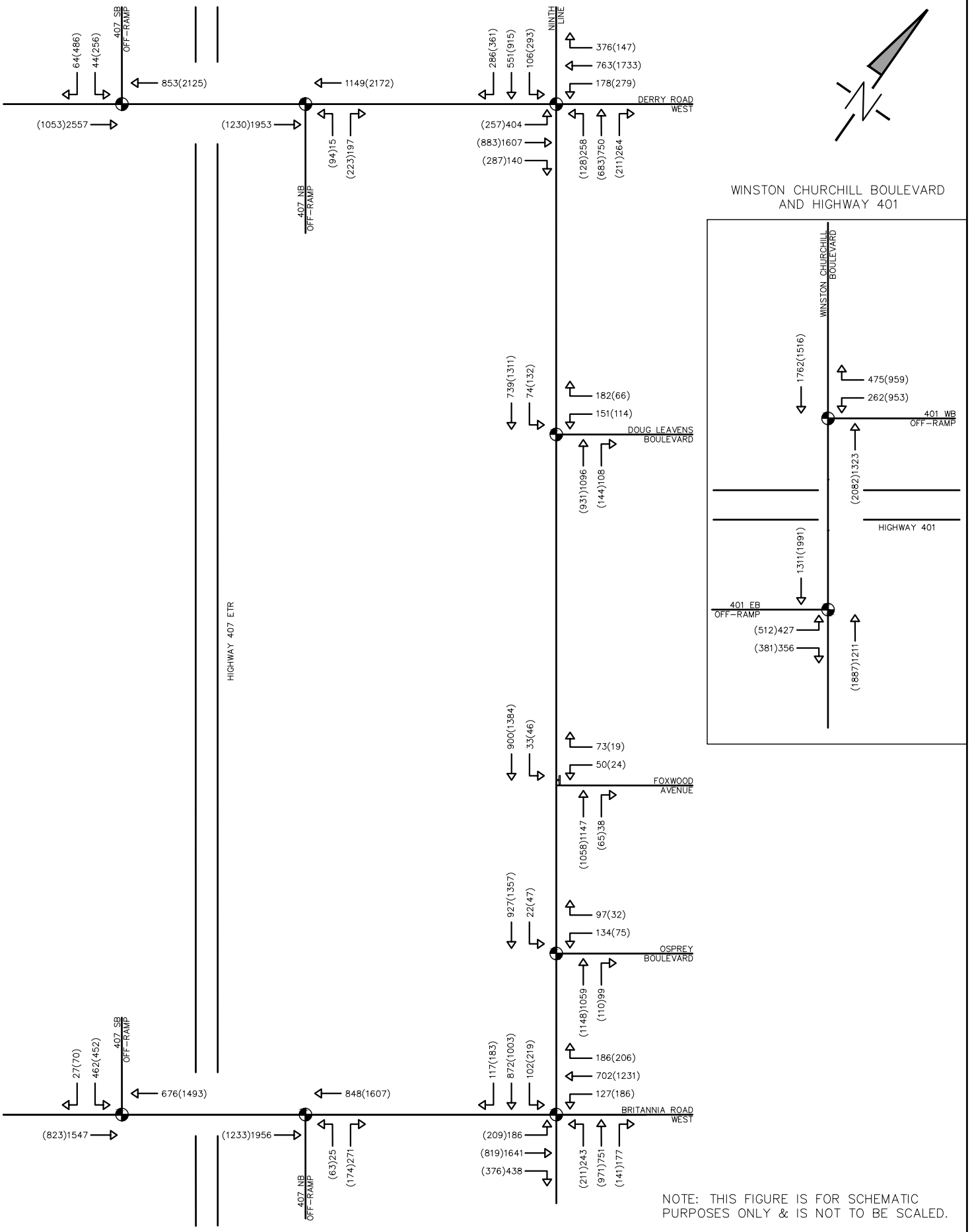
Drawn By	Design By	Project
D.L.	D.L.	780-5227

Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 10



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

- SIGNAL CONTROL
- STOP CONTROL
- XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

2036 FUTURE BACKGROUND TRAFFIC VOLUMES

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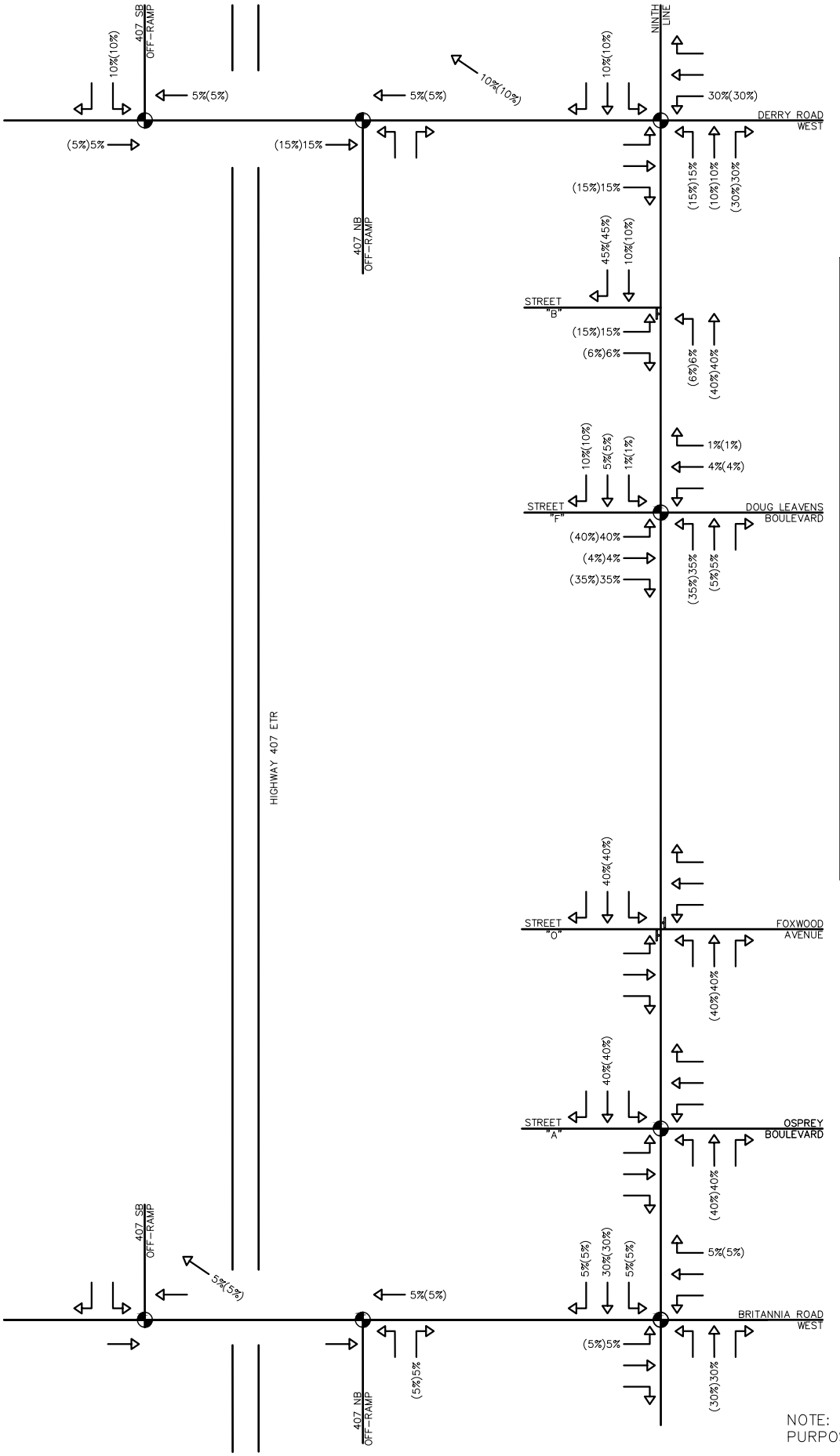
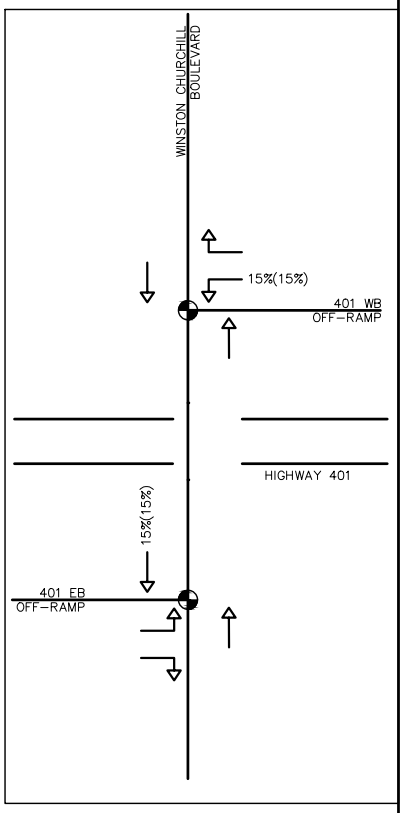
D.L.	D.L.	780-5227

Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 11



WINSTON CHURCHILL BOULEVARD AND HIGHWAY 401



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

- SIGNAL CONTROL
- STOP CONTROL
- XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

TRIP DISTRIBUTION
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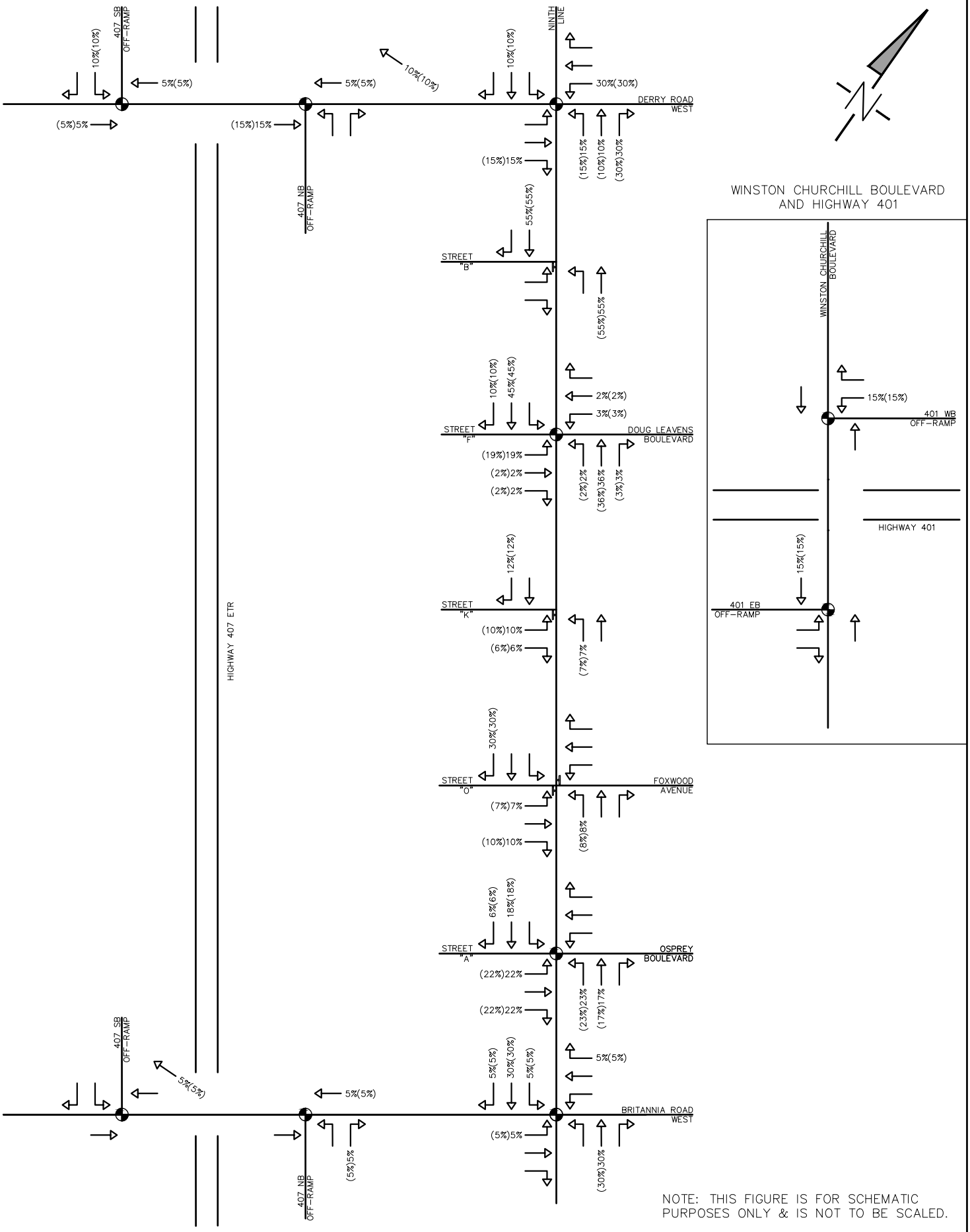
D.L.	D.L.	780-5227

Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 12



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

TRIP DISTRIBUTION
(SOUTH DRAFT PLAN)

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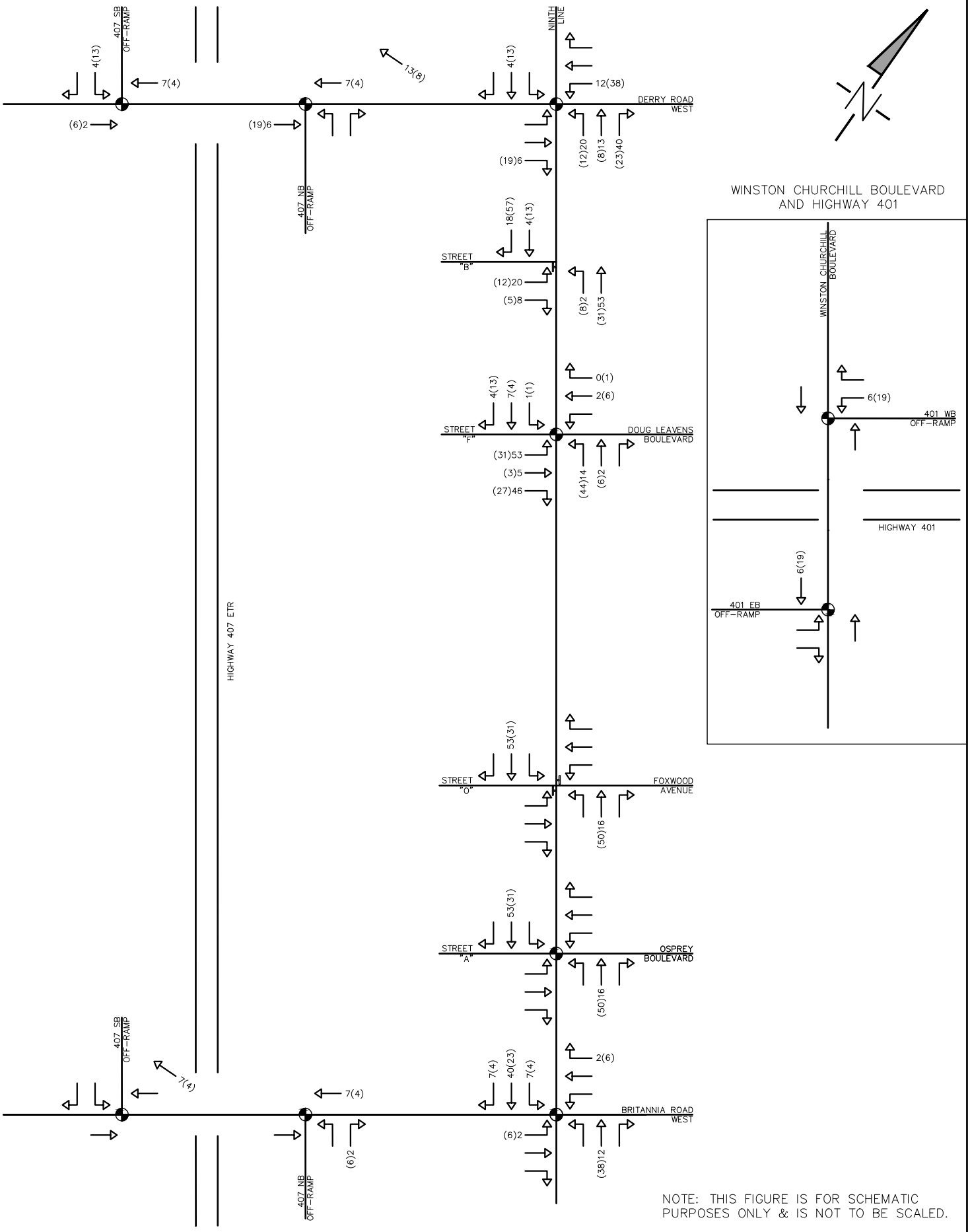
Drawn By	Design By	Project
D.L.	D.L.	780-5227

Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 13



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

TRIP ASSIGNMENT
(NORTH DRAFT PLAN)

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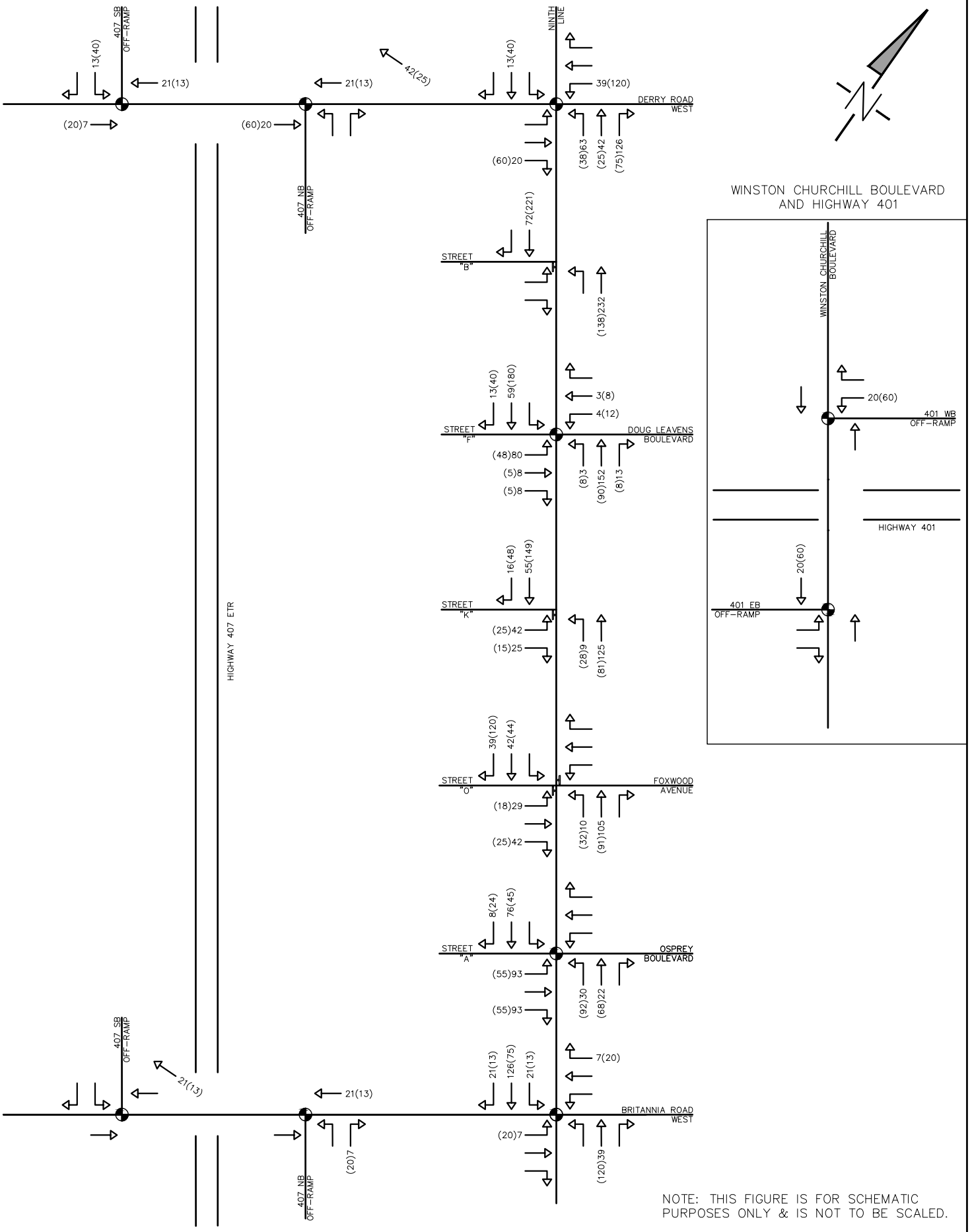
Drawn By	Design By	Project
D.L.	D.L.	780-5227

Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 14



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

TRIP ASSIGNMENT
(SOUTH DRAFT PLAN)

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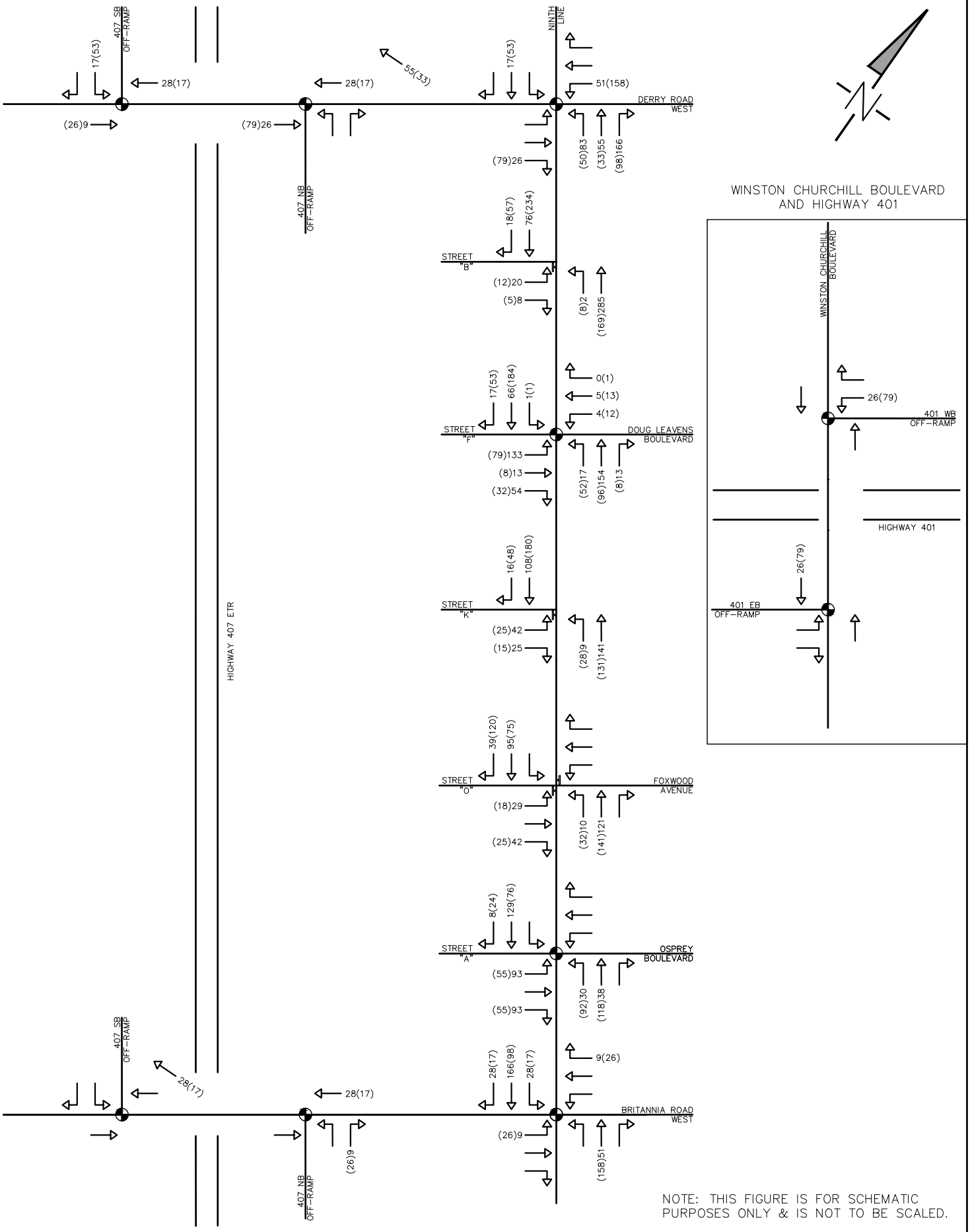
D.L.	D.L.	780-5227

Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 15



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

NET TRIP ASSIGNMENT
(FULL BUILD-OUT)

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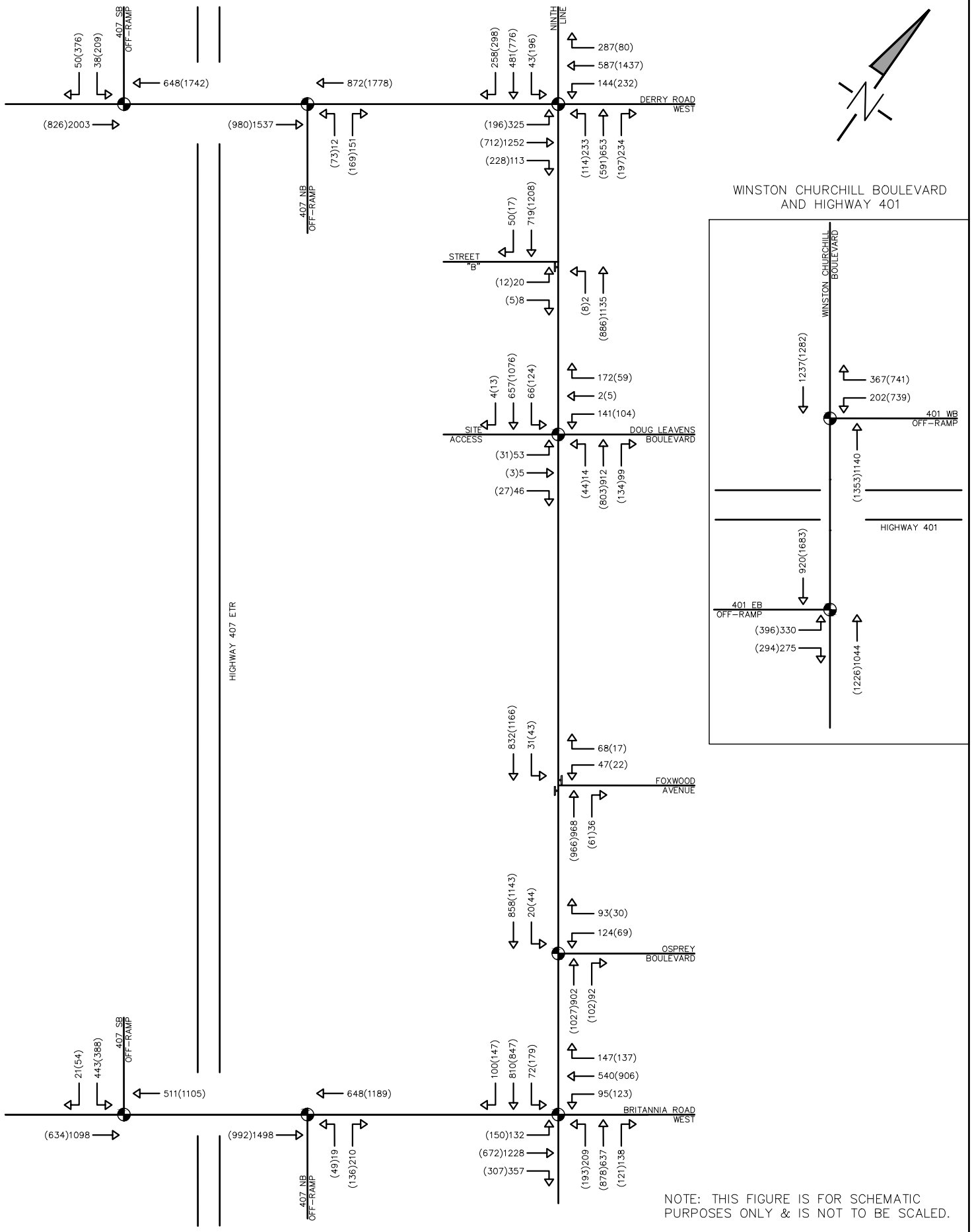
Drawn By	Design By	Project
D.L.	D.L.	780-5227

Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 16



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

2023 FUTURE TOTAL
TRAFFIC VOLUMES

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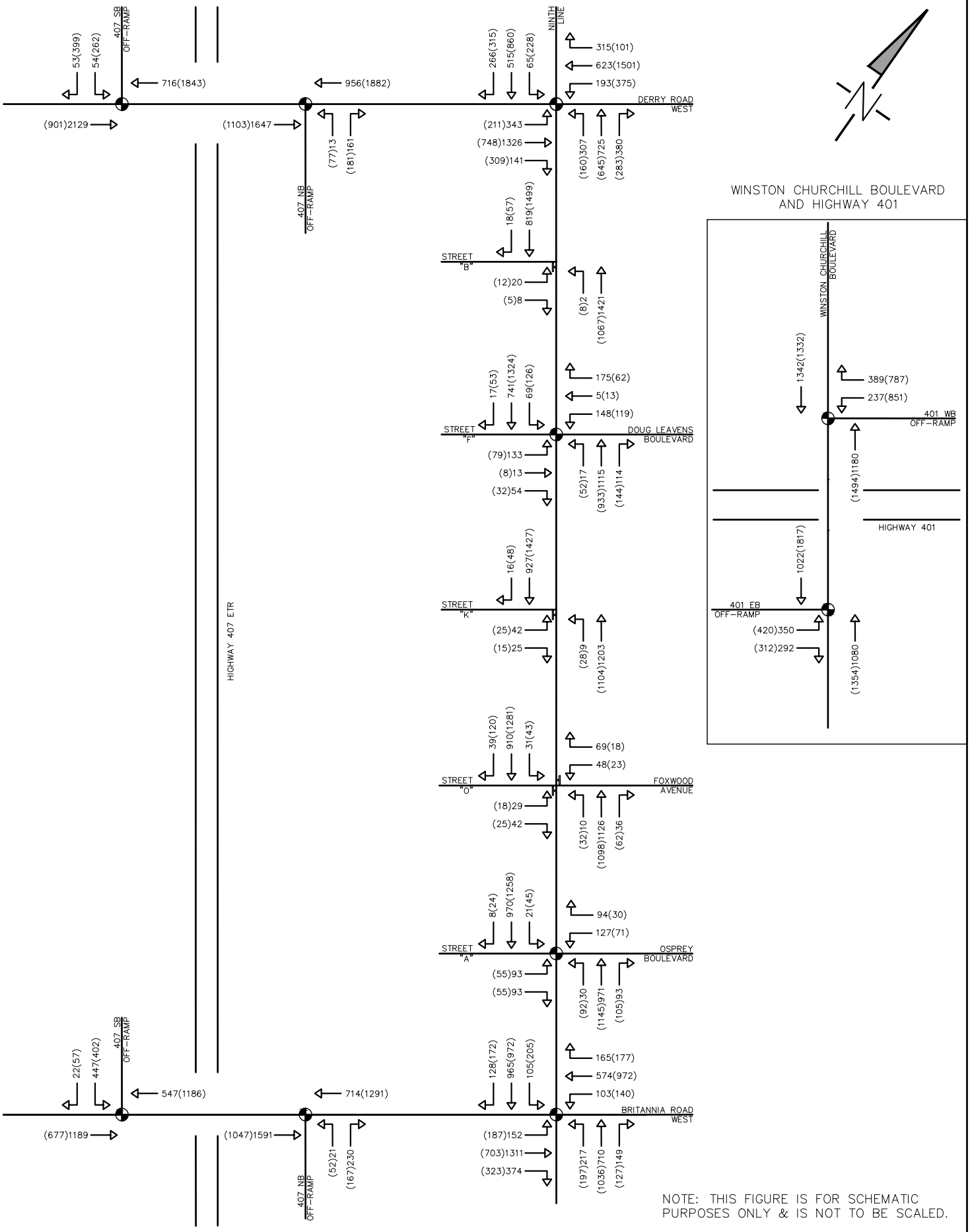
Drawn By	Design By	Project
D.L.	D.L.	780-5227

Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 17



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

2026 FUTURE TOTAL
TRAFFIC VOLUMES

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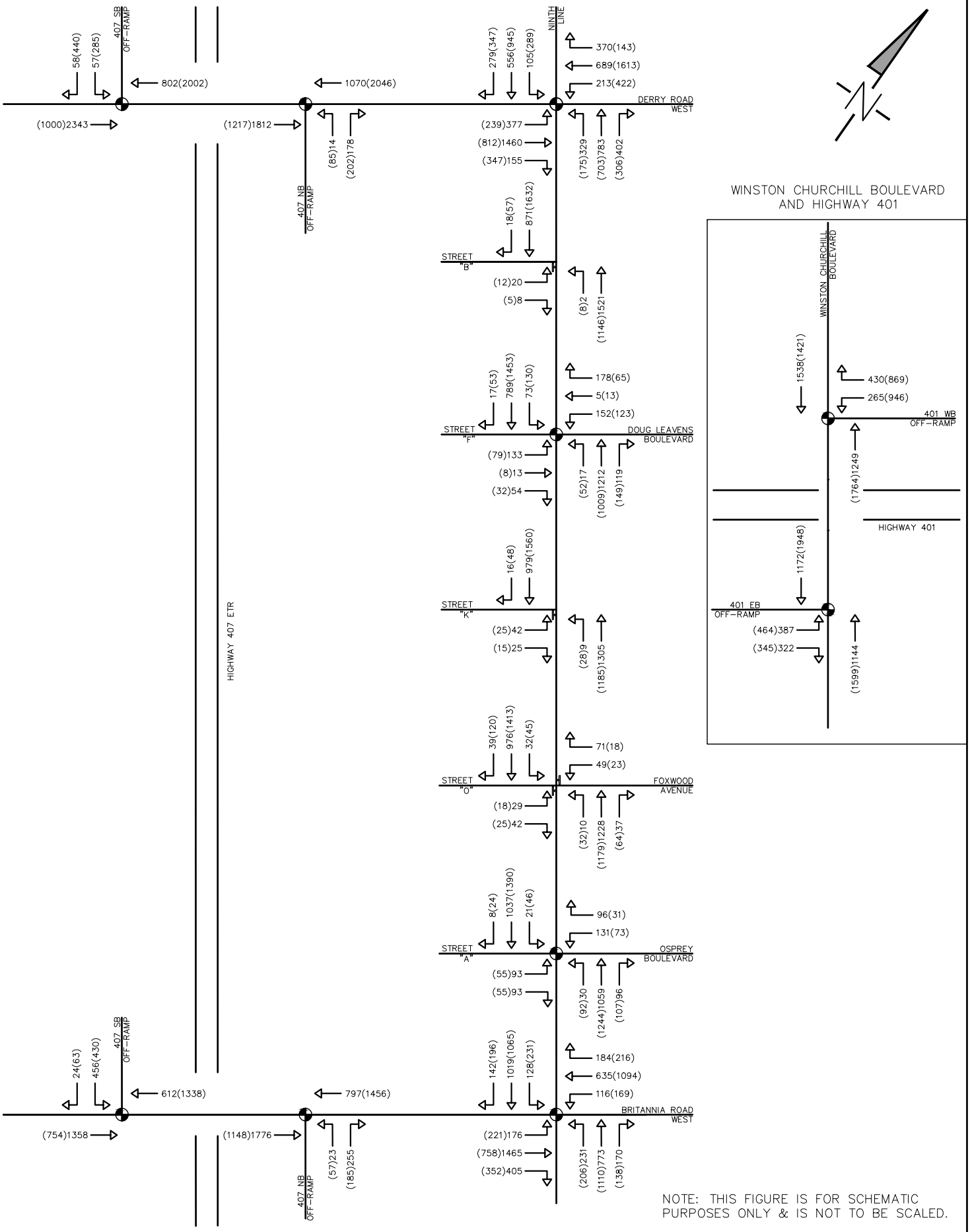
D.L.	D.L.	780-5227

Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 18



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

2031 FUTURE TOTAL
TRAFFIC VOLUMES

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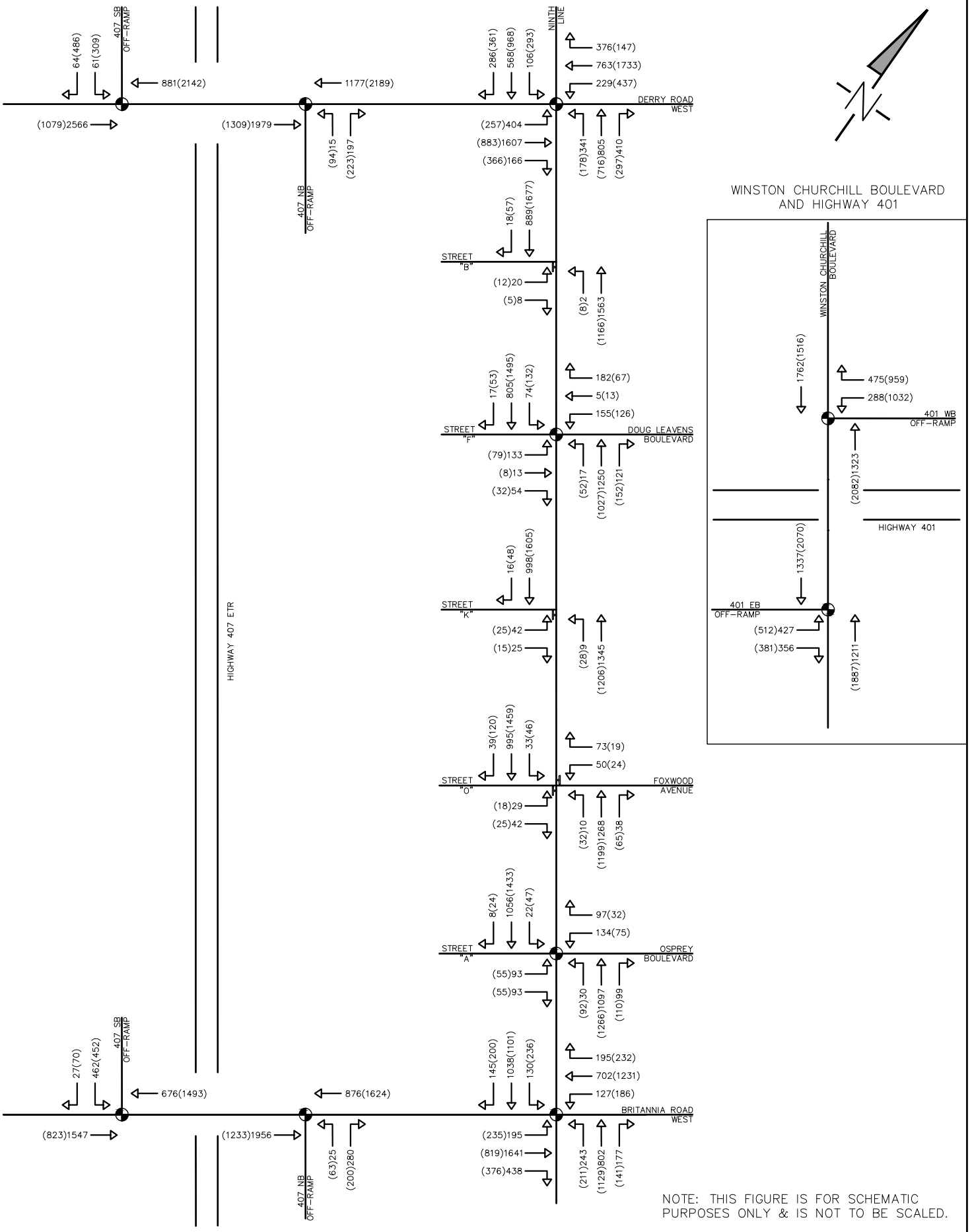
Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 19



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend

SIGNAL CONTROL

STOP CONTROL

XX(YY) WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES

Project

NINTH LINE
DRAFT PLAN OF SUBDIVISION

Drawing

2036 FUTURE TOTAL
TRAFFIC VOLUMES

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D.L.	D.L.	780-5227

Scale	Date	Check By	Drawing
N.T.S.	MAY 17, 2019	A.F.	FIG. 20