TOWN OF CALEDON
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TRANSPORTATION ASSESSMENT UPDATE

BOLTON NORTH HILL
OPTION 1 & OPTION 2 LANDS

TOWN OF CALEDON
REGION OF PEEL

PREPARED FOR:
BOLTON NORTH HILL
LANDOWNERS GROUP INC.

PREPARED BY:

C.F. CROZIER & ASSOCIATES INC.
2800 HIGH POINT DRIVE, SUITE 100
MILTON, ON
L9T 6P4

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CROZIER
CONSULTING ENGINEERS

Revision Number	Date	Comments
Rev. 0	October 2020	LPAT Submission
Rev. 1	December 2021	Option 1/2 Assessment Submission
Rev. 2	February 2025	Second Submission
Rev. 3	February 2026	Third Submission

1.0 Executive Summary

C.F. Crozier & Associates Inc. (Crozier) was retained by the Bolton North Hill Landowners Group to undertake a Transportation Assessment in support of a Local Official Plan Amendment (LOPA) for the Bolton North Hill Secondary Plan Option 1 and 2 Lands (the 'development') in the Town of Caledon, Region of Peel.

The purpose of a Transportation Assessment is to evaluate the transportation-related impacts arising from the development and to determine if mitigation measures are required on the boundary road network to support the development into the future. This updated assessment was undertaken to address changes to the Concept Plan (Bousfields Inc., February 27, 2026) and to address comments received from the Town of Caledon and Region of Peel on the February 2025 submission. The key findings of study are as follows:

2024 Existing Conditions

The following existing intersections were analyzed as part of the Transportation Assessment:

- King Street and Emil Kolb Parkway
- Highway 50 and Emil Kolb Parkway
- Highway 50 and Columbia Way
- Highway 50 and Cross Country Boulevard/Bolton Heights Road
- Highway 50 and King Street East/West
- Columbia Way and Kingsview Drive
- Columbia Way and Westchester Boulevard
- Columbia Way and Mount Hope Road
- Columbia Way and Forest Gate Avenue
- Columbia Way and Caledon King Townline

The boundary road network is currently operating at overall acceptable levels of service with minor control delays and no critical movements. At the intersection of Highway 50 and King Street East/West, the 95th percentile queue lengths exceed the available storage in the westbound left-turn lane. These results indicate that under 2024 existing traffic operations, all intersections in the study area are currently operating efficiently with minimal delays and reserve capacity to accommodate future increases in traffic volume.

Background Developments

Through communications with the Region of Peel it was confirmed that the growth rate estimates account for growth based on the development of the ROPA 30 Bolton Residential Expansion Settlement Area. The Town of Caledon confirmed that proposed developments within the ROPA 30 boundary should not be double counted as background developments and within the network growth.

As such, a review of the background developments requested by the Town of Caledon was undertaken. A portion of the development of 14275 The Gore Road was carried forward as a background development as it sits outside the ROPA 30 boundary. It was also agreed that the inclusion of 14245 Highway 50 as a background development was acceptable as it will share a collector road with the greater development lands.

Planned Improvements

There are several studies that are currently ongoing, and improvements have been considered based on currently available information.

The 2019 Long Range Transportation Plan identified Highway 50 as maintaining a four lane cross-section. It is noted that the downtown core of Bolton provides one-lane in each direction with on-street parking under existing conditions. The Town of Caledon prepared a Queen Street Corridor Study Report in March 2019, which recommended maintaining the two-lane cross section in the Downtown Core in favour of increased active transportation facilities such as bike lanes and maintaining on-street parking. The Region of Peel is currently undertaking a Complete Corridor Study and Preliminary Design for Queen Street (Highway 50) from Queensgate Boulevard to Columbia Way. Since the public meeting in November 2023 there has been no further information of roadway design released. As such, the existing cross-section for Highway 50 has been maintained for the purposes of this assessment.

The Town of Caledon completed a Multi-Modal Transportation Master Plan in April 2024. Figure ES-1 of the report illustrated the planned widening of both Columbia Way and the Caledon King Townline (south of Columbia Way) to four lanes by the 2041 horizon. Both widenings have been assessed under the 2041 future background and future total horizons.

While not noted in the Transportation Master Plan, the Town's 2024 Development Charges Background Study noted the signalization of Caledon King Town Line at Columbia Way and the widening of Duffy's Lane to a four-lane cross-section. Signalization of the intersection has been considered in the 2041 horizon, with the completion of the road widening. Duffy's Lane, however, has not been modeled with a four lane cross-section as it is not required to support the future total volumes and was not identified in the Transportation Master Plan.

The Caledon Station Secondary Plan Transportation Study presents a future lane configuration of two through lanes per direction on King Street west of Emil Kolb. The widening has been assessed under the 2041 future background and future total horizons.

The Town's Multi-Modal Transportation Master Plan also identifies the planned GTA-West Transportation Corridor (Highway 413) with interchanges planned for Coleraine Drive and with Highway 427, both south of Bolton. The Highway has been identified within the planned improvements but any impact on existing travel patterns have not been assessed under future background and future total horizons.

2051 Future Background Conditions

The boundary road network is expected to operate at overall acceptable Levels of Service, with the exception of the intersection of Highway 50 and King Street, which is expected to operate at LOS "D" and "E", and a maximum volume-to-capacity ratio of 1.13 and 1.16 during the weekday a.m. and p.m. peak hours, respectively. Similar to the existing conditions, under both peak hours, the 95th percentile queue lengths are exceeding the designated storage length for the westbound left-turn lane at the intersection.

These operations are not uncommon at high-volume arterial roadway intersections in urban areas. As previously noted, the Region of Peel is undertaking an Environmental Assessment of the downtown area of Bolton, including the intersection of Highway 50 and King Street. The final cross-section of the roadways determined by the assessment and any additional recommendations are not known at this time. Monitoring of the intersection for signal optimization is recommended as development of Bolton continues over the next 20 years.

Site Generated Traffic

The proposed development is expected to generate 3,416 two-way trips during the weekday a.m. peak hour, and 3,182 two-way trips during the weekday p.m. peak hour at full build-out. Development volumes are dispersed onto the internal and external road networks. Collector roads internal to the Option 1 lands act as site accesses to the boundary road network.

Proposed Roadways

The prepared Concept Plan illustrates the proposed collector and local roadways. The residential collector roads are proposed to have 22 m Right-of-Ways (ROW) and local roads are proposed to have 18 m ROWs. The proposed collector and local ROWs proposed align with the proposed ROWs within other Caledon Secondary Plans.

The 18 m local road cross-section is proposed to have 1.8 m sidewalks on both sides of the roadway, with 2.45 m boulevards. 3.95 m travel lanes are proposed each direction. The roadway width can accommodate on-street parking along residential housing frontage.

The 22 m collector road cross-section is proposed to have 3.0 m multi-use paths on both sides of the roadway with 2.6 m boulevards. The roadway width accommodates a 2.1 m lay-by street parking lane on one side of the roadway and 3.5 m travel lanes in each direction. The 3.5 m travel lane supports the future expansion of the transit system.

Lay-by parking shall be provided along the side of the collector road uninterrupted by driveways to optimize the parking provided. Based on the February 2026 Tertiary Plan, approximately 94% of the length of the collector roadways can support on-street parking uninterrupted by driveways.

A 20 m cross-section was also prepared for review by the landowners and the Town as individual landowners may wish to pursue a 20 m ROW in future planning stages. The cross-section proposes a 3.0 m multi-use path on one side of the roadway and a 1.8 m sidewalk. on the opposing side, both with 2.5 m boulevards. The road width accommodates a 2.1 m lay-by street parking lane on one side of the roadway and 3.3 m travel lanes in each direction.

The Town requested a 26 m ROW for Duffy's Lane. The 26 m major collector road cross-section proposed 3.0 m multi-use paths on both sides of the roadway with 3.4 m boulevards. The roadway accommodates two 2.4 m lay-by parking lanes, one on either side of the roadway, and 3.5 m travel lanes in each direction. The 3.5 m travel lane supports the future inclusion of an expanded transit system.

Recommendations

Multi-modal recommendations include the expansion of existing transit into the development area and the implementation of pedestrian and cycling facilities to promote active transportation connections to the existing services, pedestrian/cycling networks and trails within Bolton. A capacity screening of the road network under 2051 future total conditions was conducted to identify any required road widening. Signal and turn lane warrants as well as a review of unmitigated operations was undertaken to determine further recommendations to support the increase of volumes on the boundary road network.

Table E1 outlines planned improvements and recommendations including the anticipated timeline for the improvements.

E1: Network Improvements

Roadway	Segment or Intersection	Recommendation	Timeline
Planned Improvements			
Columbia way	Highway 50 to Caledon-King Townline	Widening from 2 to 4 lanes	2041
Caledon-King Townline	South of Columbia Way	Widening from 2 to 4 lanes	2041
-	Columbia Way and Caledon-King Townline	Signalization	2041
Future Background Improvements			
King Street	West of Emil Kolb	Widening from 2 to 4 lanes	2041 (Background Development Recommendation)
Highway 50	North of Emil Kolb	Widening from 2 to 4 lanes	2041
Future Total Improvements			
Highway 50	Columbia Way	Optimization of signals in a.m. and p.m. peak	2041
	Bolton Heights	Southbound right-turn lane becomes southbound through/right-turn lane	2041
		Optimization of signals a.m. and p.m. peak hours	2051
	Street A	Signalized intersection based on warrants. Implemented left-turn lane in all directions based on traffic operations with the following storage lengths: - Eastbound (25 m) - Westbound (50 m) - Northbound (20 m) - Southbound (20 m)	With construction of Street A (2031 assumed)
	Emil Kolb to Columbia Way	Widening to two lanes per direction.	2041
	Emil Kolb / Street B	Revised circulation/signage	With construction of Street B (2031 assumed)
	Street C	Implemented left-turn lane based on warrants with the following storage lengths: - Northbound (40 m) - Southbound (40 m)	With construction of Street C (2031 assumed)
	Street D	Implemented left-turn lane based on warrants with the following storage lengths: - Southbound (55 m)	With construction of Street D (2031 assumed)
Columbia Way	Kingsview Drive/Street G	Optimization of splits in the p.m. peak hours	With construction of Street G (2031 assumed)
	Mount Hope Road	Implemented left-turn lane in the eastbound/westbound directions (15 m)	Warranted 2031 Recommended with widening in 2041

Roadway	Segment or Intersection	Recommendation	Timeline
Planned Improvements			
	Forest Gate Avenue/ Street I	Implemented left-turn lane in eastbound/westbound directions (15 m)	With construction of Street I (2031 assumed)
Emil Kolb Parkway	Highway 50 to King Street	Widening to a four-lane cross-section	2041
	Duffy's Lane	Signalized intersection based on traffic operations	2041
		Southbound right-turn lane becomes southbound through/right-turn lane	With widening of Emil Kolb Parkway in 2041
	Street E	Implemented left-turn lane in eastbound direction (65m)	With construction of Street E (north) (2041 assumed)
		Signalized intersection based on traffic operations. Implemented left-turn lane in westbound direction (15 m)	With construction of Street E (south) (2051 assumed)

2051 Future Total Conditions

Under 2051 future total conditions, the intersection of Highway 50 and Emil Kolb/Street B is forecasted operate with an overall Level of Service 'A' in the a.m. peak hour and Level of Service 'C' in the p.m. peak hours. However, in the p.m. peak hour the westbound leg of the intersection (Street B) is expected to experience significant delay, due to the high number of northbound through and eastbound left turns vehicles in the p.m. peak hour. Both movements are in conflict with westbound movements entering the intersection. Ongoing monitoring of the intersection should occur as unit are constructed to understand the actual impact of the fourth leg. It is also noted that the geometry of a roundabout impacts the forecasted operations when modelling. As design of the intersection proceeds, updated analysis can be undertaken to reassess forecasted operations.

The intersection of Highway 50 and Bolton Heights Road is forecasted operate with an overall Level of Service 'D' and 'A' in the a.m. peak hour and p.m. peak hours, respectively. However, in the a.m. peak hour the southbound leg of the intersection (Highway 50) is expected to experience less than a minute of delay. Ongoing monitoring of the intersection is recommended to understand the impact of future growth on the boundary road network.

Similar to the future background operations the intersection of Highway 50 and King Street is expected to operate at capacity with extended delays for several movements. Similar to the existing and future background conditions, under both peak hours, the 95th percentile queue lengths are exceeding the designated storage length for the westbound left-turn lane at the intersection. The recommendations of the Queen Street Environmental Assessment should be considered before further mitigation are made. It is expected that additional through lanes would improve operations, however the Town of Caledon is in favour of maintaining the two lane cross-section and providing additional active transportation facilities. Significant delay may encourage more users to by-pass downtown Bolton in favour of parallel routes, which would be supported by future Highway 413 interchanges.

Columbia Way and Mount Hope Road experiences 123.9s of delay for southbound vehicles. Under 2051 future total conditions, the intersection did not warrant signalization or southbound left-turn lanes. The intersection is recommended to be monitored for ongoing improvements to determine if and when additional mitigation measures are required.

The intersection of Columbia Way and Caledon King Townline is expected to approach a critical v/c ratio in the a.m. peak hour due to the large volume of eastbound right-turning vehicles. The intersection is recommended to be monitored for ongoing improvements such as signal timing optimization as development in the area proceeds.

The intersection of Highway 50 and Street D is expected to experience an LOS of 'F' and critical v/c ratios in the a.m. and p.m. peak hours. These operations are typical on a minor controlled approach along a major roadway. As noted previously in the report, the signalization of the intersection is not warranted. Motorists may choose to alternate their travel behaviour and utilize the signalised intersection of Street G and Columbia Way if delays are observed to be higher in the peak hours at Street D.

All remaining study intersections are forecasted to operate well with acceptable delays and capacity to accept future growth. Overall, ongoing monitoring with the build-out of the ROPA 30 lands and into the future horizons is recommended to capture changes in travel behaviour and traffic patterns within the community.

Conclusion

The proposed Bolton North Hill development can be accommodated on the boundary road network with the noted recommendations and ongoing monitoring. Future reports prepared to support the Draft Plan of Subdivision Applications and Site Plan Applications can monitor experienced growth as well as provide greater detail regarding mitigations and timelines required to support the construction and occupancy of the development.

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2.0 Introduction

2.1 Background and Purpose

C.F. Crozier & Associates Inc. (Crozier) was retained by the Bolton North Hill Landowners Group to undertake a Transportation Assessment in support of a Local Official Plan Amendment (LOPA) for the Bolton North Hill Secondary Plan Option 1 and 2 Lands (the 'development') in the Town of Caledon, Region of Peel. The development is located north of the intersection of Regional Road 50 and Columbia Way.

The purpose of a Transportation Assessment is to evaluate the transportation-related impacts arising from the development and to determine if mitigation measures are required on the boundary road network to support the development into the future.

This updated assessment was undertaken to address changes to the Concept Plan (Bousfields Inc., February 27, 2026) and to address comments received from the Town of Caledon and Region of Peel on the February 2025 submission. **Figure 1** illustrates the February 2026 Tertiary Plan. **Appendix A** includes a Comment Response Matrix for reference.

2.2 Background Studies

Paradigm Transportation Solutions Ltd. completed the "Bolton Residential Expansion Evaluation of Alternative Growth Areas Transportation" (June 2014) for the Town of Caledon analyzing the transportation-related impacts arising from residential expansion Options 1 and 3. CIMA+ completed the "Intersection Analysis for Bolton Residential Expansion Areas" (April 2016) for the Region of Peel to analyze intersection operations and recommend intersection improvements on Regional Roads for the residential expansion options.

A previous Transportation Assessment was completed by Crozier in October 2020 for the LPAT Case No. PL170058. The study reviewed all six Bolton Residential Expansion Options as well as three rounding out areas and additional employment lands. **Appendix B** illustrates the original Bolton Residential Expansion areas.

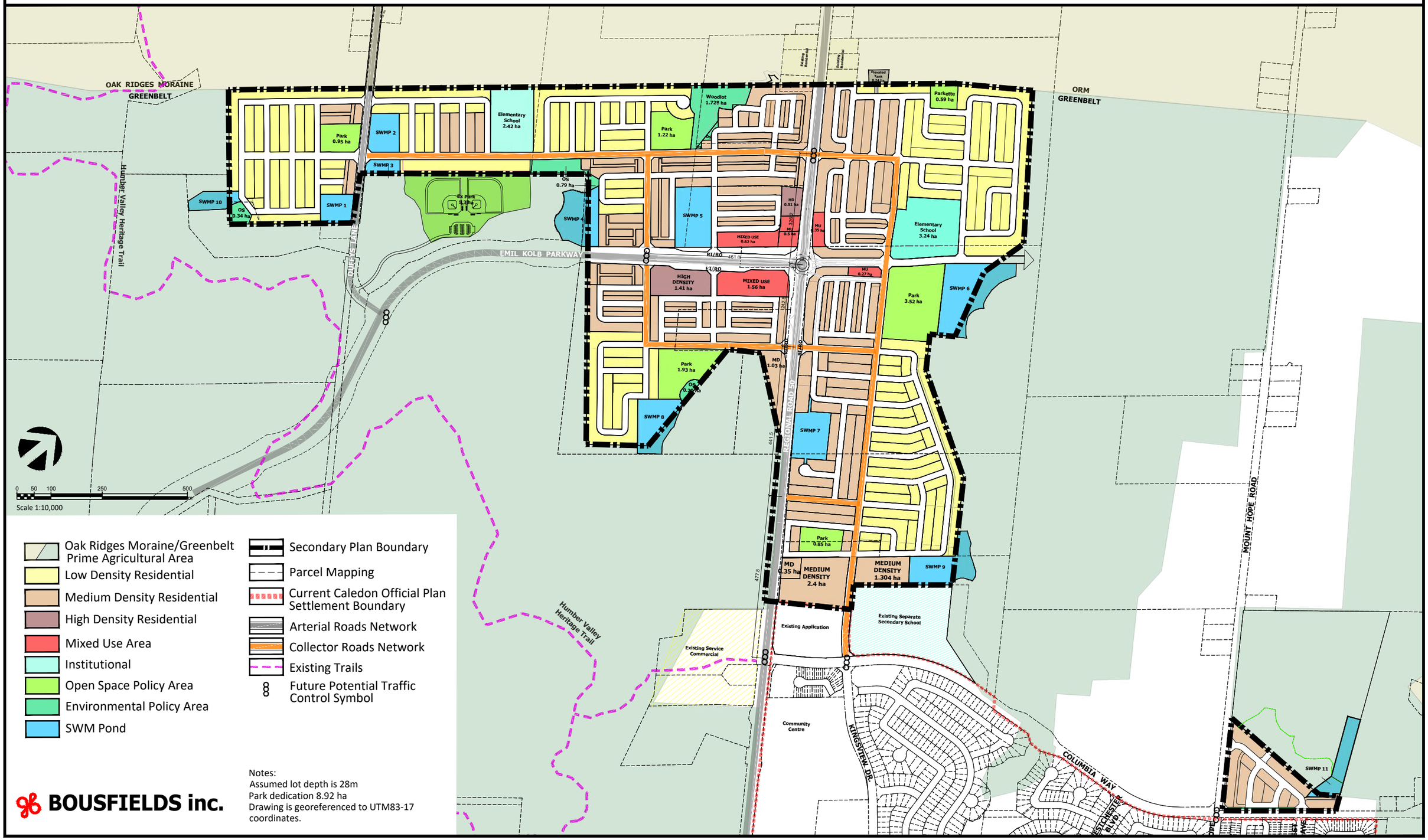
2.3 Study Area

The Option 1 Lands are approximately 171 ha and are located along Regional Road 50, north of Columbia Way, extending west to the north and south of Emil Kolb Parkway and west of Duffy's Lane. The Option 2 Lands are approximately 4.3 ha and are bound by Columbia Way to the south and Mount Hope Road to the west.

A 32.03-ha parcel, located at the southern limit of the Option 1 Lands, has been subject to Regional Official Plan Amendment 30 (ROPA 30), which was approved by the Local Planning Appeal Tribunal (LPAT) on November 30, 2020. This LPAT approval brings the 32.03-ha portion of Option 1 Lands into the Bolton Rural Service Centre Settlement Area Boundary. While the portion of the development that is within ROPA 30 may proceed now, the balance of the lands would require the approval of the 2051 urban boundary expansion through the current Regional SABE process.

Bolton North Hill Tertiary Plan

Owner's Plans Consolidation



- Oak Ridges Moraine/Greenbelt Prime Agricultural Area
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Mixed Use Area
- Institutional
- Open Space Policy Area
- Environmental Policy Area
- SWM Pond
- Secondary Plan Boundary
- Parcel Mapping
- Current Caledon Official Plan Settlement Boundary
- Arterial Roads Network
- Collector Roads Network
- Existing Trails
- Future Potential Traffic Control Symbol

Notes:
Assumed lot depth is 28m
Park dedication 8.92 ha
Drawing is georeferenced to UTM83-17 coordinates.

BOUSFIELDS inc.

The remainder of Option 1/2 Lands are currently designated as "Rural Area" per the Region of Peel Official Plan and "Agricultural Area" in the Town of Caledon's Official Plan. To permit development of these lands for the proposed urban uses, Option 1/2 Lands will need to be brought into the Bolton Rural Service Centre Settlement Area Boundary. This review is currently underway at the Region of Peel through the Region's 2051 Municipal Comprehensive Review (MCR) of the Region's Official Plan. Further, a local Official Plan Amendment is required to assign urban land use designations to all the Option 1 and 2 Lands.

2.4 Option 1 & Option 2 Development Yields

The following residential unit counts by landowner were established based on the February 2026 Conceptual Tertiary Plan and unit yields were provided by Bousfields. Non-participating areas within the Option 1/2 lands have also been considered and included. **Table 1** summarizes the unit counts for the various land uses within the Bolton North Hill development.

Table 1: Residential Development Yields (Option 1/2)

Owner	Single-Detached	Townhouses	Apartments
1328272 Ontario Ltd.	84	138	0
Ballymore Building (Bolton) Corp.	0	161	0
F.P.L.E.T. Group Inc.	0	114	98
14685 Hwy 50 Inc.	327	373	28
Oakbank Estates Inc.	142	385	22
Marhome Ventures	177	164	0
Georgian Humbervale	0	0	148
Cold Creek Developments	0	142	0
Remaining Developments East	6	17	0
Remaining Developments West	549	733	298
Total	**1,283**	**2,238**	**312**

A total of 3.15 ha has been designated as mixed-use and have been considered for commercial uses. Additionally, there are two elementary school blocks proposed in lands, one public school block of 3.24 ha west of Highway 50 and one Catholic school block of 2.42 ha east of Highway 50.

3.0 Existing Conditions

An analysis of existing conditions has been completed to understand how the road network is currently operating.

3.1 Study Intersections

The following existing intersections have been analyzed as part of the Transportation Assessment:

- King Street and Emil Kolb Parkway
- Highway 50 and Emil Kolb Parkway
- Highway 50 and Columbia Way
- Highway 50 and Cross Country Boulevard/Bolton Heights Road
- Highway 50 and King Street East/West
- Columbia Way and Kingsview Drive
- Columbia Way and Westchester Boulevard
- Columbia Way and Mount Hope Road
- Columbia Way and Forest Gate Avenue
- Columbia Way and Caledon King Townline

3.2 Boundary Road Network

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

Table 2: Boundary Road Network

Roadway (Jurisdiction)	Feature				
	Direction	Classification	Speed Limit	Surrounding Uses	Number of Lanes
Highway 50 (Regional)	Two-way (North-South)	Arterial	60 km/h north of Mayfield Rd	Rural north of Columbia Way Urban south of Columbia Way	Four[1] Three[2] Two[3]
Emil Kolb Parkway (Regional)	Two-way (North-South)	Arterial	70 km/h	Rural	Two
King Street (Regional)	Two-way (East-West)	Arterial	50 km/h within the core area 60 km/h just outside core area	Urban east of Coleraine Drive Rural west of Coleraine Drive	Two
Columbia Way (Town)	Two-way (East- West)	Collector	40 km/h east of Highway 50 60 km/h east of the school	Urban to the south Rural to the north	Two
Caledon King Townline (Town)	Two-way (North- South)	Collector	60 km/h	Rural	Two
Duffys Lane	Two-way (North- South)	Collector	60 km/h	Rural	Two
Cross Country Boulevard/Bolton Heights Road	Two-way (East-West)	Local	40 km/h	Urban	Two

Roadway (Jurisdiction)	Feature				
	Direction	Classification	Speed Limit	Surrounding Uses	Number of Lanes
Kingsview Drive	Two-way (North- South)	Local	40 km/h	Urban	Two
Westchester Boulevard	Two-way (North- South)	Local	40 km/h	Rural	Two
Mount Hope Road	Two-way (North- South)	Collector	60 km/h	Rural	Two
Forest Gate Avenue	Two-way (North- South)	Local	40 km/h	Rural	Two

Note 1: South of Centennial Dr
Note 2: South of Columbia Way
Note 3: North of Columbia Way

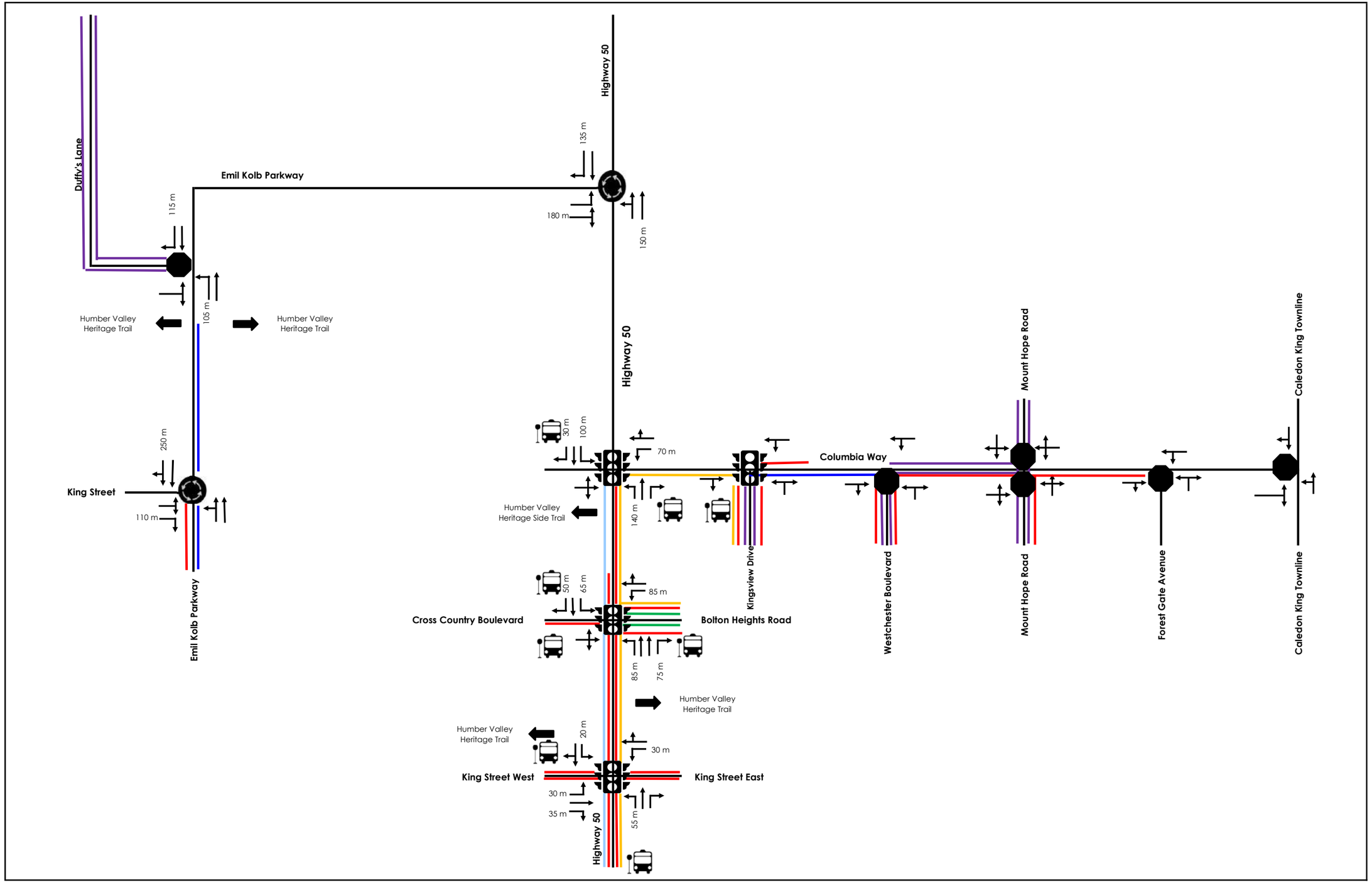
Figure 2 illustrates the existing boundary road network, including lane configurations, storage lengths, and intersection control.

3.3 Bolton By-Pass

Emil Kolb Parkway opened in 2015 as part of the Bolton Arterial Route (BAR), which was planned to divert through-traffic away from the historic downtown Bolton core in the area of Queen Street and King Street. Part of its fundamental purpose was to reduce congestion and heavy truck traffic in downtown Bolton by providing a continuous by-pass around Bolton rather than forcing regional traffic through the village centre. Queen Street services residential and commercial driveways as well as the finer grid pattern of the core of Bolton. The roadway has increased friction with on-street parking and points of conflict with the priority of the roadway is access to the business and not moving regional volumes.

The segment of Highway 50 from Healey Road to Emil Kolb Parkway is designated as a "No Heavy Trucks" route. This designation is to prevent regional heavy truck traffic from travelling through the downtown core of Bolton. To support the truck restrictions on Highway 50, Emil Kolb does not restrict truck movements.

Over the eight hours of data collected, 306 heavy vehicles were recorded on Emil Kolb, which is approximately 8% of the total number of vehicles on the road. With the addition of site generated volumes, the percentage is forecasted to be less than 2% of the volumes on the roadway. The planned network connections of Street E and Street F (outlined further in **Section 5.0**) are adequately spaced based on Peel Region's requirements. The separation of intersections and restrictions on the driveways of residential and commercial blocks maintains a reduction in conflict points and friction when compared to Queen Street, and supports the continued use of Emil Kolb as a by-pass route.



Legend:

- Sidewalk
- Bike Lane
- Multi-Use Path
- On-Road Signed Cycling Route
- Brampton Transit Route 41
- Go Transit Route 38
- Trail Head
- Signalized Intersection
- Stop-Controlled Intersection
- XX Turn Lane Parrallel Length
- Movement per Lane
- Transit Stop
- Roundabout

Bolton North Hill

Existing Boundary Road Network

CROZIER CONSULTING ENGINEERS

Figure 2

Project No. 708-3446
Date. February 2026
Analyst. KH

3.4 Transit Operations

Brampton Transit operates Route 41 "Bolton" between Highway 50 and Columbia Way in Bolton to Highway 50 and Queen Street in Brampton. This route is under contract to the Town of Caledon. The route is only serviced during peak commuter hours and operates with a minimum frequency of 55 minutes. Trips can be planned through the Triplinx website linked on the Town of Caledon's website.

GO Transit operates bus Route 38 "Bolton-Malton" in Bolton, running from a north terminus at the intersection of Highway 50 and Columbia Way to Malton GO station, with connection to Union Station. Through Bolton the bus operates along Highway 50 with a number of stops, including the Park 'n Ride commuter lot at the intersection of Highway 50 and Mayfield Road.

Assistive transportation services are also available to seniors and residents with disabilities through the Region of Peel's Transhelp and the Town's Caledon Community Services.

Table 3 outlines the existing transit routes in the study area.

Table 3: Existing Transit Services

Route	Direction	Span	Operation	Bus Stops in Development Area
Brampton Transit Route 41	Two-way (North/South)	Columbia Way/Bolton Heights to Queen Street/Highway 7	Weekday a.m. and p.m. peak hours	Kingsview Dr @ Columbia Way Highway 50 @ Caledon Recreation Centre
Go Transit Route 38	Two-Way (North/South)	Highway 50 and Columbia Way to Malton Go Station	Weekday at 5:05 and 6:05 a.m. and 5:17 and 7:37 pm	Highway 50 @ Columbia Way

The boundary road network in **Figure 2** illustrates the existing bus stop locations in the study area. **Appendix C** contains relevant transit information.

3.5 Active Transportation Network

Bolton has a network of active transportation facilities, composed of hiking trails, bike routes, paved and unpaved multi-use trails and footpaths. Concrete sidewalks connect residential areas to commercial and employment areas.

The existing active transportation facilities on the boundary road network are described in **Table 4**.

Table 4: Active Transportation Network

Roadway	Facilities	Span
Highway 50	Paved sidewalk on both sides of the roadway	North of Columbia Way –no sidewalk North of the downtown core to Columbia Way – sidewalk on one side alternating Downtown core – sidewalks on both sides of the roadway
King Street	Paved Sidewalk on both east and west Sides	Mixture of Grass and Paved boulevards, some sections no boulevard
	Signed Bike Trail	From Evans Ridge to Caledon King Townline From Humber Lea Road to Old King Road
Columbia Way	Multi-Use Path on south side of the roadway	Kingsview Drive to Westchester Boulevard
	On-street cycling route	Westchester Boulevard to Mount Hope Road
Kingsview Drive	Paved sidewalk on both sides of roadway	Columbia Way to Taylorwood Avenue, sidewalk on at least one side to Hathaway Court
	On-street cycling route	Columbia Way to Longwood Drive
Westchester Boulevard	Paved sidewalk on both sides of roadway	Columbia Way to Egan Crescent
	On-street cycling route	Columbia Way to Guardhouse Drive
Mount Hope Road	Paved sidewalk on east side of roadway	Columbia Way to Guardhouse Drive
	On-street cycling route	Castlederg Side Road to Guardhouse Drive
Bolton Heights Road	Paved sidewalk on both sides of roadway	Highway 50 to Kingsview Drive
	Painted bike lanes on both sides of the roadway	
Duffy's Lane	On-street cycling	Castlederg Side Road to Emil Kolb Parkway
Emil Kolb Parkway	Multi-Use Path on east side of the roadway	South of King Street to the Humber Valley
Humber Valley Heritage Trail	Multi-use trail	Spanning from Emil Kolb Parkway to Albion Vaughn Road with a network of side trails

The boundary road network in **Figure 2** illustrates the existing pedestrian and cycling facilities in the study area.

There are also extensive hiking trail and conservation facilities in the north part of Bolton. The Humber Valley Heritage Trail starts near the intersection of Caledon King Townline and King Street and crosses northwest, through the Bolton Resource Management Tract to the Northwest of the study area. This trail offers a Main trail and other side trails. The Bolton Camp, located off Caledon-King Townline and just north of King Street, offers 15 km of hiking trails. This conservation area also has side trails branching from the Humber Valley Heritage Trail.

Appendix C contains relevant active transportation information, including visual representations of the trail system.

3.6 Traffic Data

Turning movement counts (TMCs) for the boundary road network were conducted by Spectrum Traffic Inc. staff on April 4th, 2024, between 6:00a.m.-10:00a.m., and 3:00p.m.-7.00p.m. Regional staff provided updated signal timing cards for the study intersections.

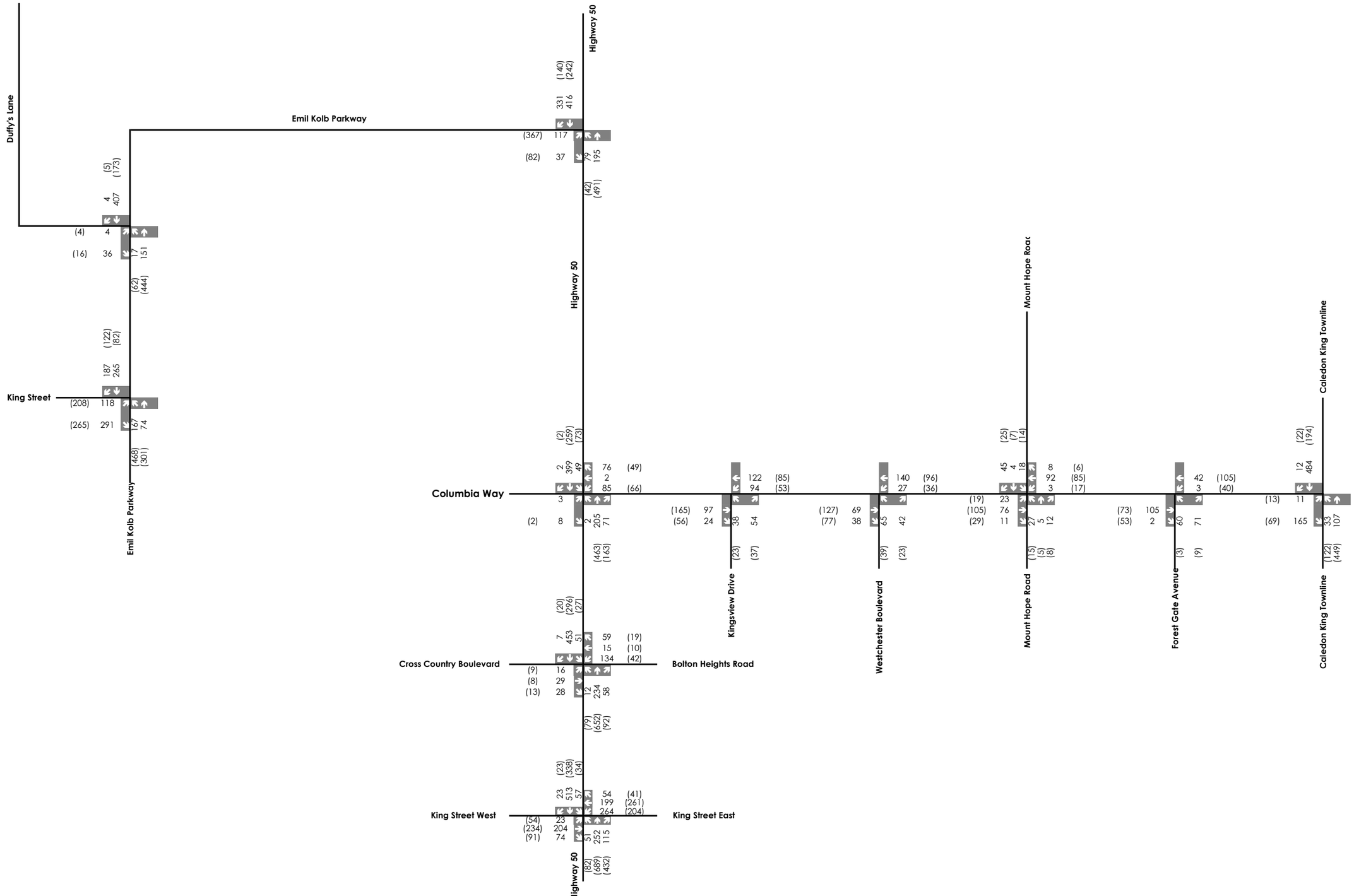
Table 5 outlines the TMC count dates and signal timing plan preparation date for each study intersection.

Table 5: Summary of Traffic Data

Intersection	Signal Timing Plan Date	TMC Count Date
King Street and Emil Kolb Parkway	N/A (roundabout)	April 4th, 2024
Highway 50 and Emil Kolb Parkway	N/A (roundabout)	
Highway 50 and Columbia Way	August 1, 2017	
Highway 50 and Bolton Heights Road	June 3, 2024	
Highway 50 and King Street East/West	June 3, 2024	
Columbia Way and Kingsview Drive	May 28, 2024	
Columbia Way and Westchester Boulevard	N/A (Stop-controlled)	
Columbia Way and Mount Hope Road	N/A (Stop-controlled)	
Columbia Way and Caledon King Townline	N/A (Stop-controlled)	

Appendix D contains the traffic count data and signal timing plans. **Figure 3** illustrates the 2024 existing traffic volumes.

It should be noted that volumes at the intersection of Columbia Way and Forest Gate were derived from the surrounding intersection of Columbia Way/Mount Hope Road and Columbia Way/Caledon King Townline. The intersection will gain a fourth leg with the development of a site access to the north which is assessed under 2041 and 2051 future total operations.



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour)

Bolton North Hill

2026 Existing Traffic Volumes

CROZIER CONSULTING ENGINEERS

Figure 3

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Analyst. AK

3.7 Traffic Modelling

The assessment of signalized and stop controlled intersections was undertaken with Synchro modelling software and intersection operations were derived from Synchro using HCM2000 methodology. The network was modelled in Synchro Version 11 in conformance with the modelling guidelines within the Region of Peel's Traffic Impact Study Guidelines.

The critical volume-to-capacity (v/c) ratio is considered to be the maximum ratio for movements at the intersection. 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, respectively. Movements exceeding the Region's threshold have been highlighted. The 95th percentile queue lengths were also derived from Synchro.

The assessment of roundabout intersections was conducted using the Junctions 8 (ARCADY) roundabout software. Roundabout geometrics were estimated from the existing roundabouts.

3.8 Level of Service

The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU) and the Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000). The Level of Service for a roundabout is based on the average delay per arriving vehicle. **Appendix E** outlines the Levels of Service (LOS) for unsignalized, signalized, and roundabout intersections.

3.9 Peak Hour Factors

The updated Traffic Impact Study and Modelling Guidelines from the Region no longer list a peak hour factor to be applied to the study intersections. As such, **Table 6** outlines the peak hour factors calculated for the study intersections.

Table 6: Peak Hour Factors

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	Hour	Factor	Hour	Factor
King Street and Emil Kolb Parkway	7:30 a.m. - 8:30 a.m.	0.95	4:45 p.m. - 5:45 p.m.	0.90
Highway 50 and Emil Kolb Parkway	7:45 a.m. - 8:45 a.m.	0.96	4:45 p.m. - 5:45 p.m.	0.91
Highway 50 and Columbia Way	7:45 a.m. - 8:45 a.m.	0.92	4:45 p.m. - 5:45 p.m.	0.96
Highway 50 and Bolton Heights Road	7:45 a.m. - 8:45 a.m.	0.83	4:45 p.m. - 5:45 p.m.	0.97
Highway 50 and King Street	8:00 a.m. - 9:00 a.m.	0.94	4:45 p.m. - 5:45 p.m.	0.97
Columbia Way and Kingsview Drive	7:45 a.m. - 8:45 a.m.	0.83	5:00 p.m. - 6:00 p.m.	0.91
Columbia Way and Westchester Boulevard	7:45 a.m. - 8:45 a.m.	0.80	5:00 p.m. - 6:00 p.m.	0.92
Columbia Way and Mount Hope Road	7:45 a.m. - 8:45 a.m.	0.82	5:00 p.m. - 6:00p.m.	0.95
Columbia Way and Caledon King Townline	7:30 a.m. - 8:30 a.m.	0.94	4:15 p.m. - 5:15 p.m.	0.97
Emil Kolb Parkway and Duffy's Lane	7:30 a.m. - 8:30 a.m.	0.90	4:45 p.m. - 5:45 p.m.	0.84

It is noted that the morning bell (8:12 a.m.) of the St. Michael Catholic Secondary School aligns with the a.m. peak hour. The afternoon bell (2:15) is outside of the p.m. peak hour of the network.

3.10 Intersection Operations

The existing intersection operations at the study intersections were analyzed using the existing traffic volumes illustrated in **Figure 3.** Detailed capacity analysis worksheets are included in **Appendix F**.

Table 7 outlines the 2024 existing traffic operations.

Table 7: 2024 Existing Traffic Operations

Intersection	Movement	A.M. Peak Hour			P.M. Peak Hour		
		LOS	V/C Ratio	Delay (s)	LOS	V/C Ratio	Delay (s)
King Street and Emil Kolb Parkway	Overall	A	-	0.73	A	-	1.19
	SB	A	-	0.68	A	-	1.11
	NB	A	-	0.71	A	-	1.58
	EB	A	-	0.78	A	-	0.59
Highway 50 and Emil Kolb Parkway	Overall	A	-	0.92	A	-	0.79
	EB	A	-	1.01	A	-	0.71
	SB	A	-	1.09	A	-	0.64
	NB	A	-	0.41	A	-	0.95
Highway 50 and Columbia Way	Overall	A	0.55	9.9	A	0.44	6.2
	EBLTR	A	0.07	1.0	A	0.00	0.00
	WBL	E	0.55	57.9	D	0.44	0.44
	WBTR	B	0.32	13.0	A	0.10	0.10
	NBL	A	0.00	4.0	-	-	-
	NBT	A	0.15	4.0	A	0.31	0.31
	NBR	A	0.06	1.1	A	0.12	0.12
	SBL	A	0.06	4.0	A	0.10	0.10
	SBT	A	0.29	4.8	A	0.17	0.17
	SBR	A	0.00	0.0	A	0.00	0.00
Highway 50 and Bolton Heights Road	Overall	B	0.43	19.8	A	0.23	8.2
	EBL	-	-	-	-	-	-
	EBTR	C	0.34	31.5	C	0.11	24.0
	WBL	C	0.38	34.4	D	0.21	39.9
	WBTR	B	0.19	10.1	B	0.11	18.6
	NBL	C	0.03	28.5	A	0.09	7.6
	NBT	C	0.12	22.2	A	0.23	6.7
	NBR	B	0.06	15.7	A	0.07	2.4
	SBL	B	0.08	13.0	A	0.04	8.2
	SBT	B	0.43	15.3	A	0.20	7.2
	SBR	A	0.01	0.0	A	0.02	0.3
Highway 50 and King Street	Overall	C	0.79	32.5	C	0.81	33.9
	EBL	C	0.08	25.2	C	0.20	30.0
	EBT	E	0.76	64.8	E	0.81	76.8
	EBR	A	0.23	3.5	A	0.27	4.7

Intersection	Movement	A.M. Peak Hour			P.M. Peak Hour		
		LOS	V/C Ratio	Delay (s)	LOS	V/C Ratio	Delay (s)
	WBL	D	0.79	48.3	D	0.61	40.0
	WBTR	D	0.59	43.5	D	0.69	54.3
	NBL	B	0.15	12.1	B	0.16	14.5
	NBT	C	0.31	20.8	D	0.75	35.1
	NBR	A	0.16	4.1	A	0.49	8.9
	SBL	B	0.09	11.5	B	0.12	15.0
	SBTR	C	0.64	27.4	C	0.43	27.3
Columbia Way and Kingsview Drive	Overall	A	0.32	8.1	A	0.20	6.7
	EBTR	A	0.11	4.0	A	0.18	4.5
	WBTL	A	0.24	5.7	A	0.13	5.0
	NBLR	B	0.32	19.2	B	0.20	18.8
Columbia Way and Westchester Boulevard	Overall	B	-	-	B	-	-
	EBTR	--	0.07	0.0	-	0.13	0.0
	WBTL	A	0.02	1.3	A	0.03	2.2
	NBLR	B	0.17	10.9	B	0.09	10.6
Columbia Way and Mount Hope Road	Overall	B	-	-	B	-	-
	EBLTR	A	0.02	1.7	A	0.01	1.0
	WBLT	A	0.00	0.1	A	0.01	1.3
	NBLTR	B	0.07	10.9	B	0.04	10.5
	SBLTR	A	0.09	9.9	A	0.06	9.8
Columbia Way and Caledon King Townline	Overall	B	-	-	B	-	-
	EBLR	B	0.32	14.5	B	0.12	11.3
	NBTL	A	0.03	2.2	A	0.09	2.4
	SBTR	--	0.30	0.0	-	0.13	0.0
Emil Kolb Parkway and Duffy's Lane	Overall	B	-	-	B	-	-
	EBLR	B	0.07	11.4	B	0.03	10.7
	NBL	A	0.02	8.5	A	0.05	7.0
	NBT	--	0.09	0.0	-	0.30	0.0
	SBT	--	0.26	0.0	-	0.12	0.0
	SBR	--	0.00	0.0	-	0.00	0.0

Table 8: 2024 Existing Queuing

Intersection	Storage Length	95th Percentile Queue	
		A.M. Peak Hour	P.M. Peak Hour
King Street and Emil Kolb Parkway	-	SB – 3.1 m NB – 7.5 m EB – 3.0 m	SB – 1.4 m NB – 14.7 m EB - 4.4 m
Highway 50 and Emil Kolb Parkway	-	EB – 7.5 m SB – 9.5 m NB – 7.5 m	EB – 2.5 m SB – 0.4 m NB – 6 m
Highway 50 and Columbia Way	WBL – 70 m NBL – 140 m SBL – 100 m SBR – 30 m	WBL – 34 m NBL – 1 m SBL – 7 m SBR – 0 m	WBL - 26 m NBL – 0 m SBL – 8 m SBR – 0 m
Highway 50 and Bolton Heights Road	WBL – 85 m NBL – 85 m NBR – 75 m SBL – 65 m SBR – 50 m	WBL – 31 m NBL – 8 m NBR – 15 m SBL – 16 m SBR – 0 m	WBL – 14 m NBL – 18 m NBR – 8 m SBL – 8 m SBR – 1 m
Highway 50 and King Street	EBL – 30 m EBR – 35 m WBL – 30 m NBL – 55 m SBL – 20 m	EBL – 9 m EBR – 5 m **WBL – 75 m** NBL – 12 m SBL – 7 m	EBL – 18 m EBR – 7 m **WBL – 58 m** NBL – 20 m SBL – 10 m
Columbia Way and Kingsview Drive	-	-	-
Columbia Way and Westchester Boulevard	-	-	-
Columbia Way and Mount Hope Road	-	-	-
Columbia Way and Caledon King Townline	-	-	-
Emil Kolb Parkway and Duffy's Lane	NBL – 105 m SBR – 115 m	NBL – 1 m SBR – 0 m	NBL – 1 m SBR – 0 m

The boundary road network is currently operating at overall acceptable levels of service with minor control delays and no critical movements. At the intersection of Highway 50 and King Street East/West, the 95th percentile queue lengths exceed the available storage in the westbound left-turn lane. These results indicate that under 2024 existing traffic operations, all intersections in the study area are currently operating efficiently with minimal delays and reserve capacity to accommodate future increases in traffic volume.

4.0 Future Background Conditions

A future background analysis is used to determine the impact of growth on the boundary road network without the addition of volumes generated by the proposed development.

4.1 Background Studies

A number of background studies were reviewed to understand the future conditions and overall transportation planning strategy for the study area. The following reports were reviewed and are referenced:

- Queen Street (Highway 50) from Queensgate Boulevard to Columbia Way, Bolton Complete Corridor Study and Preliminary Design (Region of Peel, ongoing)
- Columbia Way Class Environmental Assessment Study (Town of Celedon, 2021)
- Town of Caledon Active Transportation Master Plan (2024)

- Town of Caledon Transportation Maser Plan (2017)
- Town of Caledon Multi-Modal Transportation Master Plan (2024 Draft)
- Bolton Transportation Master Plan (MMM Group Ltd., 2015)
- Region of Peel Road Characterization Study (2013)
- Region of Peel Long Range Transportation Plan (2019)
- Region of Peel 2051 Transportation Master Plan (ongoing progress updates)

4.2 Horizon Years

As previously noted, a portion of the proposed development is within the Bolton Residential Expansion Settlement Area approved for development by 2031 under ROPA 30. The remaining development is anticipated to proceed by 2051. For the purposes of this study the horizon year of 2031 was retained from the previous study to align with the ROPA 30 horizon, and previous reports completed for the expansion areas.

The horizon years of 2041 and 2051 were also assessed to review the impact of the remaining development proceeding. The 2041 and 2051 horizon aligns with the Regions EMME modelling and Long Range Transportation planning horizons. Future assessments can update the timeline and horizons of development while reassessing future traffic growth on the road network. The development's phasing plan can be shown in **Figure 4**

4.3 Growth Rate

EMME Modelling Plots and compounded growth rate volumes were provided by the Region of Peel. Based on the information provided and the location of development applications in the Town of Caledon the following compounded annual growth rate were applied up to the 2051 horizon:

- 1% on Emil Kolb Parkway, Columbia Way, King Street, Mount Hope Road, Caledon King Townline, Duffy's Lane and Forest Gate Avenue.
- 0.5% on Highway 50.
- No growth on Cross County Boulevard, Bolton Heights Road, Kingsview Drive, and Westchester Boulevard.

Appendix G includes the EMME modelling and development mapping for reference.

4.4 Background Developments

Through communications with the Region of Peel it was confirmed that the growth rate estimates account for growth based on the development of the ROPA 30 Bolton Residential Expansion Settlement Area. The Town of Caledon confirmed that proposed developments within the ROPA 30 boundary should not be double counted as background developments and within the network growth. As such, a review of the background developments requested by the Town of Caledon was undertaken. A portion of the development of 14275 The Gore Road was carried forward as a background development as it sits outside the ROPA 30 boundary. It was also agreed that the inclusion of 14245 Highway 50 as a background development was acceptable as it will share a collector road with the greater development lands. Based on comments received on the first submission, the Mount Hope West Development was included in the analysis. **Appendix A** includes record of communications with Region and Town staff.

The Transportation Impact Study (January 2022) prepared by CGH Transportation for the development of 14245 Highway 50 reviews the proposal for 24 townhouse units, 118 stacked

townhouse units and 409 residential apartment units. The site proposes a full-moves access to Columbia Way and a right-in-right-out access to Highway 50. It is acknowledged that the Town will require the access to Columbia Way to align with Kingsview Drive and continue north to provide connection with the Bolton North Hill development. As such, updates are expected to the Site Plan included in the 2022 Transportation Impact Study.

The trip assignment for the development of 14245 Highway 50 was obtained from Figure 16 in the Transportation Impact Study. Trips distributed to study intersections outside of those analyzed in the study were distributed based on the trip distribution outlined in Section 6.3. The background development is expected to be fully built-out by the 2031 horizon year. **Figure 5** illustrates the trip assignment reviewed for 14245 Highway 50.

The Transportation Impact Study (February 2021) prepared by the BA Group for the development of 14275 The Gore Road (Caledon Station Secondary Plan) reviews the proposal for a total of 3,104 single-detached residential units, 1,6000 low-rise residential units, 3,967 mid-ride residential units, three school blocks and lands for a future GO Transit station. The development proposed two connections to King Street, two connections to The Gore Road and one to Emil Kolb Parkway.

The portion of the development east of Street J on the Draft Plan is within the ROPA 30 boundary and the Region of Peel growth projections. As such the remaining residential units and trip generation outlined in **Table 9** were assessed in the 2051 horizon.

Table 9: 14275 The Gore Road Trip Generation

Land Use Code	Units	Peak Hour	Inbound	Outbound	Total
210: Single-Family Detached	513	A.M.	82	248	330
		P.M.	291	171	462
215: Single-Family Attached Housing	827	A.M.	106	318	424
		P.M.	290	202	492
221: Multi-Family Housing (Mid-Rise)	754	A.M.	74	246	320
		P.M.	180	114	294

The residential trip distribution was applied based on Table 17 in the BA Group 2021 Transportation Impact Study.

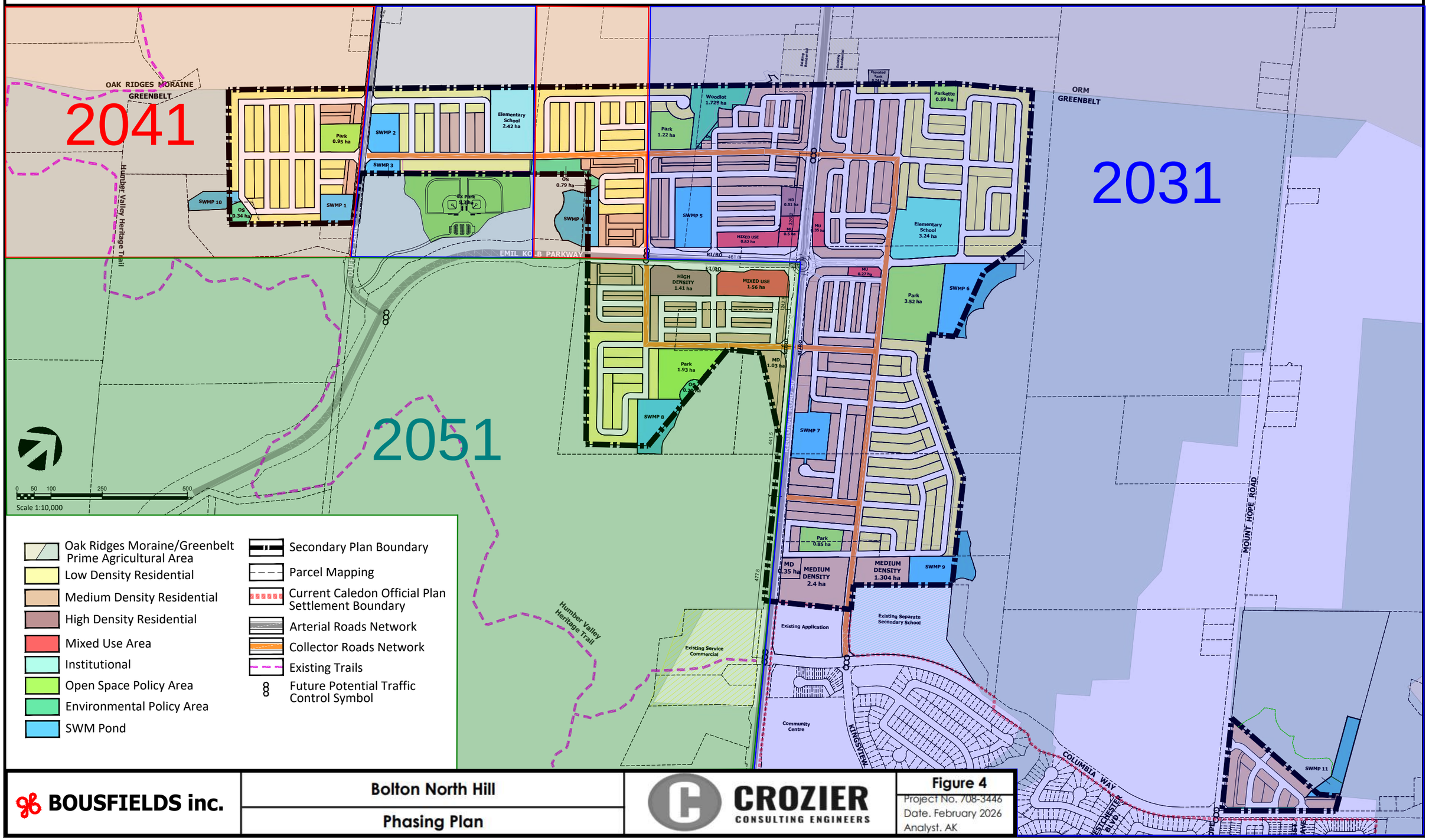
Two school blocks are located outside the ROPA 30 boundary. School trips were assigned based on Figure 12 of the BA Group 2021 Transportation Impact Study. All trips distributed north on Emil Kolb Parkway are assumed to continue north on Highway 50. **Figure 6** illustrates the trip assignment for 14275 The Gore Road.

The Mount Hope West Secondary Plan Transportation Impact Study (February 2025) prepared by Paradigm Transportation Solutions Limited reviews the proposal for a residential subdivision with up to 1,016 dwelling units, including detached homes, townhouses, apartments, and block townhouses. The commercial land parcel includes a one-story building with a gross floor area of 4,200 m². Vehicle access is proposed via a fourth leg on Westchester Boulevard, two new access roads on Mount Hope Road and two new driveways on Mount Hope Road. **Figure 7** illustrates the trip assignment for the Mount Hope West Secondary Plan.

Appendix H includes excerpts from the background development studies.

Bolton North Hill
Tertiary Plan

Owner's Plans Consolidation



BOUSFIELDS inc.

Bolton North Hill

Phasing Plan

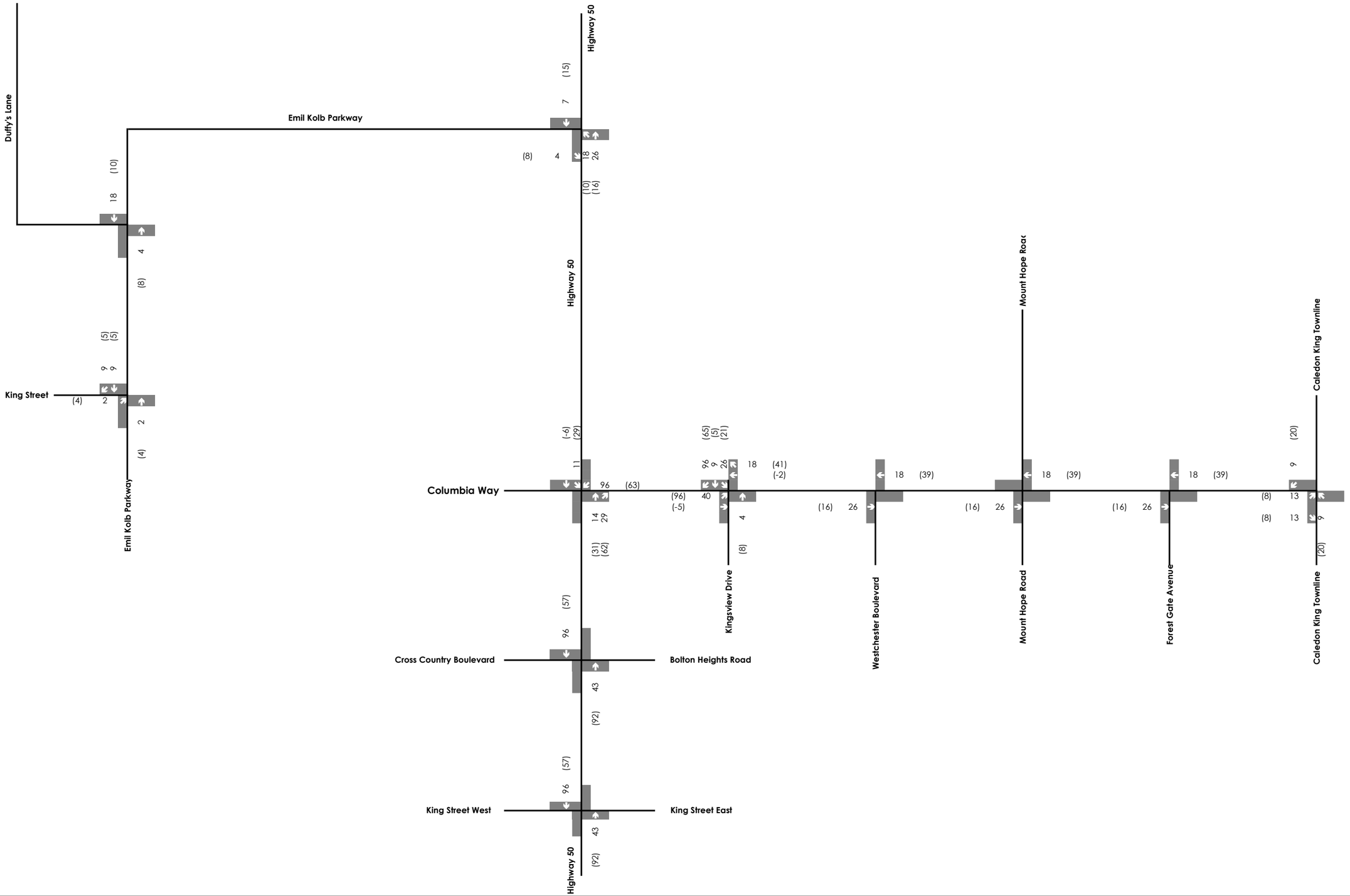
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Figure 4

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Analyst. AK



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour)

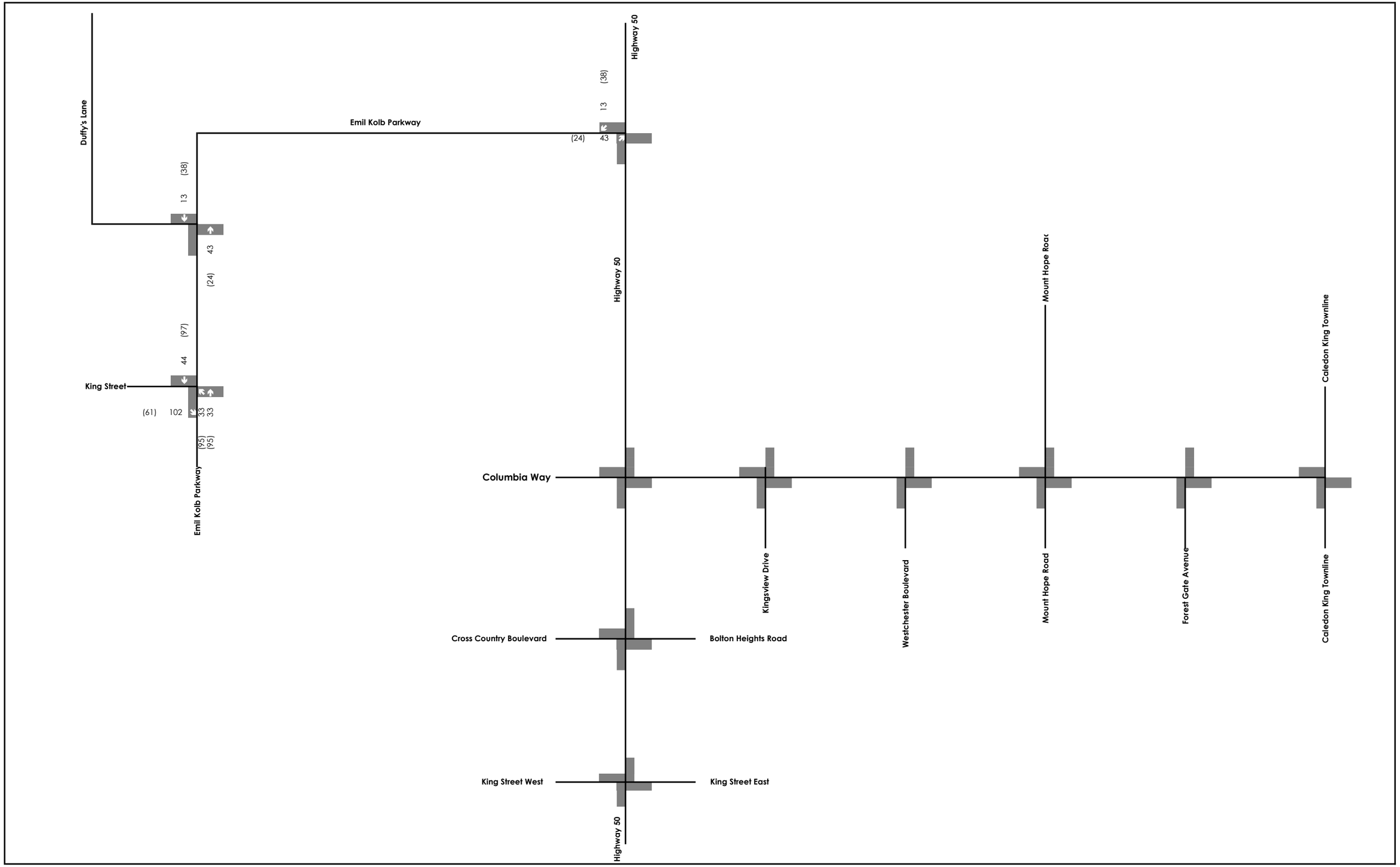
Bolton North Hill

14245 Highway 50 Trip Assignment

CROZIER CONSULTING ENGINEERS

Figure 5

Project No. 708-3446
Date. February 2026
Analyst. AK



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour)

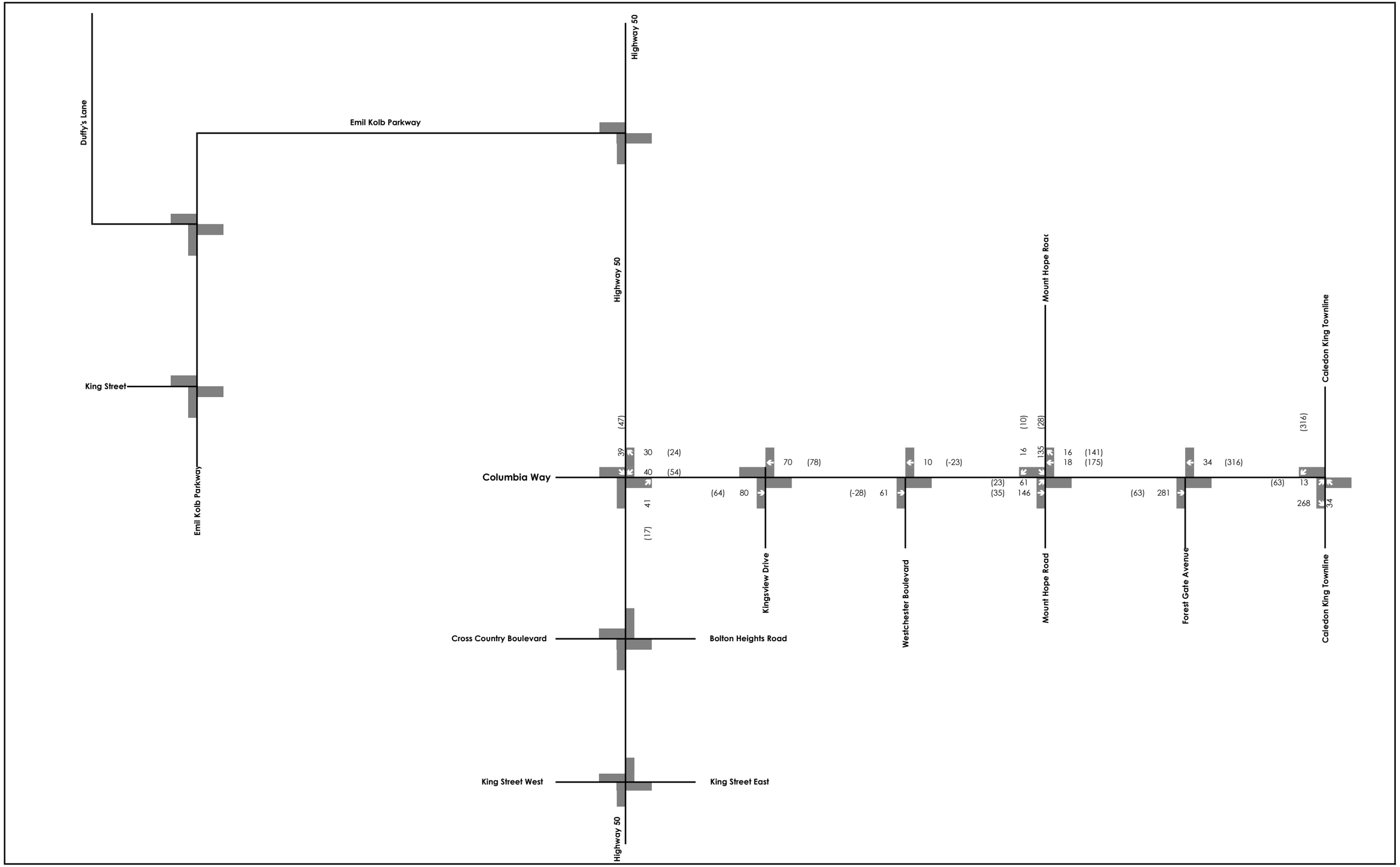
Bolton North Hill

14275 The Gore Road Trip Assignment

CROZIER CONSULTING ENGINEERS

Figure 6

Project No. 708-3446
Date. February 2026
Analyst. AK



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour)

Bolton North Hill

Mount Hope West Secondary Plan Trip Assignment

CROZIER CONSULTING ENGINEERS

Figure 7

Project No. 708-3446
Date. February 2026
Analyst. AK

4.5 Planned Roadway Improvements

The background studies outlined in **Section 4.1** were reviewed and referenced to identify proposed roadway improvements within the study area. There are several studies that are currently ongoing, and improvements have been considered based on currently available information.

The Region of Peel is undertaking a 2051 Transportation Master Plan. The Region is in the process of updating and combining a number of existing studies. The 2019 Long Range Transportation Plan identified Highway 50 as maintaining a four-lane cross-section. It is noted that the downtown core of Bolton provides one-lane in each direction with on-street parking under existing conditions.

The Town of Caledon prepared a Queen Street Corridor Study Report in March 2019, which recommended maintaining the two-lane cross section in the Downtown Core in favour of increased active transportation facilities such as bike lanes and maintaining on-street parking. The Region of Peel is currently undertaking a Complete Corridor Study and Preliminary Design for Queen Street (Highway 50) from Queensgate Boulevard to Columbia Way. Since the public meeting in November 2023 there has been no further information of roadway design released. As such, the existing cross-section for Highway 50 has been maintained for the purposes of this assessment.

The Town of Caledon completed a Multi-Modal Transportation Master Plan in April 2024. Figure ES-1 of the report illustrated the planned widening of both Columbia Way and the Caledon King Townline (south of Columbia Way) to four lanes by the 2041 horizon. Both widenings have been assessed under the 2041 future background and future total horizons.

While not noted in the Transportation Master Plan, the Town's 2024 Development Charges Background Study noted the signalization of Caledon King Town Line at Columbia Way and the widening of Duffy's Lane to a four-lane cross-section. Signalization of the intersection has been considered in the 2041 horizon, with the completion of the road widening. Duffy's Lane, however, has not been modeled with a four lane cross-section as it is not required to support the future total volumes and was not identified in the Transportation Master Plan.

The Caledon Station Secondary Plan Transportation Study presents a future lane configuration of two through lanes per direction on King Street west of Emil Kolb. The widening has been assessed under the 2041 future background and future total horizons.

As no improvements are planned within the study area for the 2031 horizon the existing conditions remain within the model for future background and future total conditions.

The Town's Multi-Modal Transportation Master Plan also identifies the planned GTA-West Transportation Corridor (Highway 413) with interchanges planned for Humber Station Road and with Highway 427, both south of Bolton. The Highway has been identified within the planned improvements but any impact on existing travel patterns have not been assessed under future background and future total horizons.

Appendix I includes excerpts from the Multi-Modal Transportation Master Plan report.

4.6 Future Background Network Improvements

Additional improvements are required on the boundary road network under 2051 future background conditions to improve traffic operations. A screening of the road network under 2051 future background conditions was conducted to identify any required future background road widenings or other intersection improvements. Road widening is recommended for Highway 50 north of Emil Kolb Parkway based on the capacity analysis outlined in **Section 7.1**.

Table 10 outlines planned and recommended background improvements reviewed in the operational assessment.

Table 10: Additional Future Background Roadway Improvements

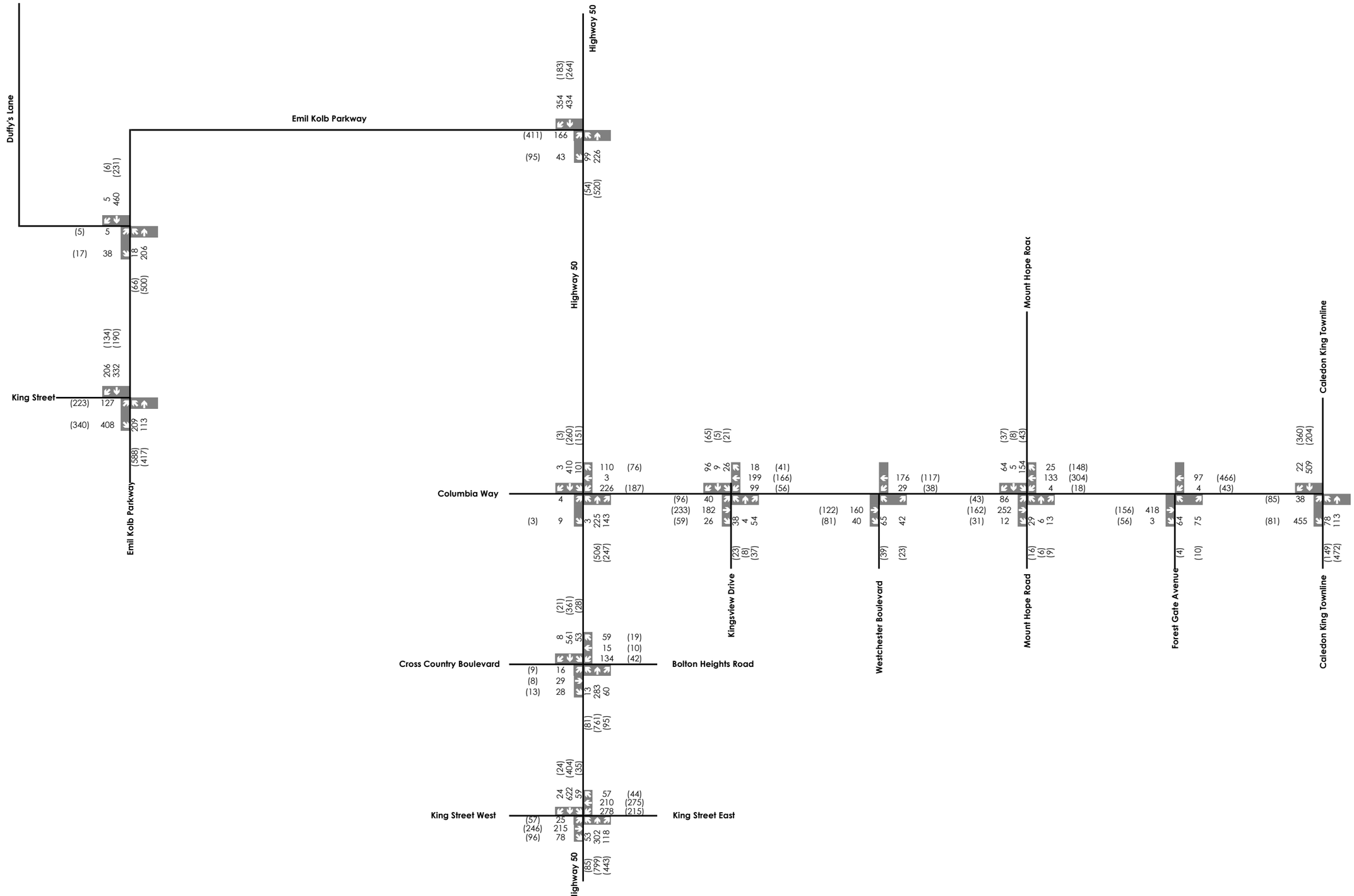
Roadway	Segment or Intersection	Timeline	Improvement	Reference
King Street	West of Emil Kolb	2041	Widening from 2 to 4 lanes	Background Development Improvement
Highway 50	North of Emil Kolb	2041	Widening from 2 to 4 lanes	Recommended Improvement
Columbia way	Highway 50 to Caledon-King Townline	2041	Widening from 2 to 4 lanes	Caledon's Multi-Modal Transportation Master Plan
Caledon-King Townline	South of Columbia Way	2041	Widening from 2 to 4 lanes	Caledon's Multi-Modal Transportation Master Plan
-	Columbia Way and Caledon-King Townline	2041	Signalization	Caledon's 2024 Development Charges Background Study

4.7 Intersection Operations

The background improvements identified in **Section 4.5** and recommendation outlined in **Section 4.6** were modelled as described under the 2041and 2051 future background conditions. The 2031 horizon maintains the existing network conditions as illustrated in **Figure 2**.

The 2031, 2041 and 2051 future background intersection operations at the study intersections outlined in **Table 11**, **Table 12** and **Table 13** were analyzed using the 2031, 2041 and 2051 future background traffic volumes illustrated in Figure 8, Figure 9 and Figure 10, respectively. **Table 14**, **Table 15** and **Table 16** outline the forecasted 95th percentile queues in the 2031, 2041 and 2051 future background horizon years, respectively.

Detailed capacity analysis worksheets are included in **Appendix F**.



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour)

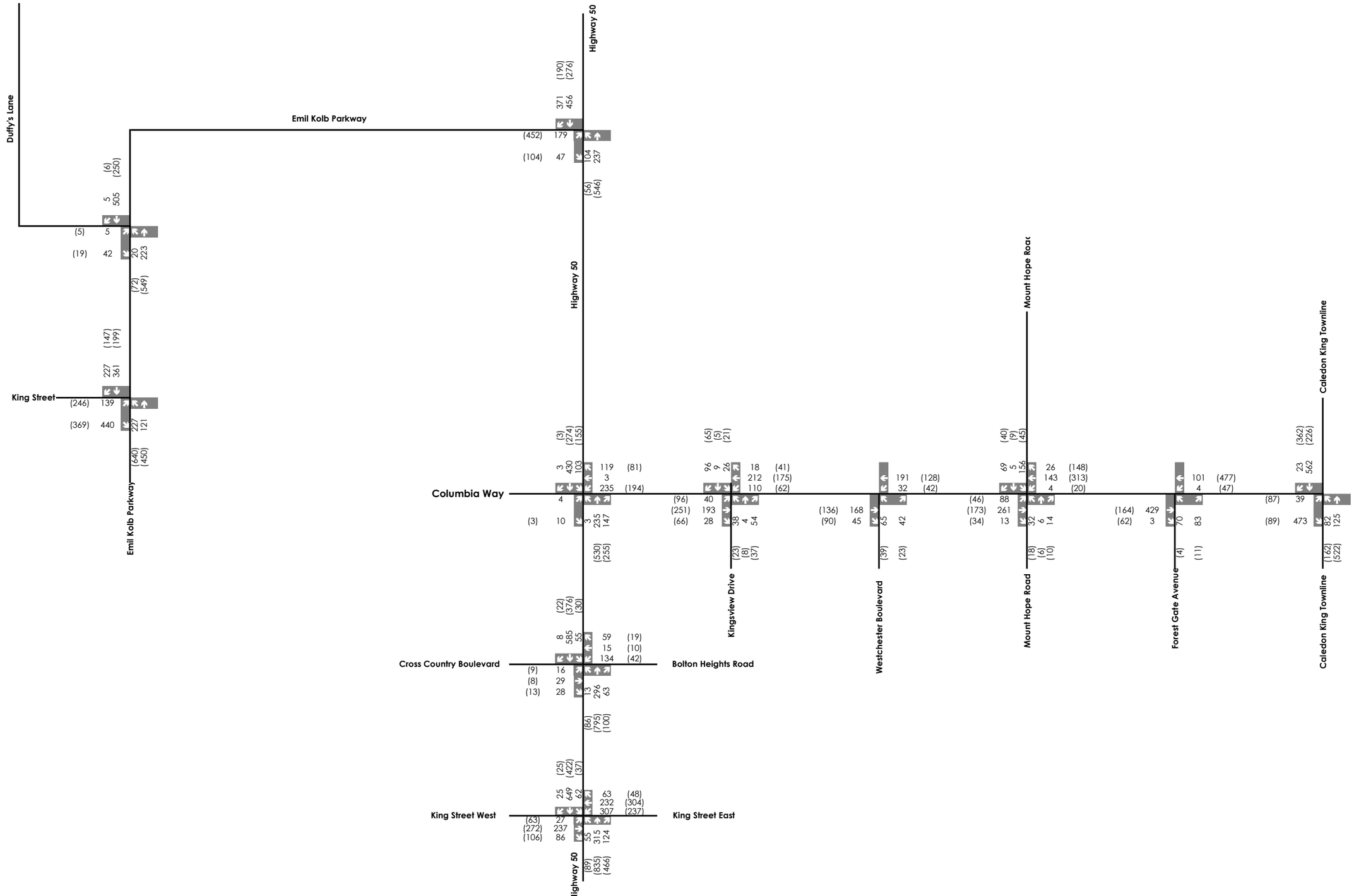
Bolton North Hill

2031 Future Background Traffic Volumes

CROZIER CONSULTING ENGINEERS

Figure 8

Project No. 708-3446
Date. February 2026
Analyst. AK



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour)

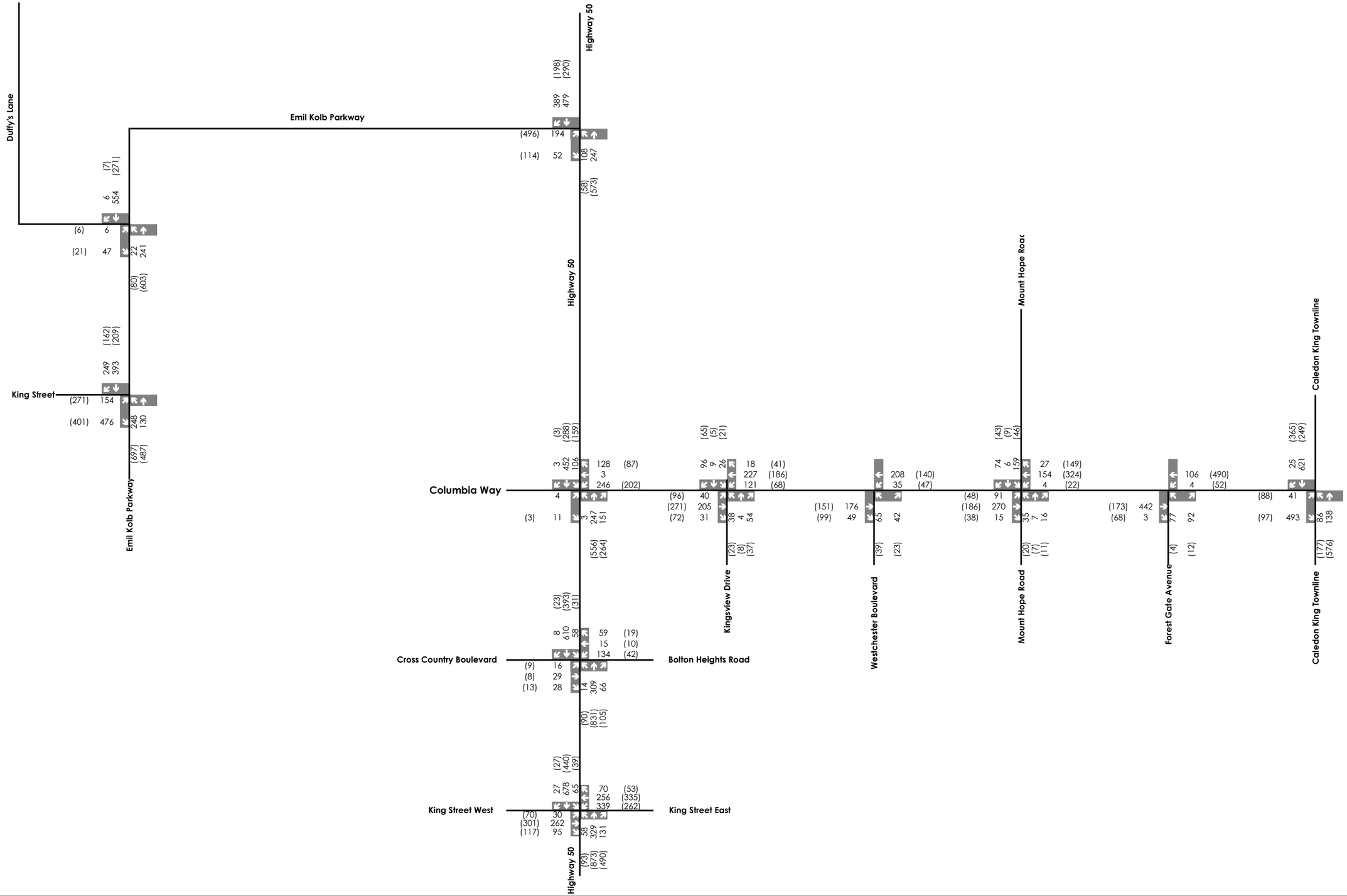
Bolton North Hill

2041 Future Background Traffic Volumes

CROZIER CONSULTING ENGINEERS

Figure 9

Project No. 708-3446
Date. February 2026
Analyst. AK



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour)

Bolton North Hill

2051 Future Background Traffic Volumes

CROZIER CONSULTING ENGINEERS

Figure 10

Project No. 708-3446
Date. February 2026
Analyst. AK

Table 11: 2031 Future Background Traffic Operations

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
King Street and Emil Kolb Parkway	Overall	**A**	**A**	**0.89**	**1.91**	**-**	**-**
	SB	A	A	0.84	1.74	-	-
	NB	A	A	0.87	2.50	-	-
	EB	A	A	0.94	0.98	-	-
Highway 50 and Emil Kolb Parkway	Overall	**A**	**A**	**1.08**	**0.97**	**-**	**-**
	EB	A	A	1.16	0.86	-	-
	SB	A	A	1.28	0.75	-	-
	NB	A	A	0.52	1.24	-	-
Highway 50 and Columbia Way	**Overall**	**B**	**B**	**17.1**	**12.7**	**0.78**	**0.72**
	EBLTR	A	A	1.8	0.0	0.06	0.00
	WBL	E	D	55.7	52.2	0.78	0.72
	WBTR	A	A	7.2	0.5	0.27	0.14
	NBL	A	-	9.3	-	0.01	-
	NBT	A	A	9.2	9.3	0.20	0.41
	NBR	A	A	1.9	1.5	0.14	0.22
	SBL	A	A	9.4	9.4	0.15	0.29
	SBT	B	A	10.7	7.4	0.36	0.21
	SBR	A	A	0.0	0.0	0.00	0.01
Highway 50 and Bolton Heights Road	**Overall**	**C**	**A**	**21.0**	**8.3**	**0.56**	**0.28**
	EBLTR	C	C	31.8	24.1	0.36	0.12
	WBL	C	D	34.9	40.1	0.41	0.22
	WBTR	A	B	10.0	18.5	0.20	0.11
	NBL	C	A	29.2	7.7	0.05	0.11
	NBT	C	A	23.3	7.0	0.15	0.28
	NBT2	C	A	23.3	7.0	0.15	0.28
	NBR	B	A	16.5	2.4	0.07	0.08
	SBL	B	A	13.2	8.4	0.10	0.06
	SBT	B	A	18.0	7.6	0.56	0.26
	SBR	A	A	0.0	0.6	0.01	0.02
Highway 50 and King Street	**Overall**	**D**	**D**	**36.0**	**42.8**	**0.88**	**0.97**
	EBL	C	C	24.9	29.1	0.09	0.22
	EBT	E	E	66.2	77.0	0.79	0.83
	EBR	A	A	4.3	5.7	0.24	0.29
	WBL	E	D	59.0	39.9	0.88	0.65
	WBTR	D	D	44.5	53.7	0.63	0.71
	NBL	B	B	13.9	16.0	0.23	0.21
	NBT	C	E	22.8	59.7	0.39	0.97
	NBR	A	B	4.1	13.4	0.17	0.56

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
	SBL	B	B	10.3	19.2	0.12	0.24
	SBTR	C	C	33.1	32.5	0.81	0.56
Columbia Way and Kingsview Drive	**Overall**	**A**	**A**	8.0	6.7	**0.34**	**0.25**
	EBTR	A	A	5.0	5.2	0.19	0.25
	WBLT	A	A	6.6	5.6	0.34	0.22
	NBLR	B	B	19.3	18.5	0.34	0.21
Columbia Way and Westchester Boulevard	**Overall**	**B**	**B**	**12.9**	**10.9**	**0.23**	**0.13**
	EBTR	A	A	0.0	0.0	0.15	0.13
	WBLT	A	A	1.3	2.1	0.03	0.03
	NBLR	B	B	12.9	10.9	0.23	0.10
Columbia Way and Mount Hope Road	**Overall**	**E**	**C**	**36.3**	**16.3**	**0.73**	**0.22**
	EBLTR	A	A	2.5	1.8	0.08	0.04
	WBLTR	A	A	0.2	0.4	0.00	0.01
	NBLTR	C	C	18.5	16.0	0.18	0.09
	SBLTR	E	C	36.3	16.3	0.73	0.22
Columbia Way and Caledon King Townline	**Overall**	**F**	**E**	**80.4**	**37.6**	**1.04**	**0.63**
	EBLR	F	E	80.4	37.6	1.04	0.63
	NBLT	A	A	4.2	3.7	0.09	0.15
	SBTR	A	A	0.0	0.0	0.33	0.34
Emil Kolb Parkway and Duffy's Lane	**Overall**	**B**	**B**	**12.6**	**12.4**	**0.30**	**0.35**
	EBLR	B	B	12.6	12.4	0.09	0.05
	NBL	A	A	8.8	8.0	0.02	0.06
	NBT	A	A	0.0	0.0	0.13	0.35
	SBT	A	A	0.0	0.0	0.30	0.16
	SBR	A	A	0.0	0.0	0.00	0.00
Forest Gate Avenue & Columbia Way	**Overall**	**B**	**B**	**13.3**	**10.9**	**0.25**	**0.12**
	EBTR	A	A	0.0	0.0	0.25	0.12
	WBLT	A	A	0.4	1.0	0.00	0.03
	NBLR	B	B	13.3	10.9	0.24	0.02

Table 12: 2041 Future Background Traffic Operations

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
King Street and Emil Kolb Parkway	Overall	**A**	**A**	**0.97**	**2.27**	**-**	**-**
	SB	A	A	0.94	2.06	-	-
	NB	A	A	0.94	3.03	-	-
	EB	A	A	1.01	1.07	-	-
Highway 50 and Emil Kolb Parkway	Overall	**A**	**A**	**1.15**	**1.14**	**-**	**-**
	EB	A	A	1.24	1.24	-	-
	SB	A	A	1.38	0.71	-	-
	NB	A	A	0.56	1.38	-	-
Highway 50 and Columbia Way	**Overall**	**B**	**B**	**17.3**	**13.0**	**0.78**	**0.73**
	EBLTR	A	A	2.2	0.0	0.06	0.00
	WBL	E	D	55.6	51.9	0.78	0.73
	WBTR	A	A	6.9	0.6	0.28	0.15
	NBL	A		9.7		0.01	
	NBT	A	A	9.6	9.8	0.22	0.44
	NBR	A	A	2.0	1.5	0.15	0.23
	SBL	A	B	9.8	10.1	0.16	0.31
	SBT	B	A	11.3	7.7	0.38	0.22
	SBR	A	A	0.0	0.0	0.00	0.01
Highway 50 and Bolton Heights Road	**Overall**	**C**	**A**	**21.2**	**8.5**	**0.59**	**0.30**
	EBL	D	C	42.0	34.2	0.11	0.05
	EBTR	C	C	26.2	20.5	0.27	0.08
	WBL	D	D	35.7	40.0	0.43	0.21
	WBTR	B	B	10.1	18.5	0.21	0.11
	NBL	C	A	28.5	7.8	0.05	0.12
	NBT	C	A	22.9	7.1	0.16	0.30
	NBT2	C	A	22.9	7.1	0.16	0.30
	NBR	B	A	16.1	2.3	0.07	0.08
	SBL	B	A	13.0	8.5	0.10	0.06
	SBTR	B	A	18.5	7.7	0.59	0.29
Highway 50 and King Street	**Overall**	**D**	**D**	**41.3**	**50.7**	**0.99**	**1.05**
	EBL	C	C	24.6	28.6	0.10	0.24
	EBT	E	E	68.5	80.0	0.82	0.86
	EBR	A	A	5.1	7.8	0.26	0.30
	WBL	F	D	81.8	40.7	0.99	0.70
	WBTR	D	D	45.9	53.7	0.68	0.73
	NBL	B	B	15.3	17.2	0.28	0.24
	NBT	C	F	23.8	82.6	0.42	1.05
	NBR	A	B	4.1	15.3	0.18	0.60

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
	SBL	B	C	10.6	21.7	0.13	0.29
	SBTR	D	D	36.6	35.7	0.86	0.61
Columbia Way and Kingsview Drive	**Overall**	**A**	**A**	**6.9**	**5.7**	**0.33**	**0.21**
	EBT	A	A	4.1	3.9	0.11	0.14
	EBTR	A	A	4.1	3.9	0.11	0.14
	WBLT	A	A	5.3	4.9	0.21	0.13
	WBT	A	A	5.3	4.9	0.21	0.13
	NBLR	B	B	19.2	18.5	0.33	0.21
Columbia Way and Westchester Boulevard	**Overall**	**B**	**B**	**12.3**	**10.8**	**0.21**	**0.10**
	EBT	A	A	0.0	0.0	0.08	0.06
	EBTR	A	A	0.0	0.0	0.07	0.09
	WBLT	A	A	2.8	4.0	0.03	0.03
	WBT	A	A	0.0	0.0	0.09	0.05
	NBLR	B	B	12.3	10.8	0.21	0.10
Columbia Way and Mount Hope Road	**Overall**	**D**	**C**	**27.6**	**15.6**	**0.65**	**0.22**
	EBLT	A	A	3.6	3.2	0.08	0.04
	EBTR	A	A	0.0	0.0	0.10	0.07
	WBLT	A	A	0.5	1.0	0.00	0.02
	WBTR	A	A	0.0	0.0	0.07	0.19
	NBLTR	C	B	18.4	14.1	0.19	0.08
	SBLTR	D	C	27.6	15.6	0.65	0.22
Columbia Way and Caledon King Townline	**Overall**	**B**	**A**	**13.5**	**6.6**	**0.76**	**0.51**
	EBL	B	B	11.8	13.6	0.08	0.12
	EBR	B	A	16.4	5.0	0.76	0.13
	NBL	B	A	12.6	9.2	0.35	0.41
	NBT	A	A	7.3	6.5	0.14	0.44
	SBTR	B	A	12.7	5.2	0.65	0.51
Emil Kolb Parkway and Duffy's Lane	**Overall**	**B**	**B**	**13.3**	**12.8**	**0.33**	**0.38**
	EBLR	B	B	13.3	12.8	0.11	0.06
	NBL	A	A	9.0	8.0	0.02	0.07
	NBT	A	A	0.0	0.0	0.15	0.38
	SBTR	A	A	0.0	0.0	0.33	0.18
	Overall	**B**	**B**	**12.6**	**10.0**	**0.24**	**0.19**
	EBT	A	A	0.0	0.0	0.17	0.06
	EBTR	A	A	0.0	0.0	0.09	0.07
	WBLT	A	A	0.9	2.0	0.00	0.04
	WBT	A	A	0.0	0.0	0.04	0.19

Table 13: 2051 Future Background Traffic Operations

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
King Street and Emil Kolb Parkway	Overall	**A**	**A**	**1.05**	**3.57**	**-**	**-**
	SB	A	A	1.04	2.54	-	-
	NB	A	A	1.03	5.21	-	-
	EB	A	A	1.08	1.32	-	-
Highway 50 and Emil Kolb Parkway	Overall	**A**	**A**	**1.24**	**1.28**	**-**	**-**
	EB	A	A	1.35	1.38	-	-
	SB	A	A	1.47	0.73	-	-
	NB	A	A	0.57	1.62	-	-
Highway 50 and Columbia Way	**Overall**	**B**	**B**	**17.6**	**13.3**	**0.79**	**0.74**
	EBLTR	A	A	2.6	0.0	0.06	0.00
	WBL	D	D	54.6	52.0	0.79	0.74
	WBTR	A	A	6.5	0.6	0.29	0.17
	NBL	B	-	10.3	-	0.01	-
	NBT	B	B	10.3	10.4	0.23	0.46
	NBR	A	A	2.1	1.6	0.15	0.23
	SBL	B	B	10.5	11.0	0.17	0.34
	SBT	B	A	12.3	8.1	0.41	0.24
	SBR	A	A	0.0	0.0	0.00	0.01
Highway 50 and Bolton Heights Road	**Overall**	**C**	**A**	**21.4**	**8.5**	**0.61**	**0.31**
	EBL	D	C	42.0	34.2	0.11	0.05
	EBTR	C	C	26.2	20.5	0.27	0.08
	WBL	D	D	35.7	40.0	0.43	0.21
	WBTR	B	B	10.1	18.5	0.21	0.11
	NBL	C	A	28.2	7.9	0.06	0.13
	NBT	C	A	22.9	7.2	0.17	0.31
	NBT2	C	A	22.9	7.2	0.17	0.31
	NBR	B	A	16.0	2.3	0.08	0.09
	SBL	B	A	13.1	8.5	0.11	0.07
	SBTR	B	A	19.0	7.9	0.61	0.30
Highway 50 and King Street	**Overall**	**D**	**E**	**49.7**	**62.6**	**1.13**	**1.16**
	EBL	C	C	24.4	28.3	0.12	0.27
	EBT	E	F	71.5	80.8	0.86	0.89
	EBR	A	A	6.9	9.7	0.27	0.32
	WBL	F	D	120.0	42.3	1.13	0.75
	WBTR	D	D	47.5	53.4	0.72	0.76
	NBL	B	B	18.0	18.6	0.36	0.29
	NBT	C	F	25.0	120.3	0.45	1.16
	NBR	A	B	4.0	17.7	0.19	0.65

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
	SBL	B	C	10.7	22.7	0.14	0.31
	SBTR	D	D	42.0	39.8	0.91	0.68
Columbia Way and Kingsview Drive	**Overall**	**A**	**A**	**6.9**	**5.7**	**0.33**	**0.21**
	EBT	A	A	4.2	4.0	0.11	0.15
	EBTR	A	A	4.2	4.0	0.11	0.15
	WBLT	A	A	5.4	4.9	0.23	0.14
	WBT	A	A	5.4	4.9	0.23	0.14
	NBLR	B	B	19.2	18.5	0.33	0.21
Columbia Way and Westchester Boulevard	**Overall**	**B**	**B**	**12.6**	**11.1**	**0.22**	**0.10**
	EBT	A	A	0.0	0.0	0.09	0.06
	EBTR	A	A	0.0	0.0	0.08	0.10
	WBLT	A	A	2.9	4.1	0.03	0.04
	WBT	A	A	0.0	0.0	0.10	0.06
	NBLR	B	B	12.6	11.1	0.22	0.10
Columbia Way and Mount Hope Road	**Overall**	**D**	**C**	**32.6**	**16.3**	**0.71**	**0.24**
	EBLT	A	A	3.6	3.2	0.08	0.05
	EBTR	A	A	0.0	0.0	0.11	0.08
	WBLT	A	A	0.4	1.0	0.00	0.02
	WBTR	A	A	0.0	0.0	0.07	0.19
	NBLTR	C	B	19.8	14.8	0.23	0.10
	SBLTR	D	C	32.6	16.3	0.71	0.24
Columbia Way and Caledon King Townline	**Overall**	**B**	**A**	**16.4**	**6.8**	**0.80**	**0.52**
	EBL	B	B	12.2	15.1	0.08	0.18
	EBR	C	A	20.9	5.5	0.80	0.19
	NBL	B	A	17.8	9.0	0.46	0.42
	NBT	A	A	7.6	6.7	0.16	0.48
	SBTR	B	A	15.0	5.4	0.72	0.52
Emil Kolb Parkway and Duffy's Lane	**Overall**	**B**	**B**	**14.2**	**13.9**	**0.37**	**0.42**
	EBLR	B	B	14.2	13.9	0.13	0.07
	NBL	A	A	9.2	8.1	0.03	0.08
	NBT	A	A	0.0	0.0	0.16	0.42
	SBTR	A	A	0.0	0.0	0.37	0.19
Forest Gate Avenue & Columbia Way	**Overall**	**B**	**B**	**13.0**	**10.1**	**0.27**	**0.19**
	EBT	A	A	0.0	0.0	0.17	0.07
	EBTR	A	A	0.0	0.0	0.09	0.07
	WBLT	A	A	0.9	2.1	0.00	0.04
	WBT	A	A	0.0	0.0	0.04	0.19

Table 14: 2031 Future Background Queuing

Intersection	Storage Length	95th Percentile Queue	
		A.M. Peak Hour	P.M. Peak Hour
King Street and Emil Kolb Parkway	-	SB – 9.1 m NB – 11.1 m EB – 7.1 m	SB – 6.8 m NB – 25.1 m EB – 5.6 m
Highway 50 and Emil Kolb Parkway	-	EB – 7.5 m SB – 11.7 m NB – 7.5 m	EB – 5.3 m SB – 3.4 m NB – 7.1 m
Highway 50 and Columbia Way	WBL – 70 m NBL – 140 m SBL – 100 m SBR – 30 m	WBL – 74 m NBL – 2 m SBL – 21 m SBR – 0 m	WBL - 57 m NBL – 0 m SBL – 28 m SBR – 0 m
Highway 50 and Bolton Heights Road	WBL – 85 m NBL – 85 m NBR – 75 m SBL – 65 m SBR – 50 m	WBL – 32 m NBL – 9 m NBR – 16 m SBL – 18 m SBR – 0 m	WBL – 15 m NBL – 19 m NBR – 8 m SBL – 9 m SBR – 1 m
Highway 50 and King Street	EBL – 30 m EBR – 35 m WBL – 30 m NBL – 55 m SBL – 20 m	EBL – 10 m EBR – 6 m **WBL – 97 m** NBL – 13 m SBL – 6 m	EBL – 20 m EBR – 10 m **WBL – 64 m** NBL – 22 m SBL – 11 m
Columbia Way and Kingsview Drive	-	-	-
Columbia Way and Westchester Boulevard	-	-	-
Columbia Way and Mount Hope Road	-	-	-
Columbia Way and Caledon King Townline	-	-	-
Emil Kolb Parkway and Duffy's Lane	NBL – 105 m SBR – 115 m	NBL – 1 m SBR – 0 m	NBL – 2 m SBR – 0 m

Table 15: 2041 Future Background Queueing

Intersection	Storage Length	95th Percentile Queue	
		A.M. Peak Hour	P.M. Peak Hour
King Street and Emil Kolb Parkway	-	SB – 7.1 m NB – 2.3 m EB – 9.2 m	SB – 7.6 m NB – 29.1 m EB – 8.0 m
Highway 50 and Emil Kolb Parkway	-	EB – 3.2 m SB – 12.9 m NB – 7.5 m	EB – 6.1 m SB – 4.9 m NB – 8.9 m
Highway 50 and Columbia Way	NBL – 140 m NBR – 30 m SBL – 125 m SBR – 30 m	WBL – 76 m NBL – 2 m NBR – 9 m SBL – 22 m SBR – 0 m	WBL – 58 m NBL – 0 m NBR – 10 m SBL – 30 m SBR – 0 m
Highway 50 and Bolton Heights Road	EBL – 30 m WBL – 85 m NBL – 90 m NBR – 75 m SBL – 65 m	EBL – 8 m WBL – 32 m NBL – 8 m NBR – 17 m SBL – 18 m	EBL – 5 m WBL – 15 m NBL – 20 m NBR – 9 m SBL – 9 m
Highway 50 and King Street East/West	EBL – 30 m EBR – 35 m WBL – 30 m NBL – 55 m SBL – 20 m	EBL – 11 m EBR – 8 m **WBL – 124 m** NBL – 13 m SBL – 6 m	EBL – 21 m EBR – 13 m **WBL – 70 m** NBL – 23 m SBL – 11 m
Columbia Way and Kingsview Drive	-	-	-
Columbia Way and Westchester Boulevard	-	-	-
Columbia Way and Mount Hope Road	-	-	-
Columbia Way and Caledon King Townline	-	-	-
Emil Kolb Parkway and Duffy's Lane	NBL – 105 m SBR – 0 m	NBL – 1 m SBR – 0 m	NBL – 2 m SBR – 0 m

Table 16: 2051 Future Background Queueing

Intersection	Storage Length	95th Percentile Queue	
		A.M. Peak Hour	P.M. Peak Hour
King Street and Emil Kolb Parkway	-	SB – 7.1 m NB – 2.3 m EB – 9.2 m	SB – 7.6 m NB – 29.1 m EB – 8.0 m
Highway 50 and Emil Kolb Parkway	-	EB – 3.2 m SB – 12.9 m NB – 7.5 m	EB – 6.1 m SB – 4.9 m NB – 8.9 m
Highway 50 and Columbia Way	NBL – 140 m NBR – 30 m SBL – 125 m SBR – 30 m	WBL – 78 m NBL – 2 m NBR – 10 m SBL – 23 m SBR – 0 m	WBL – 60 m NBL – 0 m NBR – 10 m SBL – 32 m SBR – 0 m
Highway 50 and Bolton Heights Road	EBL – 30 m WBL – 85 m NBL – 90 m NBR – 75 m SBL – 65 m	EBL – 8 m WBL – 32 m NBL – 8 m NBR – 17 m SBL – 19 m	EBL – 5 m WBL – 15 m NBL – 22 m NBR – 9 m SBL – 9 m
Highway 50 and King Street East/West	EBL – 30 m EBR – 35 m WBL – 30 m NBL – 55 m SBL – 20 m	EBL – 12 m EBR – 11 m **WBL – 127 m** NBL – 14 m SBL – 6 m	EBL – 23 m EBR – 17 m **WBL – 78 m** NBL – 24 m SBL – 12 m
Columbia Way and Kingsview Drive	-	-	-
Columbia Way and Westchester Boulevard	-	-	-
Columbia Way and Mount Hope Road	-	-	-
Columbia Way and Caledon King Townline	-	-	-
Emil Kolb Parkway and Duffy's Lane	EBL – 0 m NBL – 105 m SBR – 0 m	EBL – 4 m NBL – 1 m SBR – 0 m	EBL – 2 m NBL – 2 m SBR – 0 m

The boundary road network is expected to operate at overall acceptable Levels of Service under 2051 future background conditions, with the exception of the intersection of Highway 50 and King Street, which is expected to operate at LOS "D" and "E", and a maximum volume-to-capacity ratio of 1.13 and 1.16 during the weekday a.m. and p.m. peak hours, respectively. Similar to the existing conditions, under both peak hours, the 95th percentile queue lengths are exceeding the designated storage length for the westbound left-turn lane at the intersection.

These operations are not uncommon at high-volume arterial roadway intersections in urban areas. As previously noted the Region of Peel is undertaking an Environmental Assessment of the downtown area of Bolton, including the intersection of Highway 50 and King Street. The final cross-section of the roadways determined by the assessment and any additional recommendations are not known at this time. Monitoring of the intersection for signal optimization is recommended as development of Bolton continues over the next 20 years.

5.0 Secondary Plan Road Network Review

The Bolton North Hill Secondary Plan proposes seven collector roads (Street A through Street G) within the Option 1 Lands and a number of local roads. The collector roads provide direct connection to the existing boundary road network. The Option 2 Lands do not propose any collector roads and only has local road connections.

5.1 Rights-of-Way

The residential collector roads are proposed to have 22 m Right-of-Ways (ROW) and local roads are proposed to have 18 m ROWs. The Town of Caledon is working on updating their ROW cross-sections to incorporate improved active transportation facilities. Town staff indicated that they were open to cross-section recommendations as part of the secondary plan. The proposed collector and local ROWs proposed align with the proposed ROWs within other Caledon Secondary Plans.

The 18 m local road cross-section is proposed to have 1.8 m sidewalks on both sides of the roadway, with 2.45 m boulevards. A pavement width of 7.9 m plus gutters, accommodates 3.95 m travel lanes in each direction. The proposed width can accommodate on-street parking along residential housing frontage.

The 22 m collector road cross-section is proposed to have 3.0 m multi-use paths on both sides of the roadway with 2.6 m boulevards. The pavement width of 8.8 m plus gutters accommodates a 2.1 m lay-by street parking lane on one side of the roadway (overlapping gutters) and 3.5 m travel lanes in each direction. The 3.5 m travel lane supports the future inclusion of a transit system expansion. The lay-by parking shall be provided along the side of the collector road uninterrupted by driveways to optimize the parking provided. Based on the February 2026 Tertiary Plan, approximately 94% of the length of the collector roadways can support on-street parking uninterrupted by driveways.

A 20 m cross-section was also prepared for review by the landowners and the Town. The cross-section proposes a 3.0 m multi-use path on one side of the roadway and a 1.8 m sidewalk on the opposing side, both with 2.5 m boulevards. A pavement width of 9.4 m plus gutters accommodates a 2.1 m lay-by street parking lane on one side of the roadway (overlapping gutter) and 3.3 m travel lanes in each direction. Individual landowners may wish to purse the 20 m ROW in future planning stages.

Duffy's Lane is proposed for a 26 m ROW, as requested by the Town. The 26 m major collector road cross-section proposed 3.0 m multi-use paths on both sides of the roadway with 3.4 m boulevards. The pavement width of 11.2 m plus gutters accommodates two 2.4 m lay-by parking lanes, one on either side of the roadway (overlapping gutters), and 3.5 m travel lanes in each direction. The 3.5 m travel lane supports the future inclusion of a transit system expansion.

Appendix J includes the samples cross-sections for reference.

5.2 Collector Roadways

The Concept Plan (Bousfields Inc., February 27, 2026) illustrates the proposed collector and local roadways. The following passages describe the collector road network. Signalization of intersections was determined as outlined in **Section 7.2.2.**

Street A is a proposed east-west collector road, the collector portion spanning from Duffy's Lane to Street G. The intersection of Street A and Highway 50 will be signalized. The intersection of Street A and Duffy's Lane is proposed for an all-way stop to allow for pedestrian connectivity between the east and west sides of Duffy's Lane. The intersection of Street A and Street G will be all-way stop to allow for pedestrian crossings for connectivity to the school. The west leg of the intersection of Street A and Duffy's Lane will be a local road. The north and east leg of the intersection of Street A and Street G will be local roads. A mid-block pedestrian crossing is recommended for Street A in front of the school block west of Highway 50 to provide safe crossing for pedestrians.

Street B is a proposed east-west collector road, spanning from Highway 50 at Emil Kolb Parkway to the eastern limits of the secondary plan area. The intersection of Street B and Street G will be all-way stop controlled to protect pedestrian crossings for the school block. East of Street G, Street B will be a local road.

Street C is a proposed east-west collector road, spanning from Street E to Street G south of the Highway 50/Emil Kolb Parkway roundabout. The intersection of Street C and Street E will be all-way stop controlled to provide safe pedestrian crossings. The west leg of the intersection will be a local road. A protected crossing of Street C is recommended for pedestrians heading to and from the adjacent park. The intersection of Highway 50 and Street C is proposed to be a left-in/right-in/right-out configuration. The intersection of Street C and Street G will be all-way stop controlled to protect for pedestrian crossings

Street D is a proposed east-west collector road, spanning from Highway 50 to Street G. The intersection of Street D and Highway 50 will be stop-controlled for Street D. The intersection of Street D and Street G will be all-way stop controlled to protect pedestrian crossings.

Street E is a proposed north-south collector road, spanning from Steet A to Street C west of the Highway 50/Emil Kolb Parkway roundabout. The intersection of Street E and Street A will be all-way stop controlled to protect pedestrian crossings. The intersection of Street E and Emil Kolb Parkway will be a signalized intersection in 2051 horizon.

Street G is a proposed north-south collector road, spanning from Steet A to Columbia Way. Street G is proposed to connect to Columbia Way through the neighbouring property to the south, creating a fourth leg at the existing signalized intersection of Columbia Way and Kingsview Drive.

Duffy's Lane is proposed to be widened to a 26 m ROW and will remain in its existing location, providing connection from Steet A to the north and to Emil Kolb Parkway to the south.

Figure 11 illustrates the proposed future road network.

As noted, the use of stop-controlled intersection can prevent both collector and local roads from having excessive long segments of roadway and provide protected pedestrian crossings. Tree plantings and on-street vehicle parking can visually narrow lanes, encouraging lower speeds. Additional traffic calming measures such as coloured/textured crosswalks, curb extensions and chicanes can be explored through Draft Plans and detailed design.

5.3 Site Accesses

As previously described the collector road connections to the boundary road network comprise the majority of site access to the Secondary Plan area. In addition to the described collector road network, three local road connections to the boundary road network are proposed.

Street F is a north-south local road spanning from Street A to Street C. The roadway will be the minor approach at both intersections with the collector roadways. At Emil Kolb, Street F will be a right-in/right-out intersection, due to the limited intersection spacing. The local road connection location supports access to the adjacent mixed-use blocks.

Street H and Street I are an angles local roadway through the development block located on the north-east corner of Mount Hope Road and Columbia Way. Street H will intersect with Mount Hope

Road at a stop-controlled intersection. Street I will intersect with Columbia Way at Forest Gate Avenue and will be stop-controlled.

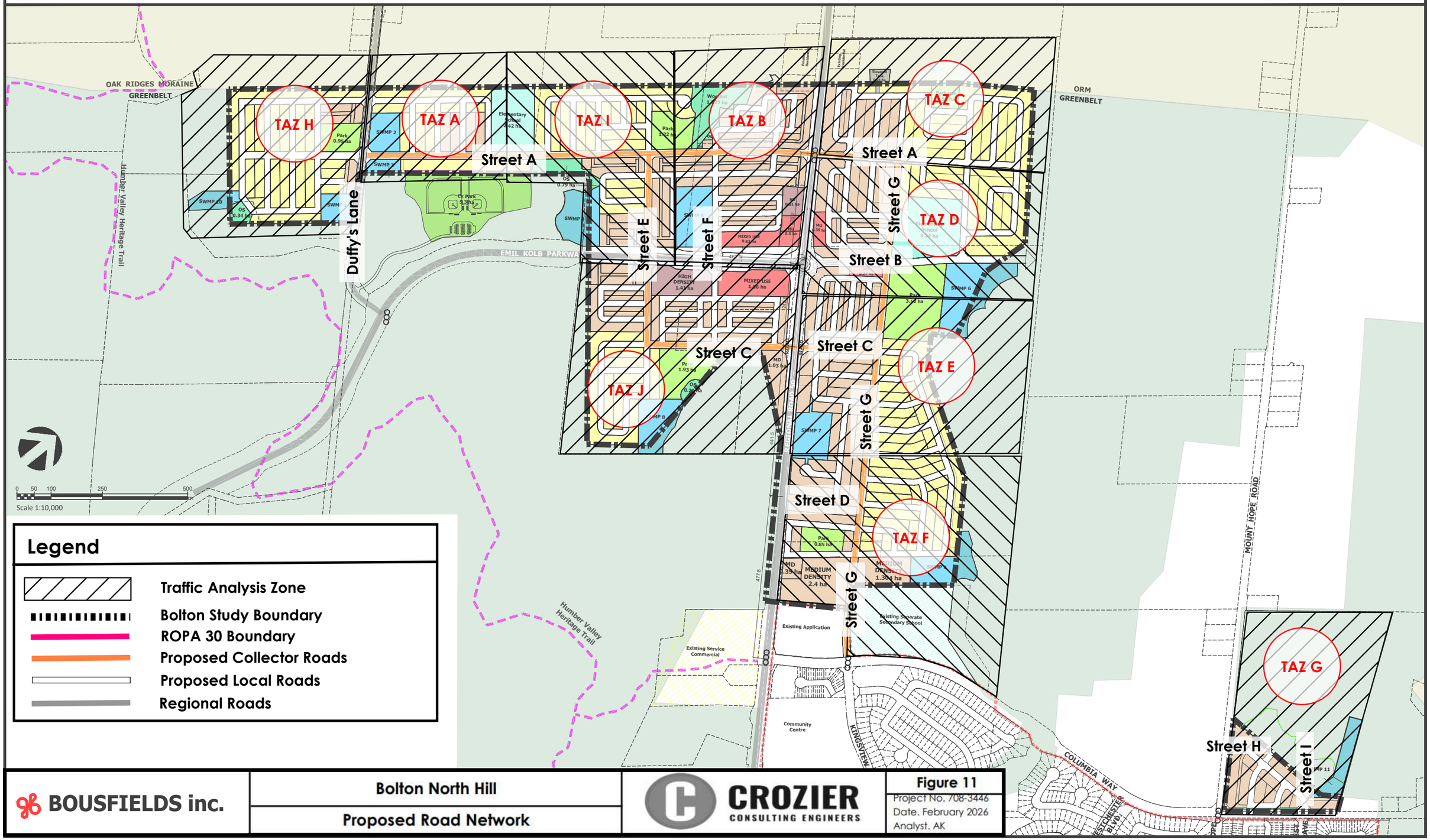
Figure 11 illustrates the road network and labels the naming convention applied for the accesses. Formal names will be assigned to the roadways, with acceptance by the Town of Caledon during a future application stage.

A review of access spacing was undertaken for the proposed site accesses. The accesses to Emil Kolb Parkway and Highway 50 are to meet the minimum access spacing requirements of the Region of Peel as outlined in the Region's Road Characterisation Study. The accesses to Columbia Way and Mount Hope Road are to adhere to the minimum access spacing recommended in the Transportation Association of Canada (TAC) Geometric Guidelines for Canadian Roads (GDGCR).

Table 17 outlines the proposed site accesses and the approximate curb to curb access spacing.

Bolton North Hill
Tertiary Plan

Owner's Plans Consolidation



Legend

- Traffic Analysis Zone
- Bolton Study Boundary
- ROPA 30 Boundary
- Proposed Collector Roads
- Proposed Local Roads
- Regional Roads

BOUSFIELDS inc.

Bolton North Hill

Proposed Road Network

CROZIER CONSULTING ENGINEERS

Figure 11

Project No. 708-3446

Date. February 2026

Analyst. AK

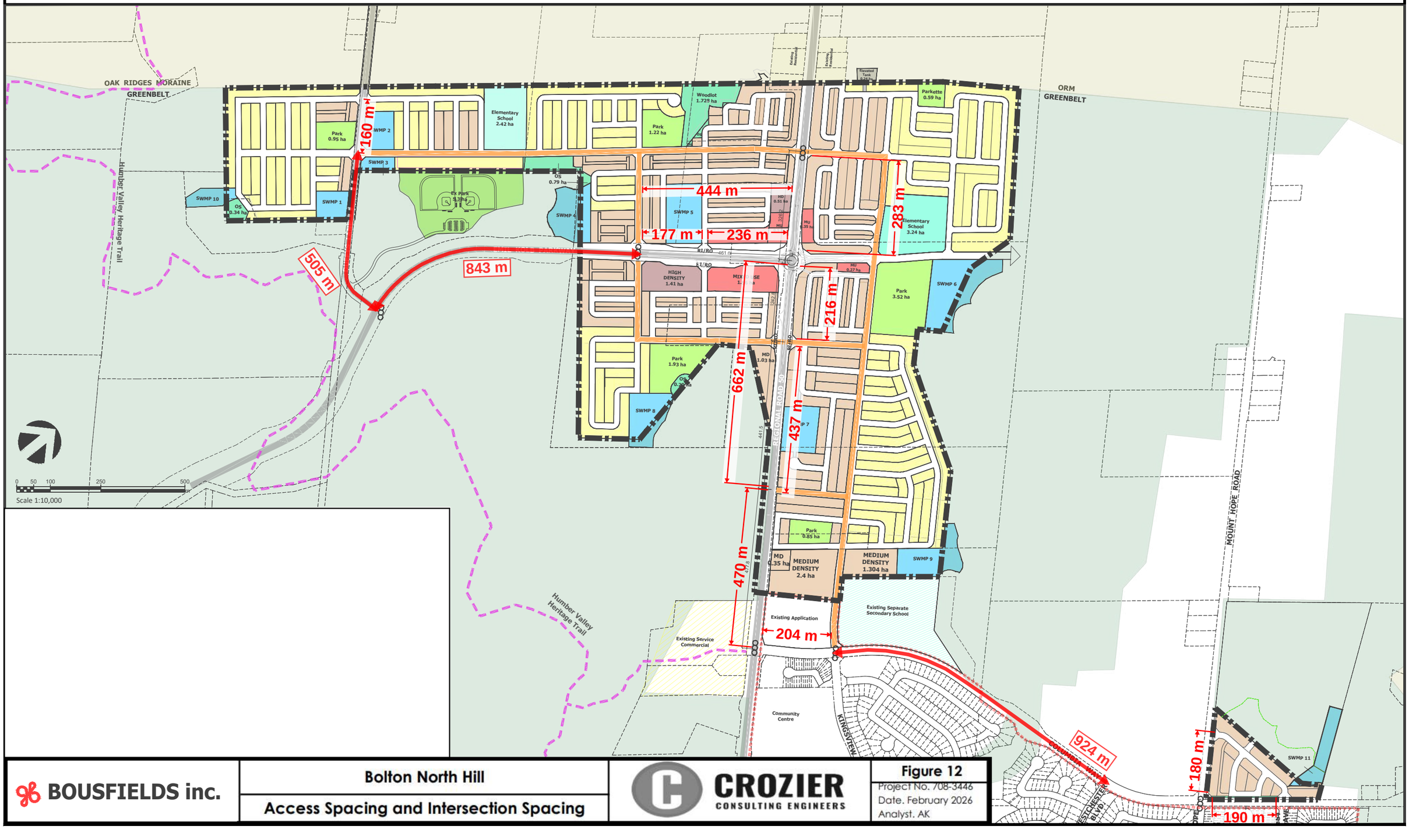
Table 17: Site Accesses

Street Name	Intersecting Roadways	Intersection Layout	Access Type	Minimum Spacing Required	Access Spacing	Access Spacing
Street A	Duffy's Lane	4-leg stop-controlled	Full-moves	60 m	505 mm (south)	160 m (north)
	Highway 50	4-leg signalized		300 m	305 m (south)	>500 m (north)
Street B	Highway 50 and Emil Kolb Parkway	4-leg roundabout		300 m	Aligns with Existing Intersection	
Street C	Highway 50	4-leg signalized	Left-in, Right-in/Right-out	150 m	437 m (south)	216 m (north)
Street D	Highway 50	3-leg stop-controlled	Full-moves	150 m to the north 300 m to the south	470 m (south)	437 m (north)
Street E	Emil Kolb Parkway	4-leg signalized		450 m to the west 100 m to the east	843 m (west)	177 m (east)
Street F	Emil Kolb Parkway	4-leg stop-controlled	Right-in/Right-out	100 m	177 m (west)	236 m (east)
Street G	Columbia Way and Kingsview Drive	4-leg signalized	Full-moves	60 m	Aligns with Existing Intersection	
Street H	Mount Hope Road	3-leg stop-controlled		60 m	180 (north)	>500 (north)
Street I	Columbia Way and Forest Gate Avenue	4-leg signalized		60 m	Aligns with Existing Intersection	

It is recognized that Street C is analyzed as left-in, right-in/right out and Steet F is analyzed as right-in/right-out only, due to the short intersection spacing along these regional roads. The location of Street F is important as it supports access to the mixed-use commercial blocks, providing frontage for site accesses not on the reginal roadway. Street C is located as far south as possible, outside of the environment policy areas and storm water management features. The proposed access and intersection spacing is shown in **Figure 12**.

Bolton North Hill
Tertiary Plan

Owner's Plans Consolidation



BOUSFIELDS inc.	Bolton North Hill Access Spacing and Intersection Spacing	CROZIER CONSULTING ENGINEERS	Figure 12 Project No. 708-3446 Date. February 2026 Analyst. AK

5.4 Sight Distance Assessment

Per the comments received on the February 2025 submission, a sight distance review was requested to be included in the study. It is noted that the roads are relatively straight and flat. However, a preliminary review of sight distance and intersection angles for all the proposed new roads was requested.

5.4.1. Intersection Sight Distance

The available sightlines at the proposed site accesses were measured and compared to the standard set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR).

Section 9.9 of TAC GDGCR provides intersection sight distance for different intersection control types. The applicable cases are as follows:

- Case B – Intersections with stop control on the minor road
    - Case B1 – Left turn from the minor road
    - Case B2 – Right turn from the minor road

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

$$ISD = 0.278 * V_{major} * t_g$$

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

Highway 50, Duffy's Lane, Mount Hope Road and Columbia Way (east of the school) have a posted speed limit of 60 km/h. Accordingly, a design speed of 70 km/h was selected. Emil Kolb Parkway has a posted speed limit of 70 km/h. As such, a design speed of 80 km/h was selected. In this case, the passenger design vehicle was used for the assessment given that this vehicle is expected to be the most common vehicle profile to use the intersection. The calculated and design sight distance is further summarized in TAC GDGCR Table 9.9.6 for vehicles turning right from stop and Table 9.9.4 for vehicles turning left from stop. **Table 18** summarizes the proposed intersection angle, and sight distance, along with the sight distance requirements for the collector roads..

Table 18: Collector Road Sight Distance Assessment

Street Name	Intersecting Roadways	Intersection Angle	Design Speed	Requirement		Available	
				Left Turn	Right Turn	Left Turn	Right Turn
Street A	Duffy's Lane	82°	70 km/h	150 m	130 m	200 m+ (east) 200 m+ (west)	200 m+ (east) 200 m+ (west)
	Highway 50	88°					
Street B	Highway 50	90°				N/A (Roundabout)	~152 m
Street C	Highway 50	90°				200 m+	200 m+
Street D	Highway 50	90°				200 m+	200 m+
Street E	Emil Kolb Parkway	90°	80 km/h	170 m	145 m	200 m+ (east) 200 m+ (west)	200 m+ (east) 200 m+ (west)
Street G	Columbia Way	90°	70 km/h	150 m	130 m	200 m+	200 m+
Street H	Mount Hope Road	85°				200 m+	200 m+
Street I	Columbia Way	90°				200 m+	200 m+

All the collector road intersections meet the boundary road network at an intersection angle between 70 and 110 degrees, which meets the TAC GDGCR standard. Intersection angles should be confirmed through the Draft Plan submissions for each independent application and the detailed design of all road connections. Furthermore, all collector road connections meet the sight distance requirements as outlined in the TAC GDGCR.

6.0 Bolton North Hill Secondary Plan

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

6.1 Basis of Assessment

For the purposes of the assessment contained herein and to address comments provided on the 2021 Transportation Assessment the trip assignment for the Bolton North Hill was updated. Trip generation was forecasted based on published data from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 12th Edition for the entirety of the development as outlined in **Section 6.2**. The trip distribution for residential, commercial, and school trips was established as outlined in **Section 6.3** and was applied to the generated trips based on the Traffic Analysis Zones (TAZ) outlined in **Section 6.4**. The trips were then assigned to the boundary road network for assessment in the future total horizon.

6.2 Trip Generation

The ITE Trip Generation Manual is a compilation 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 (LUCs) were applied to the study areas:

- LUC 210: "Single-Family Detached Housing" was applied to the single-detached dwellings.
- LUC 215: "Single-Family Attached Housing" was applied to the townhouse dwellings.
- LUC 221: "Multifamily Housing (Mid-Rise)" was applied to the residential medium-density and high-density apartment dwellings.
- LUC 520: "Elementary School" was applied to the proposed school blocks.
- LUC 820: "Shopping Centre (>150k)" was applied to the commercial/mixed use areas.

Table 19 outlines the residential trip generation forecasted for the subject lands.

Table 19: Residential Trip Generation

Land Use Category	Peak Hour	Inbound	Outbound	Total
LUC 210: "Single-family Detached Housing" (1283 units)	A.M.	234	632	866
	P.M.	624	383	1007
LUC 215: "Single-family Attached Housing" (2238 units)	A.M.	326	979	1305
	P.M.	723	545	1268
LUC 221: "Multifamily housing (Mid-Rise)" (608 units)	A.M.	57	191	248
	P.M.	142	80	222
Total	A.M.	**617**	**1801**	**2418**
	P.M.	**1489**	**1008**	**2497**

The trip generation for the commercial areas (mixed-use blocks) was assessed based on a lot coverage of 40%.

For the purposes of the analysis herein the total trip generation of the commercial area was assessed. Primary trips add additional volumes to the road network as the site is the ultimate destination while pass-by trips are generated by existing vehicles on the road network, which stop at the site when travelling to their primary destination.

Pass-by trips were established based on the Pass-By Tables included in the Appendix of the 12th Edition Manual. As each block has pass-by trips assigned independently and each block is anticipated to have less than 150,000 ft^2 of gross floor area (GFA), the pass-by rate of 0% in the a.m. peak hour and 40% in the p.m. peak hour was assessed per Land Use Category 821: Shopping Plaza (40-150k). **Table 20** outlines the commercial trip generation forecasted for the subject lands.

Table 20: Commercial Trip Generation

Land Use Category	Type	Peak Hour	Inbound	Outbound	Total
LUC 820: "Shopping Centre (>150k)" (107,538 ft^2)	Primary	A.M.	59	36	95
		P.M.	103	107	210
	Pass-By	A.M.	0	0	0
		P.M.	69	72	140
Total		A.M.	**59**	**36**	**95**
		P.M.	**240**	**250**	**490**

Based on the Ministry of Education's "Building Our Schools, Building Our Future" (June 2010) a lot coverage of 20% would support a school capacity of 680 students at the Peel District School Board

site of the west (3.24 ha) and a capacity of 540 students at the Dufferin-Peel Catholic District School Board site to the east (2.42 ha). These capacities align with existing elementary schools within the respective boards.

Based on anticipated student yields provided by the school boards as part of their comments on the December 2021 Transportation Impact Study 100% of the school capacity will be filled by households internal to the development and are not expected to draw students externally from Bolton. **Table 21** outlined the elementary school trip generation.

Table 21: Elementary School Trip Generation

Land Use Category	Peak Hour	Inbound	Outbound	Total
LUC 520: "Elementary School" (680 Public School Students)	A.M.	272	231	503
	P.M.	50	59	109
LUC 520: "Elementary School" (540 Catholic School Students)	A.M.	184	216	400
	P.M.	40	46	86

The entirety of the development is expected to generate approximately 3,416and 3,182 total two-way trips during the weekday a.m. and p.m. peak hours, respectively.

6.3 Trip Distribution

The trip distribution for the development was prepared by reviewing the Bolton Transportation Master Plan (MMM Group Ltd., 2015) and the 2016 Transportation Tomorrow Survey data for the community of Bolton. Approximately 40% of trips generated are expected to remain within the community of Bolton, with other significant destinations (approximately 10% each) being York Region, the City of Toronto, the City of Mississauga, and the City of Brampton.

Based on the trip destinations and origins the following residential trip distribution was established:

- 20% to and from the north on Highway 50
- 10% to and from the east on Columbia Way (proceeding south on the Caledon King Townline)
- 30% to and from the south on Highway 50
- 40% to and from the west on Emil Kolb parkway (20% proceeding west on King Street and 20% proceeding south on Emil Kolb Parkway)

The following commercial trip distribution was established based on trip destinations and origins as well as anticipated catchment areas:

- 20% to and from the north on Highway 50
- 10% to and from the east on Columbia Way
    - 5% to and from Kingsview Drive
    - 5% to and from Westchester Boulevard
- 30% to and from the south on Highway 50
- 40% to and from the west on Emil Kolb parkway (20% proceeding west on King Street and 20% proceeding south on Emil Kolb Parkway)

As previously noted enrollment of the proposed elementary schools are forecasted to be contained to the Bolton North Hill development. With close proximity to the neighbourhood it is serving, many trips to and from the school are anticipated to be walking and cycling.

The vehicle trips generated, as established in **Section 6.2** are expected to be parents who drop students off on the way to work. The trips to and from external employment are counted in the residential trip generation. In order to prevent double counting of trips, no external distribution was applied to the boundary road network. Trips crossing the boundary road network have been accounted for and are assigned based on the break down of units in the respective Traffic Analysis Zone.

Appendix K can be referenced for further details regarding trip distributions and Transportation Tomorrow Survey data.

6.4 Traffic Analysis Zones

As the proposed development encompasses multiple existing intersections, proposed site accesses, and land parcels, the site was divided into ten Traffic Analysis Zones (TAZ). **Figure 11** illustrates the Traffic Analysis Zones established.

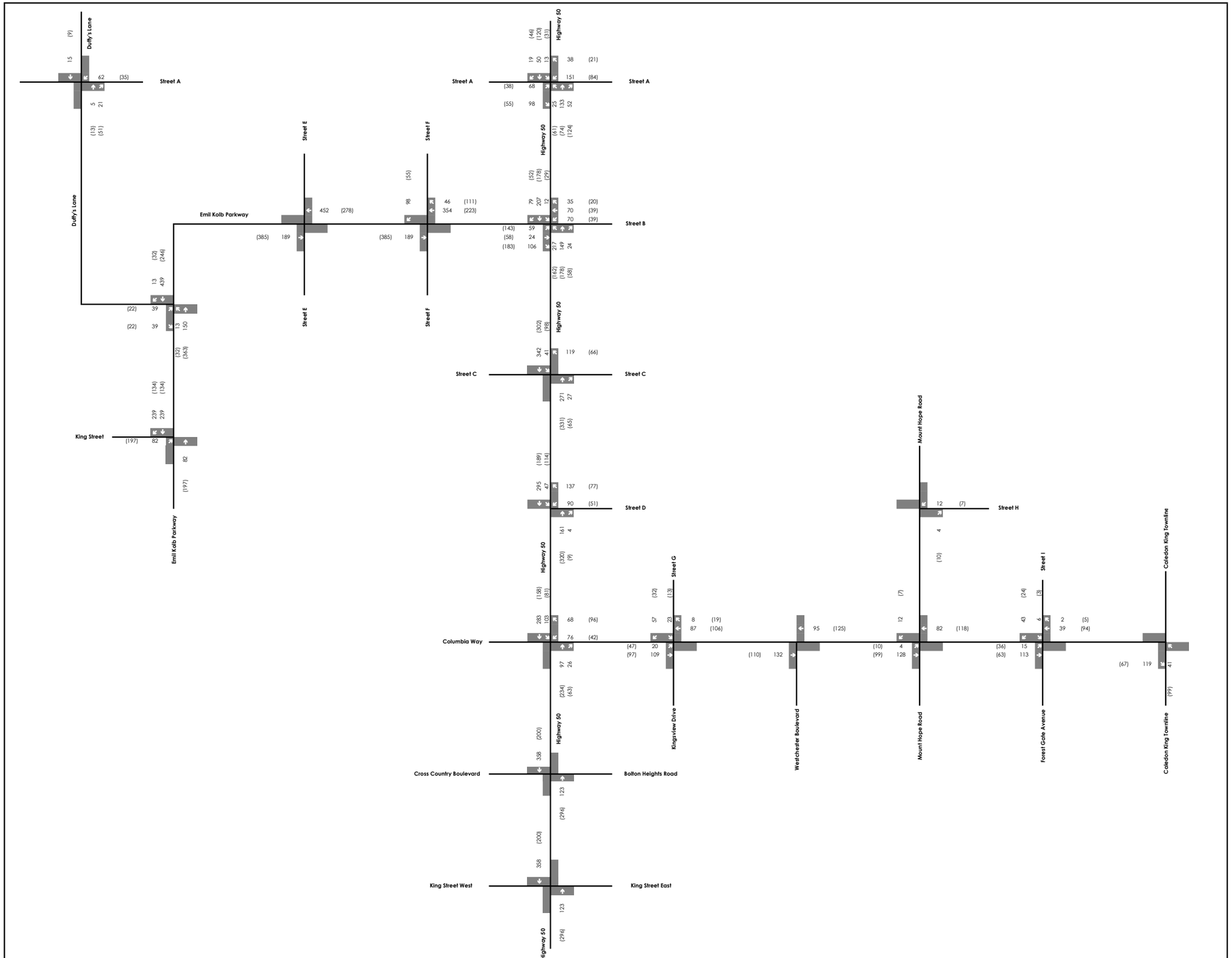
The trip distributions outlined in **Section 6.3** were applied to each TAZ, with further breakdown of the distribution at the site accesses outlined in **Section 5.3**.

6.5 Trip Assignment

The trip generation forecasted in **Section 6.2** was divided amongst the ten Traffic Analysis Zones based on their proportional number of units and assigned to the boundary road network based on the associated trip distribution. Trip assignment per TAZ can be referenced in **Appendix K.**

Developments located in TAZ A to G are expected to built out by 2031. Developments located in TAZ H and I are expected to be built out in 2041. Developments located in TAZ J are expected to be built out in 2051. **Figure 4** illustrates a phasing plan of the development lands. It is noted that the proposed phasing is solely for the purposes of this study. The timing of development will ultimately be based on the progression of individual Draft Plans.

Figure 13, Figure 14 and **Figure 15** illustrate the 2031, 2041 and 2051 total residential trip assignment, respectively. **Figure 16**, **Figure 17** and **Figure 18** illustrate the 2031, 2041 and 2051 total commercial trip assignment, respectively, and **Figure 19** illustrates the 2051 total school trip assignment.



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour) Trip Assignment

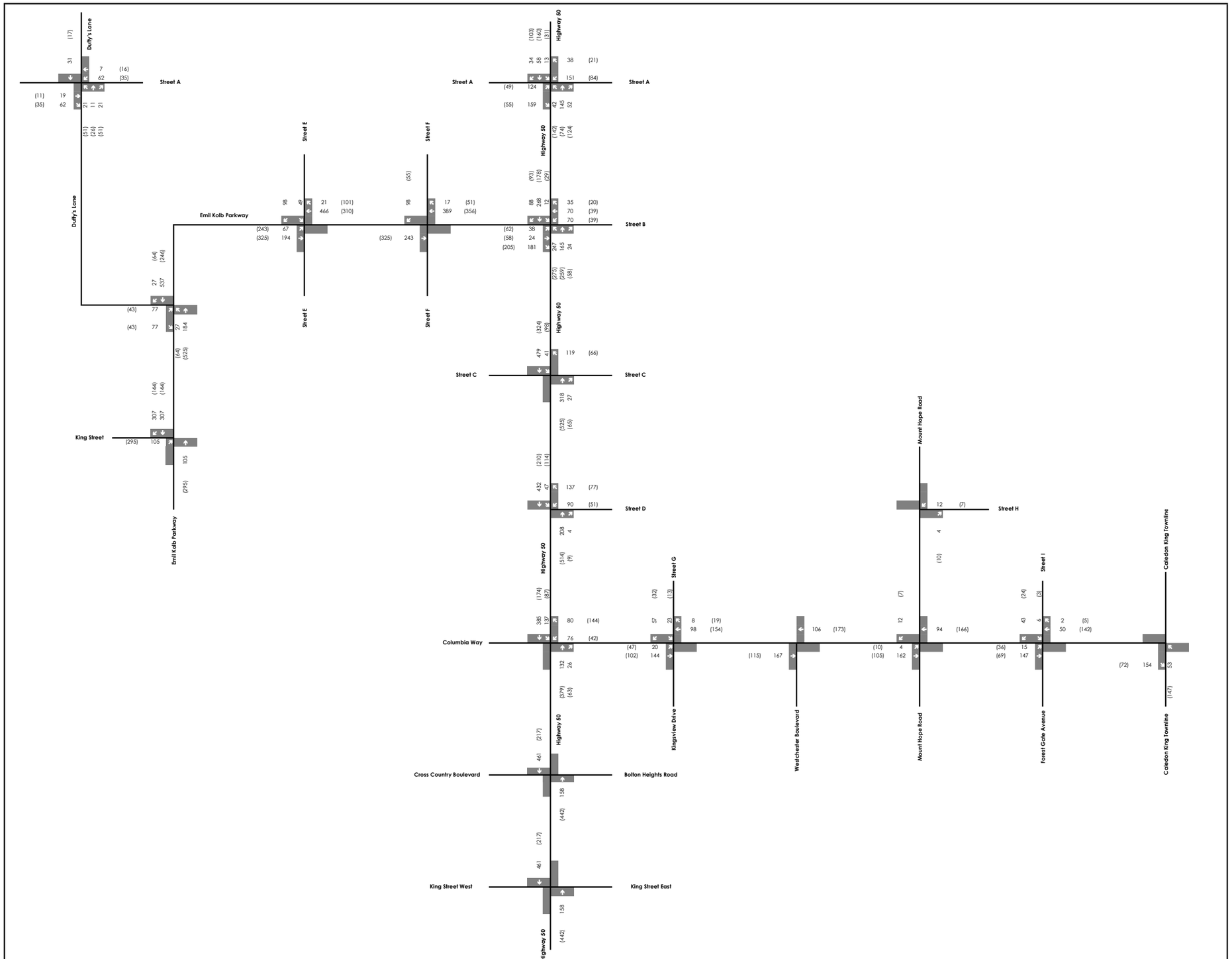
Bolton North Hill

2031 Residential Trip Assignment

CROZIER CONSULTING ENGINEERS

Figure 13

Project No. 708-3446
Date. February 2026
Analyst. AK



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour) Trip Assignment

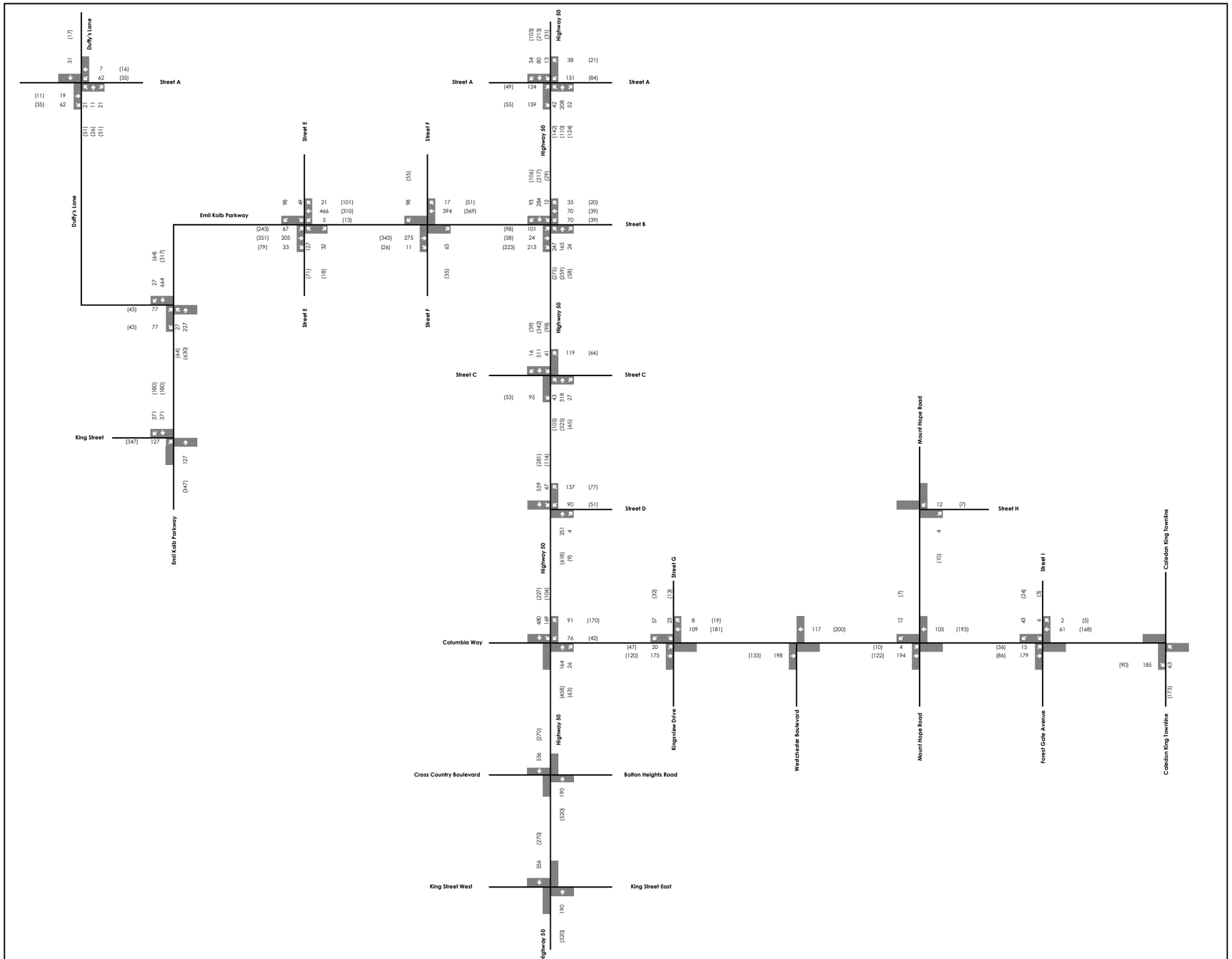
Bolton North Hill

2041 Residential Trip Assignment

CROZIER CONSULTING ENGINEERS

Figure 14

Project No. 708-3446
Date. February 2026
Analyst. AK



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour) Trip Assignment

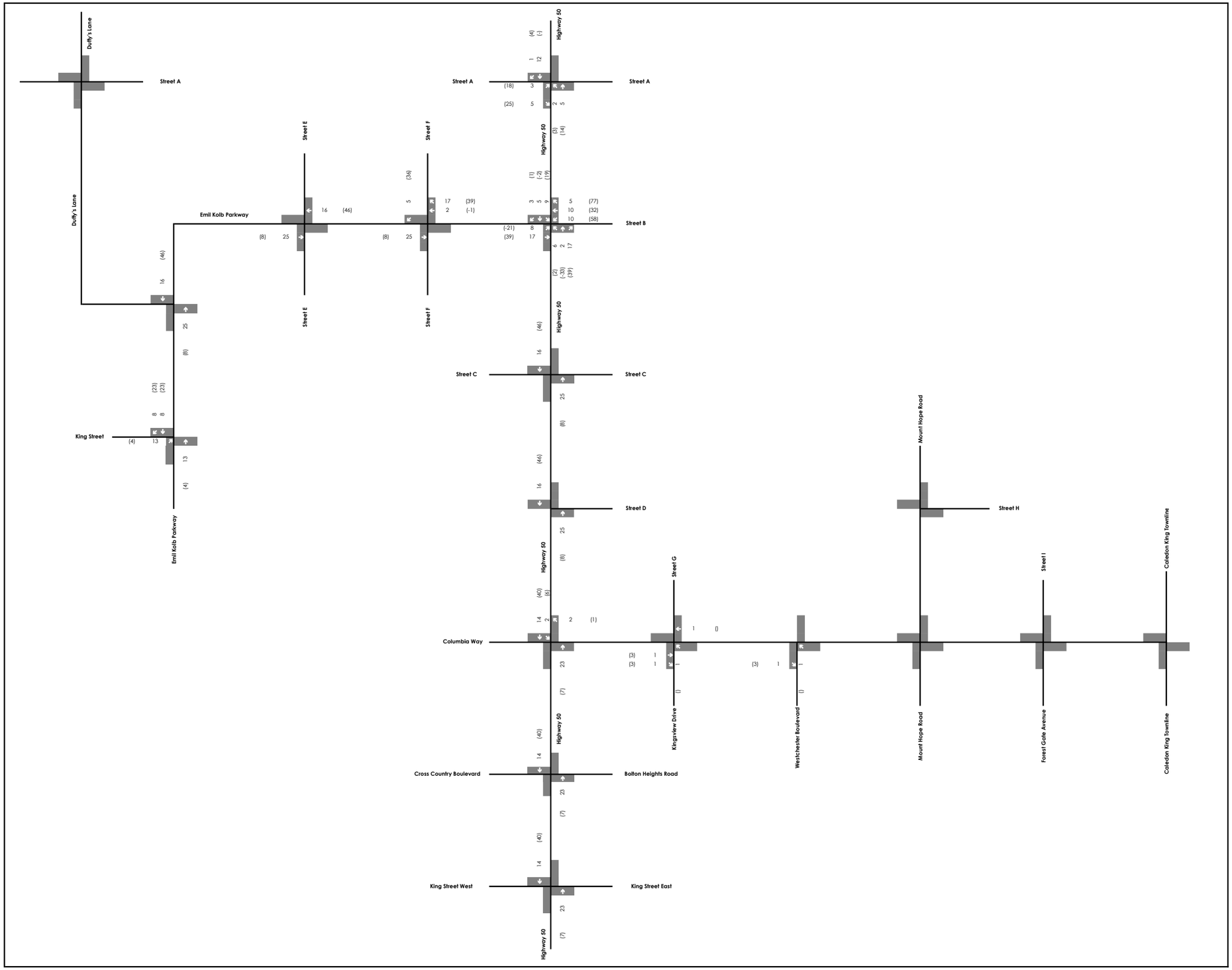
Bolton North Hill

2051 Residential Trip Assignment

CROZIER CONSULTING ENGINEERS

Figure 15

Project No. 708-3446
Date. February 2026
Analyst. AK



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour) Trip Assignment

Bolton North Hill

2031 Commercial Trip Assignment

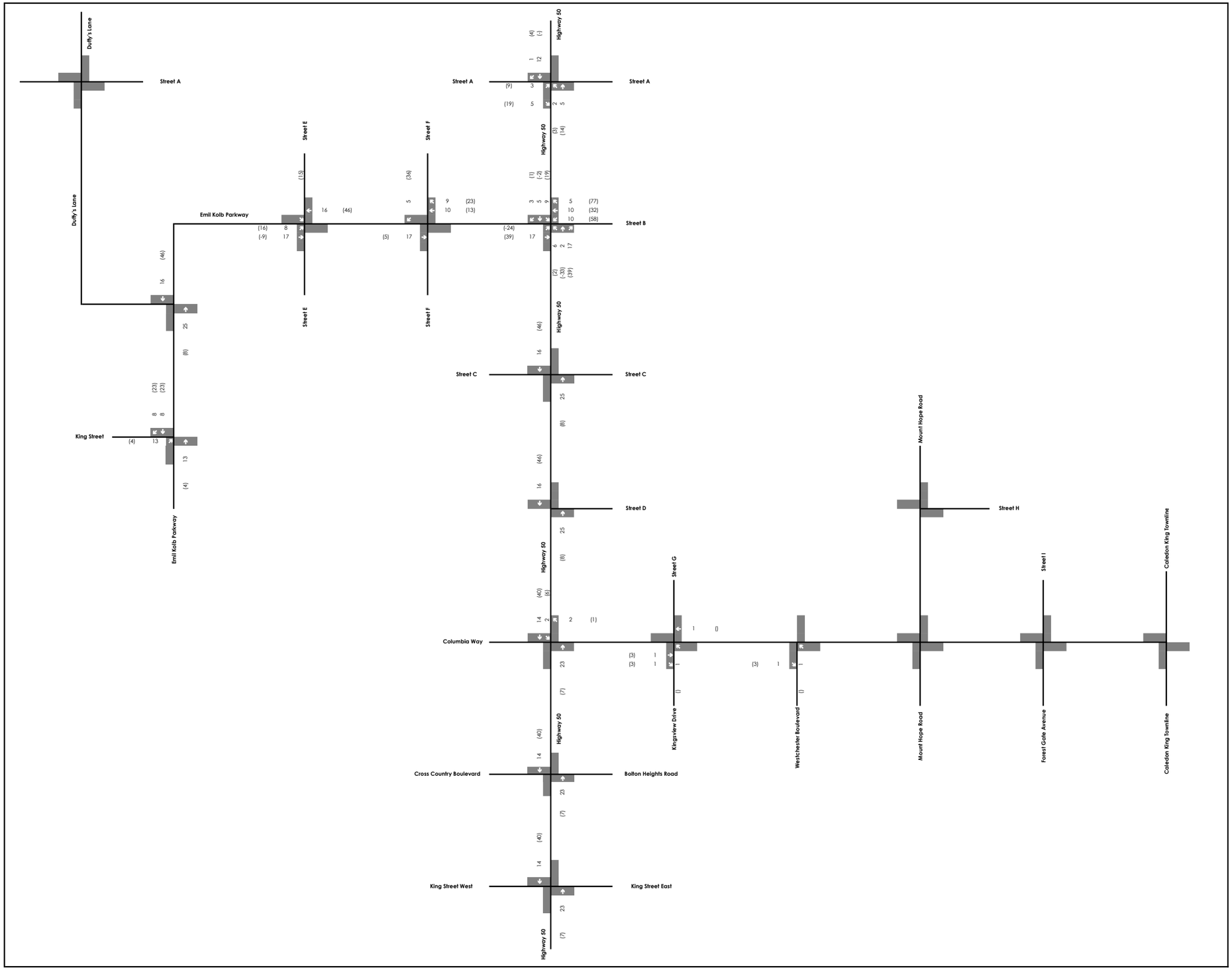
CROZIER CONSULTING ENGINEERS

Figure 16

Project No. 708-3446

Date. February 2026

Analyst. AK



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour) Trip Assignment

Bolton North Hill

2041 Commercial Trip Assignment

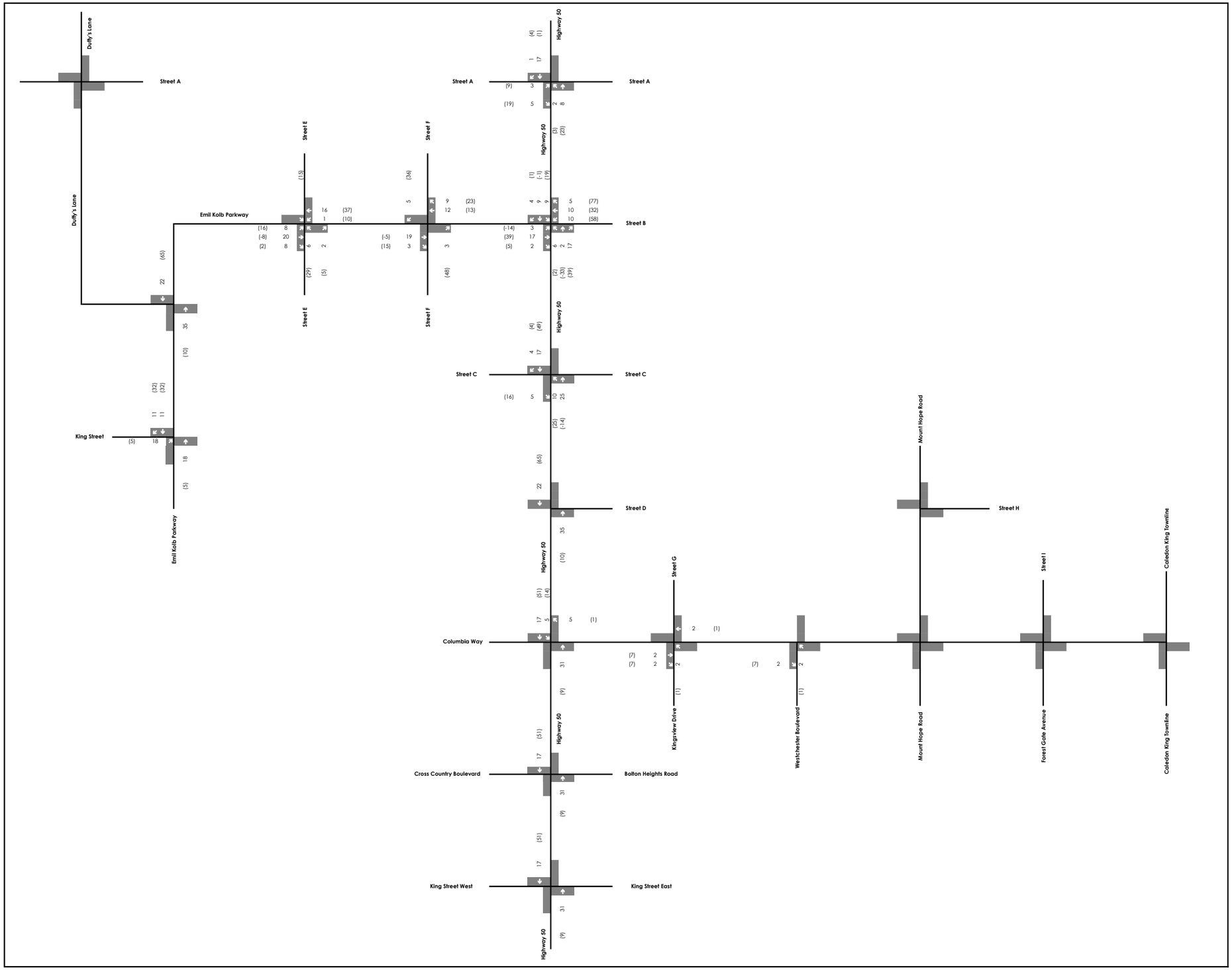
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Figure 17

Project No. 708-3446

Date. February 2026

Analyst. AK



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour) Trip Assignment

Bolton North Hill

2051 Commercial Trip Assignment

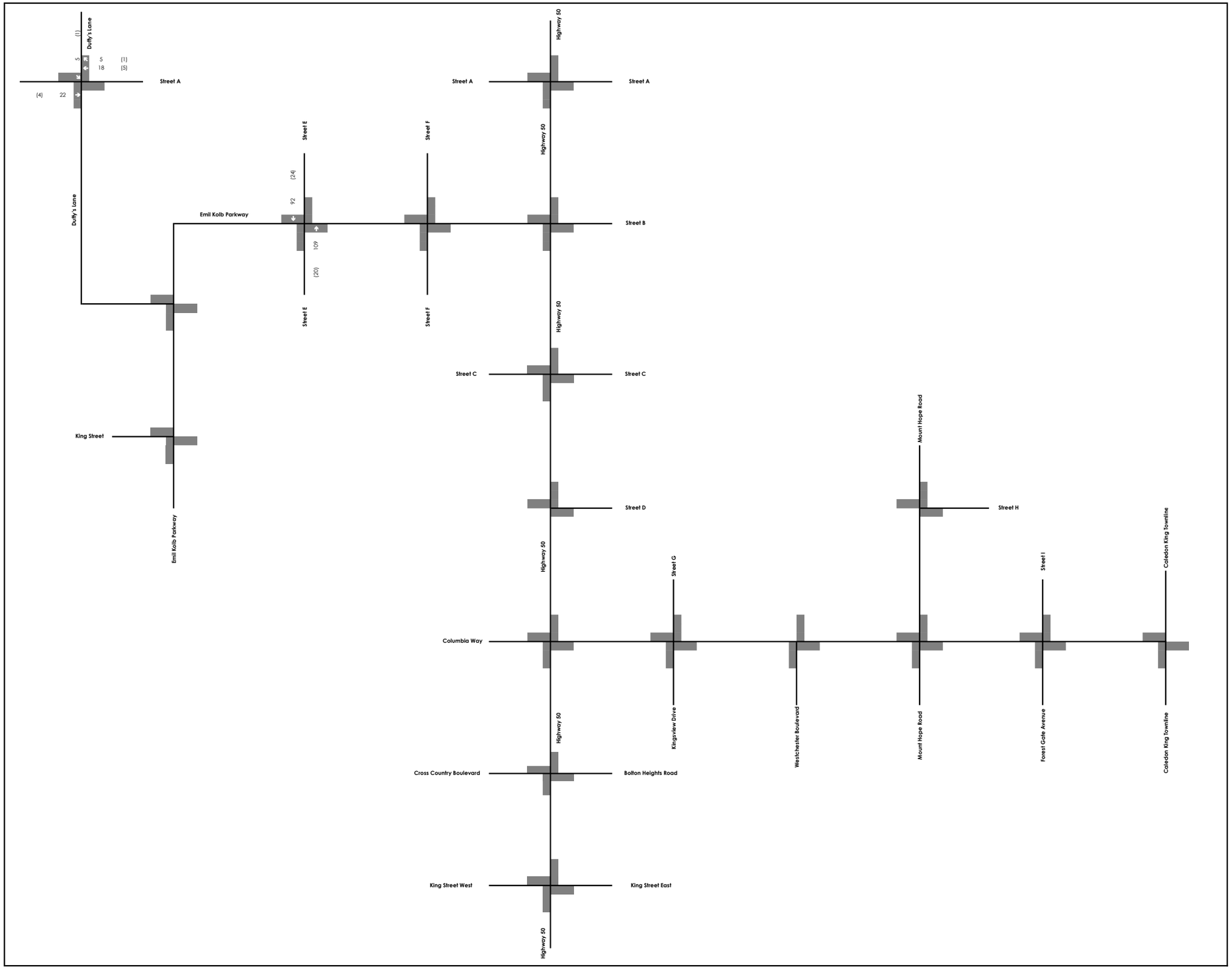
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Figure 18

Project No. 708-3446

Date. February 2026

Analyst. AK



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour) Trip Assignment

Bolton North Hill

2051 School Trip Assignment

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Figure 19

Project No. 708-3446

Date. June 2024

Analyst. AK

7.0 Improvement Analysis Methodology

A roadway improvement analysis was conducted under future total conditions to determine additional works triggered by the development. Various intersection improvements and potential road widenings were analyzed.

7.1 Road Widening Analysis Methodology

The Region of Peel's Long Range Transportation Plan (2019) and the Town of 's 2017 Transportation Master Plan both used a link capacity maximum threshold of 0.9 for road widening analysis, meaning that if the midblock volumes on the roadway segment are greater than 90% of the roadway capacity (per hour per lane), then the need for a road widening is identified. However, neither document indicates typical link capacity thresholds for various roadway classifications within the Town of Caledon nor Region of Peel.

Therefore, link capacities were evaluated in comparable municipalities with set link capacities to determine link capacity thresholds (per hour per lane) for various roadway classifications to apply to this analysis. **Table 22** compares the link capacities in other municipalities and outlines the assumed link capacity for this analysis.

Table 22: Link Capacity Thresholds

Roadway Classification	Link Capacity (vehicles per hour per lane)			
	Region of Halton	County of Simcoe	Region of York	Link Capacity Assumed
Collector	500-700 (Rural)	400-600	800	**700**
Major Arterial	800-900	900	1100 (Rural Highway)	**900**

The existing and proposed boundary road network was assessed to determine the need for road widening and if the number of lanes proposed was sufficient to support the development. **Table 23** outlines the future background and future total capacity available on the boundary road network. **Table 24** outlines the future total capacity availability.

The capacity analysis reaffirms the need for widening Caledon King Townline, south of Columbia Way, which is planned to be completed by the 2041 horizon as outlined in the Town's Multi-Modal Transportation Master Plan. The Master Plan also outlines the widening of Columbia Way in the 2041 horizon. The four-lane cross-section has been assessed, though it is noted that the roadway is not over capacity based on the 2051 future total volumes in a two-lane cross-section.

Assessment of the future background traffic volumes identified the need for an additional northbound lane on Highway 50, north of Emil Kolb Parkway. In the 2041 and 2051 future total horizon, the need for two southbound through lanes on Highway 50 and a secondary through lane in each direction on Emil Kolb Parkway was identified.

As previously noted, the Town of Caledon's Queen Street Corridor Study recommends maintaining the two-lane cross-section of Highway 50 in downtown Bolton. A four-lane cross-section of Highway 50 has only been assessed north of Columbia Way under the 2041 and 2051 horizons, based on the findings of this review.

Table 23: Future Background Road Capacity

Road	Segment	Capacity (vphpl)	Direction	2031			2041			2051		
				Lanes per Direction	Max. vph	Max. v/c Ratio	Lanes per Direction	Max. vph	Max. v/c Ratio	Lanes per Direction	Max. vph	Max. v/c Ratio
Highway 50	North of Emil Kolb	900	Northbound	1	904	**1.00**	1	949	**1.05**	1	1069	**1.19**
			Southbound	1	786	0.87	1	825	0.92	1	868	0.96
	Columbia Way to Emil Kolb		Northbound	1	562	0.62	1	589	0.65	1	618	0.69
			Southbound	1	473	0.53	1	496	0.55	1	521	0.58
	Bolton Heights to Columbia Way		Northbound	2	789	0.44	2	823	0.46	2	859	0.48
			Southbound	1	645	0.72	1	675	0.75	1	709	0.79
	King Street to Bolton Height		Northbound	2	937	0.52	2	981	0.55	2	1026	0.57
			Southbound	1	723	0.80	1	747	0.83	1	772	0.86
Emil Kolb Parkway	Highway 50 to King Street	900	Eastbound	1	506	0.56	1	556	0.62	1	610	0.68
			Westbound	1	463	0.51	1	508	0.56	1	558	0.62
Caledon-King Townline	North of Columbia Way	700	Northbound	1	557	0.80	1	609	0.87	1	664	0.95
			Southbound	1	564	0.81	1	588	0.84	1	646	0.92
	South of Columbia Way		Northbound	1	621	0.89	2	684	0.49	2	753	0.54
			Southbound	1	964	**1.38**	2	1035	0.74	2	1114	0.80
Columbia Way	Highway 50 to Mount Hope Road	700	Eastbound	1	398	0.57	2	413	0.30	2	439	0.31
			Westbound	1	339	0.48	2	357	0.26	2	377	0.27
	Mount Hope Road to Caledon-King Townline		Eastbound	1	493	0.70	2	512	0.37	2	534	0.38
			Westbound	1	509	0.73	2	524	0.37	2	542	0.39
Mount Hope Road	North of Columbia Way	700	Northbound	1	197	0.28	1	200	0.29	1	204	0.29
			Southbound	1	223	0.32	1	230	0.33	1	239	0.34
Duffy's Lane	North of Emil Kolb	700	Northbound	1	71	0.10	1	78	0.11	1	86	0.12
			Southbound	1	43	0.06	1	47	0.07	1	52	0.07
King Street	West of Emil Kolb	900	Northbound	1	563	0.80	1	615	0.88	2	672	0.48
			Southbound	1	722	**1.03**	1	787	**1.12**	2	859	0.61

Road	Segment	Capacity (vphpl)	Direction	2031			2041			2051		
				Lanes per Direction	Max. vph	Max. v/c Ratio	Lanes per Direction	Max. vph	Max. v/c Ratio	Lanes per Direction	Max. vph	Max. v/c Ratio
	West of Highway 50		Eastbound	1	399	0.57	1	441	0.63	1	488	0.70
			Westbound	1	384	0.55	1	418	0.60	1	455	0.65
	East of Highway 50		Eastbound	1	724	**1.03**	1	775	**1.11**	1	830	**1.19**
			Westbound	1	545	0.78	1	602	0.86	1	665	0.95

Table 24: Future Total Road Capacity

Road	Segment	Capacity (vphpl)	Direction	2031			2041			2051		
				Lanes per Direction	Max. vph	Max. v/c Ratio	Lanes per Direction	Max. vph	Max. v/c Ratio	Lanes per Direction	Max. vph	Max. v/c Ratio
Highway 50	North of Emil Kolb	900	Northbound	2	1295	0.72	2	1360	0.76	2	1475	0.82
			Southbound	2	1103	0.61	2	1212	0.67	2	1280	0.71
	Columbia Way to Emil Kolb		Northbound	1	901	**1.00**	1	1122	**1.25**	1	1129	**1.25**
			Southbound	1	784	0.87	1	944	**1.05**	1	1102	**1.22**
	Bolton Heights to Columbia Way		Northbound	2	1093	0.61	2	1272	0.71	2	1389	**0.77**
			Southbound	1	1018	**1.13**	1	1150	**1.28**	1	1283	**1.43**
	King Street to Bolton Height		Northbound	2	1241	0.69	2	1430	0.79	2	1556	0.86
			Southbound	1	1095	**1.22**	1	1222	**1.36**	1	1345	**1.49**
Emil Kolb Parkway	Highway 50 to King Street	900	Eastbound	1	909	**1.01**	1	897	**1.00**	1	1018	**1.13**
			Westbound	1	891	0.99	1	933	**1.04**	1	989	**1.10**
Caledon-King Townline	North of Columbia Way	700	Northbound	1	557	0.80	1	609	0.87	1	664	0.95
			Southbound	1	564	0.81	1	588	0.84	1	646	0.92
	South of Columbia Way		Northbound	2	720	0.51	2	831	0.59	2	926	0.66
			Southbound	2	1084	0.77	2	1189	0.85	2	1300	0.93
Columbia Way	Highway 50 to Mount Hope Road	700	Eastbound	2	549	0.39	2	571	0.41	2	621	0.44
			Westbound	2	486	0.35	2	515	0.37	2	549	0.39
	Mount Hope Road to Caledon-King Townline		Eastbound	2	614	0.44	2	667	0.48	2	721	0.52
			Westbound	2	609	0.44	2	673	0.48	2	717	0.51
Mount Hope Road	North of Columbia Way	700	Northbound	1	208	0.30	1	211	0.30	1	215	0.31
			Southbound	1	236	0.34	1	243	0.35	1	252	0.36
Duffy's Lane	North of Emil Kolb	700	Northbound	1	136	0.19	1	208	0.30	1	216	0.31
			Southbound	1	121	0.17	1	202	0.29	1	207	0.30
King Street	West of Emil Kolb	900	Northbound	1	765	**1.09**	1	914	**1.31**	2	1025	0.73
			Southbound	1	879	**1.26**	1	955	**1.36**	2	1072	0.77

Road	Segment	Capacity (vphpl)	Direction	2031			2041			2051		
				Lanes per Direction	Max. vph	Max. v/c Ratio	Lanes per Direction	Max. vph	Max. v/c Ratio	Lanes per Direction	Max. vph	Max. v/c Ratio
	West of Highway 50		Eastbound	1	399	0.57	1	441	0.63	1	488	0.70
			Westbound	1	384	0.55	1	418	0.60	1	455	0.65
	East of Highway 50		Eastbound	1	724	**1.03**	1	775	**1.11**	1	830	**1.19**
			Westbound	1	545	0.78	1	602	0.86	1	665	0.95
Street A	West of Highway 50	700	Eastbound	1	175	0.25	1	293	0.42	1	293	0.42
			Westbound	1	115	0.16	1	253	0.36	1	253	0.36
	East of Highway 50		Eastbound	1	157	0.22	1	157	0.22	1	157	0.22
			Westbound	1	189	0.27	1	189	0.27	1	189	0.27
Street B	East of Highway 50	700	Eastbound	1	243	0.35	1	243	0.35	1	243	0.35
			Westbound	1	266	0.38	1	266	0.38	1	266	0.38
Street C	West of Highway 50	700	Eastbound	1	-	-	1	-	-	1	100	0.14
			Westbound	1	-	-	1	-	-	1	173	0.25
	East of Highway 50		Eastbound	1	164	0.23	1	164	0.23	1	164	0.23
			Westbound	1	119	0.17	1	119	0.17	1	119	0.17
Street D	East of Highway 50	700	Eastbound	1	124	0.18	1	124	0.18	1	124	0.18
			Westbound	1	229	0.33	1	229	0.33	1	229	0.33
Street E	North of Emil Kolb	700	Northbound	1	-	-	1	362	0.52	1	382	0.55
			Southbound	1	-	-	1	149	0.21	1	242	0.35
	South of Emil Kolb		Northbound	1	-	-	1	-	-	1	276	0.39
			Southbound	1	-	-	1	-	-	1	141	0.20
Street G	North of Columbia Way	700	Northbound	1	212	0.30	1	212	0.30	1	212	0.30
			Southbound	1	212	0.30	1	212	0.30	1	212	0.30

7.2 Intersection Improvements Methodology

The boundary road network was analyzed to determine if intersection improvements are required to support site generated traffic volumes. Intersection improvements can range from major improvements such as signalization and auxiliary turn lane implementation or extensions, to minor improvements such as signal timing and phasing optimization.

7.2.1. Signal Timing Optimization

At signalized intersections with movements near or exceeding capacity, the signal timing splits were reviewed to determine if simply optimizing the signal timings, increasing the cycle length, or adding protected turn phases would improve operations for the critical movements and for the overall intersection. These improvements are minor and are easy to implement. Signal timing optimization was reviewed at intersections where volume-to-capacity ratios exceed capacity. The signal optimization recommendations are shown in **Section 7.3.**

7.2.2. Signal Warrant Analysis

Signal warrant analysis was conducted for the proposed site accesses on the boundary road network under 2051 future total conditions. The analysis followed the procedures specified in Chapter 4 of the "Ontario Traffic Manual – Book 12", March 2012. Justification 7 was used to assess the need for signalization as only the proposed intersections were assessed.

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

Traffic signal requirements were analyzed under future total conditions. Engineering judgement was applied to the signal warrant analysis to determine if traffic signals are necessary at unsignalized intersections even if not triggered by the OTM warrant. For example, if the intersection is not technically warranted for traffic signals but is expected to experience heavy delays during the peak hours (i.e., LOS "F"), then traffic signals were considered at these locations to improve traffic operations.

Table 25 outlines the intersections that were recommended to be signalized based on warrants and intersection operations**. Appendix L** contains signal warrant analysis worksheets.

Table 25: Signal Warrants

Roadway	Warranted	Timeline
Columbia Way and Westchester Boulevard	No	
Columbia Way and Mount Hope Road	No	
Columbia Way and Caledon King Townline	Yes	2041 Planned Improvement
Duffy's Lane and Emil Kolb Parkway	No	2041 Based on Intersection Operations
Highway 50 and Street A	Yes	2031
Duffy's Lane and Street A	No	
Highway 50 and Street C	No	
Highway 50 and Street D	No	
Emil Kolb Parkway and Street E	Yes	2051
Mount Hope Road and Street H	No	
Columbia Way and Forest Gate Avenue/Street I	No	

It is noted that Duffy's Lane and Emil Kolb Parkway does not warrant signalization, however it is recommended in the 2041 horizon to mitigate poor operations. As the 2041 horizon considers the build-out of non-participating landowners, monitoring of the intersection as development proceeds can confirm the need for and timeline of signalization.

7.2.3. Turn Lane Analysis

Auxiliary left-turn lane warrant analysis was conducted at the proposed site accesses on the boundary road network impacted under 2051 future total conditions. The analysis was conducted using the Ministry of Transportation (MTO)'s Design Supplement for TAC GDGCR

As per industry standard, the assumed design speed for turn lane analysis was set to 10 km/h greater than the posted speed limit. **Appendix M** contains left-turn lane warrant analysis worksheets.

Auxiliary turn lane analysis was conducted at signalized intersections on the boundary road network under 2051 future total conditions. The need for turn lane implementation or extensions to storage lengths was determined by impacts to traffic operations such as movement volume-to-capacity ratios, intersection delay and LOS, and 95th percentile queue lengths.

Engineering judgement was applied to turn lane analysis at signalized intersections. As discussed earlier, a movement operating at or slightly above a critical volume-to-capacity ratio or with an extended 95th percentile queue length does not necessarily indicate the need for additional lanes or major roadway improvements especially if the overall intersection is operating at acceptable levels of service. Additionally, turn lanes or other major roadway improvements are not practical at certain intersections for reasons such as geometric constraints.

For signalized intersections where an exclusive left-turn lane is triggered at one approach of a four-legged intersection, an exclusive left-turn lane is also recommended at the opposite approach to maintain geometric alignment and consistency on the roadway at the intersection.

Based on the analysis described, the left-turn lanes are recommended for the study intersections as shown in **Table 26.**

Table 26: Turn Lane Warrants

Roadway	Warranted	Timelines	Storage Lengths
Emil Kolb Parkway and Street E	Yes	2041	Eastbound: 65 m
	Signalized	2051	Westbound: 15 m
Highway 50 and Street A	Signalized	2031	Eastbound: 25 m
			Westbound: 50 m
			Northbound: 20 m
			Southbound: 20 m
Highway 50 and Street C	Yes	2031	Northbound: 40 m
			Southbound: 40 m
Highway 50 and Street D	Yes	2031	Southbound: 55 m
Columbia Way and Forest Gate Avenue/Street I	Yes	2031	Eastbound: 15 m
			Westbound: 15 m
Columbia Way and Mount Hope Road	Yes	2031 Two-Lane Roadway	Eastbound: 15 m
			Westbound: 15 m
	Yes	2041 Four-Lane Roadway	Eastbound: 15 m
			Westbound: 15 m

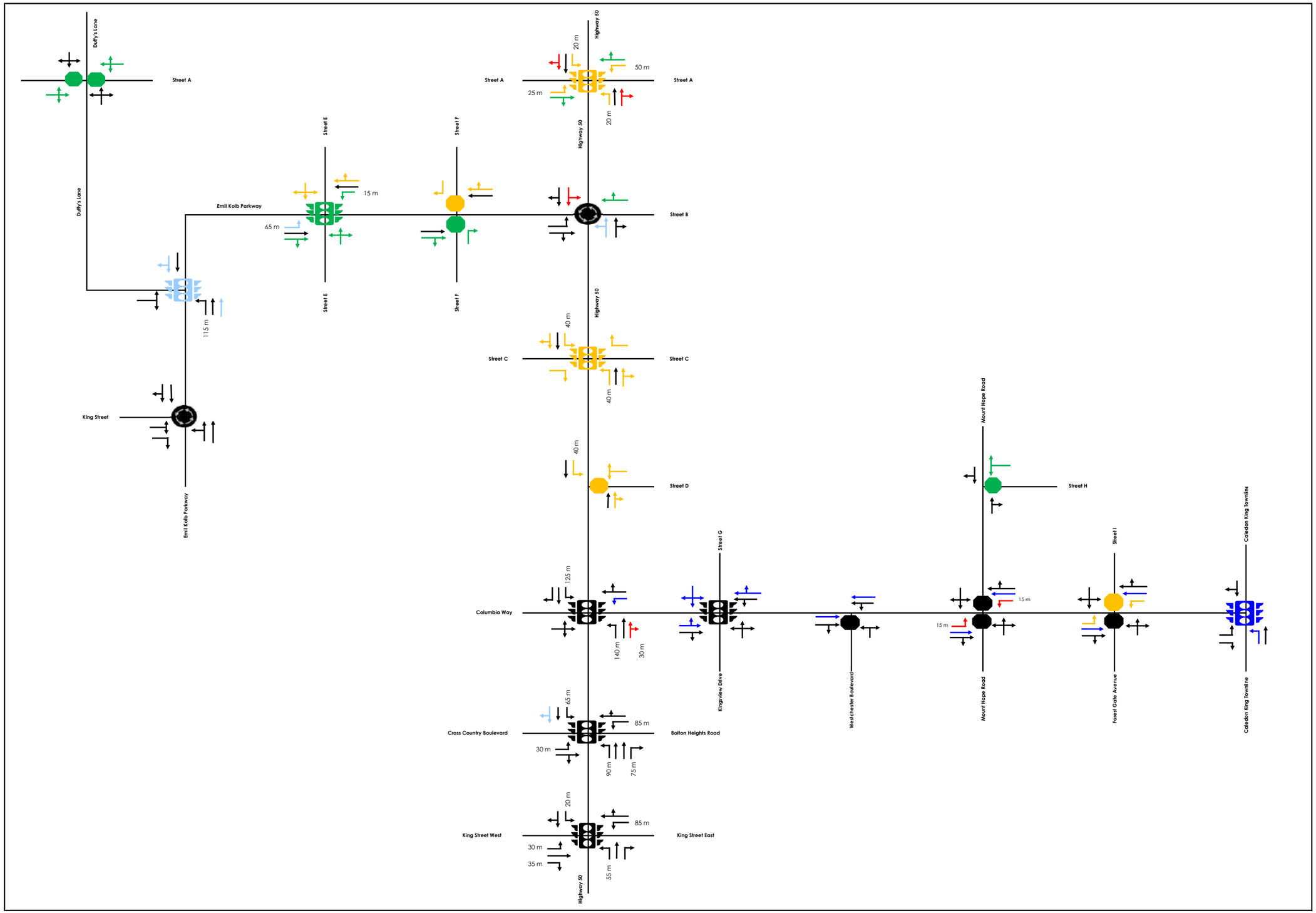
It is noted that at the intersection of Columbia Way and Mount Hope Road left-turn lanes are warranted in the 2031 horizon under the existing two-lane cross-section and in 2041 under the proposed four lane cross-section. Timing of the build-out of the lands in the northeast and northwest quadrants of the intersection may impact the warranted conditions. The construction of the turn lanes has been recommended for the 2041 horizon to correspond with the widening of the roadway so that earlier construction is not a throw away cost that will be removed. The development parcels surrounding the intersection should consider the need for turn lanes on Columbia Way as their development applications proceed.

7.3 Future Total Recommended Network Improvements

Additional improvements are required on the boundary road network under 2041 future total conditions to improve traffic operations.

A screening of the road network under 2041 future total conditions was conducted to identify any required future total road widenings or other intersection improvements. This analysis was conducted using the methodology outlined in **Section 7.1.**

Table 27 Error! Reference source not found.outlines the required improvements identified for the site as outlined in the 2031, 2041 and 2051 future total horizons. **Figure 20** illustrates the Future Total Road Network Configuration.



Legend:

- Existing
- Planned Improvement (2041)
- Future Background Recommendation (2041)
- 2031 Development Recommendation
- 2041 Development Recommendation
- 2051 Development Recommendation

XX Turn Lane Storage Length

Signalized Intersection

Stop-Controlled Intersection

Movement per Lane

Roundabout

Bolton North Hill

Future Total Road Network Configuration

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Figure 20

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Date. February 2026

Analyst. KH

Table 27: Additional Future Total Roadway Improvements

Roadway	Segment or Intersection	Improvement	Timeline
	Columbia Way	Optimization of signals in a.m. and p.m. peak	2041 Future Total Horizon
	Bolton Heights	Southbound right-turn lane becomes southbound through/right-turn lane	2041 Future Total Horizon
		Optimization of signals a.m. and p.m. peak hours	2051 Future Total Horizon
	Street A	Signalized intersection based on warrants. Implemented left-turn lane in all directions based on traffic operations with the following storage lengths: - Eastbound (25 m) - Westbound (50 m) - Northbound (20 m) - Southbound (20 m)	With construction of Street A
	Emil Kolb to Columbia Way	Additional northbound lane	2041 Future Total Horizon
	Emil Kolb / Street B	Revised circulation/signage	With construction of Street B
	Street C	Implemented left-turn lane based on warrants with the following storage lengths: - Northbound (40 m) - Southbound (40 m)	With construction of Street C
	Street D	Implemented left-turn lane in the southbound direction (55 m)	With construction of Street D
Columbia Way	Kingsview Drive/Street G	Optimization of splits in the p.m. peak hours	With construction of Street G
	Mount Hope Road	Implemented left-turn lane in the eastbound/westbound directions (15 m storage length).	With Widening of Columbia Way
	Forest Gate Avenue/ Street I	Implemented left-turn lane in eastbound/westbound directions (15 m storage length).	With construction of Street I
Emil Kolb Parkway	Highway 50 to King Street	Widening to a four-lane cross-section	2041 Future Total Horizon
	Duffy's Lane	Signalized intersection based on traffic operations.	2041 Future Total Horizon
		Southbound right-turn lane becomes southbound through/right-turn lane	With widening of Emil Kolb Parkway
	Street E	Implemented left-turn lane in eastbound direction (65 m)	With construction of Street E (north)
		Signalized intersection based on traffic operations. Implemented left-turn lane in westbound direction (15 m)	With construction of Street E (south)

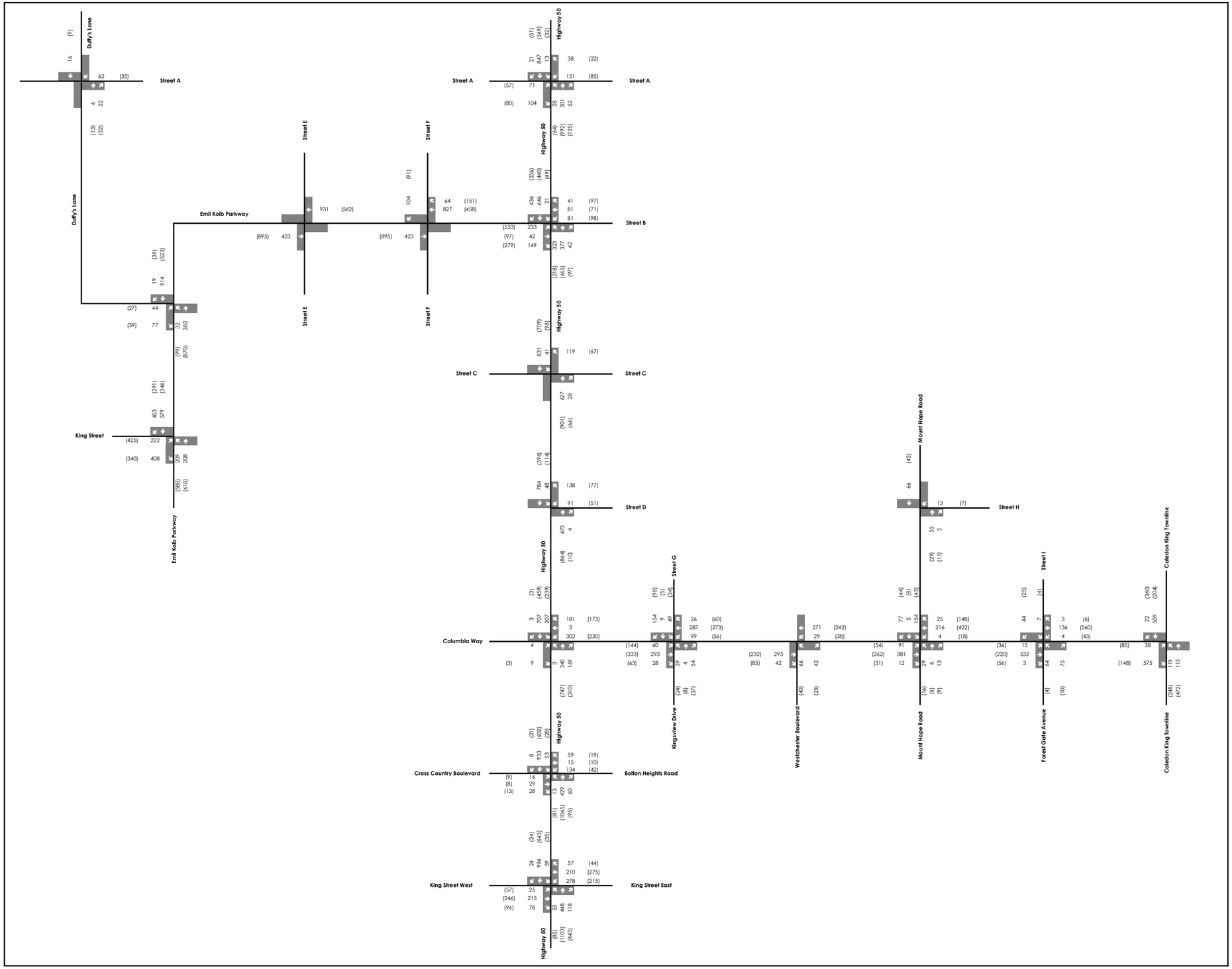
8.0 Future Total Conditions

A future total analysis is used to determine the impact of growth on the boundary road network with the addition of volumes generated by the proposed development. This analysis includes the recommendations determined in **Section 7.0**.

8.1 Intersection Operations

The 2031 future total operation are outlined in **Table 28** and are based on the volumes illustrated in **Figure 21.** The 2041 future total operations are outlined in Error! Reference source not found. and are based in the volumes illustrated in **Figure 22**. The 2051 future total operations are outlined in **Table 30** and are based in the volumes illustrated in **Figure 23**.

Appendix F includes detailed capacity analysis worksheets for reference.



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour)

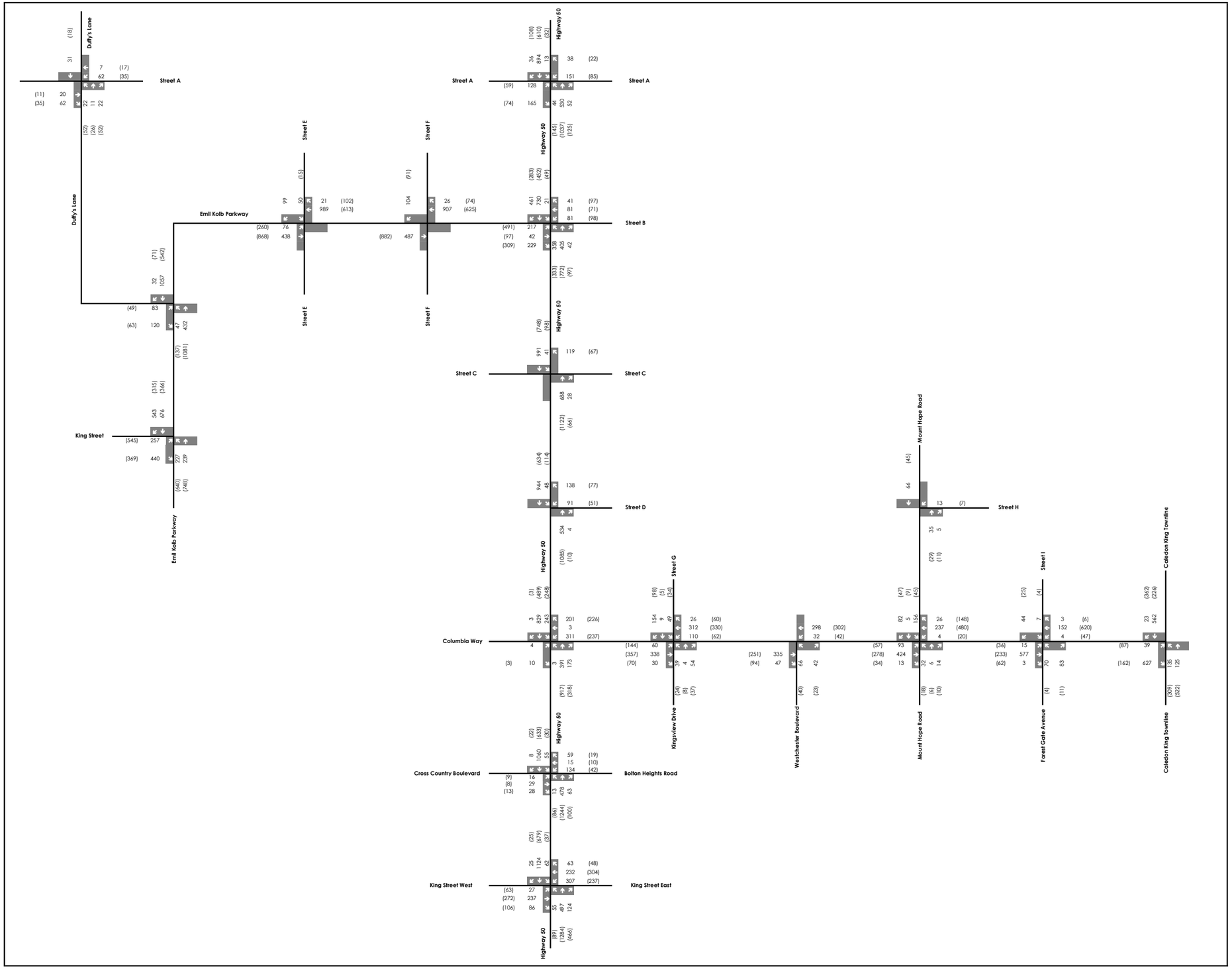
Bolton North Hill

2031 Future Total Traffic Volumes

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Figure 21

Project No. 708-3446
Date. February 2026
Analyst. AK



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour)

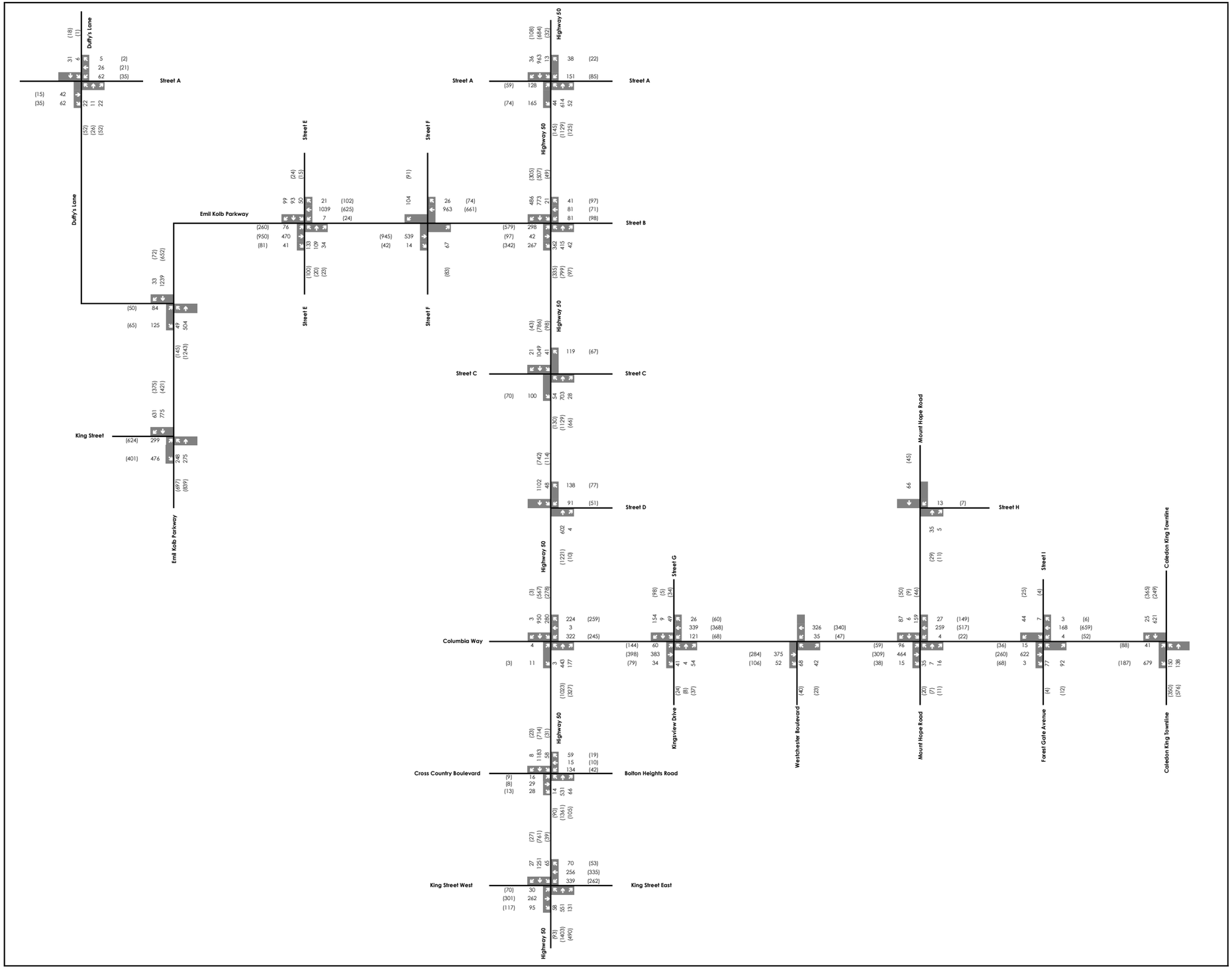
Bolton North Hill

2041 Future Total Traffic Volumes

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Figure 22

Project No. 708-3446
Date. February 2026
Analyst. AK



Legend:

Direction of Travel

XX (XX) A.M. Peak Hour (P.M. Peak Hour)

Bolton North Hill

2051 Future Total Traffic Volumes

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Figure 23

Project No. 708-3446
Date. February 2026
Analyst. AK

Table 28: 2031 Future Total Traffic Operations

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
King Street and Emil Kolb Parkway	Overall	**A**	**A**	**1.39**	**3.25**	**-**	**-**
	SB	A	A	1.71	2.66	-	-
	NB	A	A	1.14	4.52	-	-
	EB	A	A	1.18	1.65	-	-
Highway 50 and Emil Kolb Parkway/ Street B	Overall	**A**	**A**	**3.00**	**6.50**	**-**	**-**
	EB	A	A	3.56	5.97	-	-
	SB	A	A	3.79	1.53	-	-
	NB	A	A	1.47	5.59	-	-
	WB	A	D	3.13	26.73		
Highway 50 and Columbia Way	**Overall**	**C**	**B**	**21.0**	**17.7**	**0.84**	**0.80**
	EBLTR	A	A	1.5	0.0	0.05	0.00
	WBL	E	D	55.2	52.1	0.84	0.77
	WBTR	A	A	5.4	6.2	0.34	0.37
	NBL	B	-	12.3	-	0.02	-
	NBT	B	B	13.4	14.9	0.34	0.64
	NBR	A	A	2.3	1.7	0.18	0.28
	SBL	B	D	16.5	37.1	0.42	0.80
	SBT	C	B	20.3	10.5	0.68	0.39
	SBR	A	A	0.0	0.0	0.00	0.01
Highway 50 and Bolton Heights Road	**Overall**	**C**	**A**	**29.1**	**8.3**	**0.93**	**0.42**
	EBLTR	C	B	31.8	15.4	0.36	0.24
	WBL	C	D	34.9	40.1	0.41	0.22
	WBTR	A	B	10.0	18.9	0.20	0.11
	NBL	D	A	45.8	8.4	0.28	0.14
	NBT	C	A	20.1	7.9	0.23	0.38
	NBT2	C	A	20.1	7.9	0.23	0.38
	NBR	B	A	12.8	1.9	0.07	0.30
	SBL	B	B	13.6	12.1	0.12	0.31
	SBT	D	A	35.8	9.3	0.93	0.42
	SBR	A	A	0.0	0.5	0.01	0.02
Highway 50 and King Street	**Overall**	**F**	**F**	**83.5**	**93.6**	**1.27**	**1.35**
	EBL	C	C	24.9	29.1	0.09	0.22
	EBT	E	E	66.2	77.0	0.79	0.83
	EBR	A	A	4.3	5.7	0.24	0.29
	WBL	E	D	59.0	39.9	0.88	0.65
	WBTR	D	D	44.5	53.7	0.63	0.71
	NBL	C	B	21.5	19.6	0.41	0.38
	NBT	C	F	26.9	195.5	0.57	1.35
	NBR	A	B	4.1	18.6	0.18	0.58
	SBL	A	C	6.0	20.8	0.15	0.28
	SBTR	F	D	153.4	48.9	1.27	0.88
Columbia Way and Kingsview Drive	**Overall**	**B**	**B**	**17.3**	**14.5**	**0.79**	**0.69**
	EBLTR	B	B	17.2	19.1	0.67	0.69
	WBLTR	C	B	24.3	14.5	0.79	0.62
	NBLTR	A	A	8.3	6.2	0.30	0.35
	SBLTR	A	A	8.0	7.2	0.50	0.30
Columbia Way and Westchester Boulevard	**Overall**	**C**	**B**	**17.6**	**13.2**	**0.32**	**0.20**
	EBTR	A	A	0.0	0.0	0.25	0.20
	WBLT	A	A	1.1	1.4	0.03	0.03
	NBLR	C	B	17.6	13.2	0.32	0.13
Columbia Way and Mount	**Overall**	**F**	**C**	**127.4**	**22.8**	**1.10**	**0.35**
	EBL	A	A	8.1	9.0	0.09	0.06

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Hope Road	EBTR	A	A	0.0	0.0	0.28	0.18
	WBL	A	A	8.3	8.2	0.00	0.02
	WBTR	A	A	0.0	0.0	0.17	0.35
	NBLTR	D	C	28.6	20.6	0.28	0.12
	SBLTR	F	C	127.4	22.8	1.10	0.33
Columbia Way and Caledon King Townline	**Overall**	**F**	**F**	**176.6**	**97.1**	**1.31**	**0.98**
	EBLR	F	F	176.6	97.1	1.31	0.98
	NBLT	A	A	5.4	5.7	0.13	0.26
	SBTR	A	A	0.0	0.0	0.33	0.34
Emil Kolb Parkway and Duffy's Lane	**Overall**	**F**	**E**	**56.3**	**48.9**	**0.69**	**0.61**
	EBLR	F	E	56.3	48.9	0.69	0.45
	NBL	B	A	11.3	9.3	0.06	0.11
	NBT	A	A	0.0	0.0	0.25	0.61
	SBT	A	A	0.0	0.0	0.60	0.37
	SBR	A	A	0.0	0.0	0.01	0.02
Forest Gate Avenue & Columbia Way	**Overall**	**A**	**A**	**8.9**	**8.9**	**0.06**	**0.04**
	EBLTR	A	A	0.0	0.0	0.00	0.00
	WBLTR	A	A	8.9	8.9	0.06	0.04
	NBLTR	A	A	0.0	0.0	0.00	0.00
	SBLTR	A	A	0.0	0.0	0.00	0.00
Duffy's Lane & Street A	**Overall**	**C**	**B**	**19.2**	**12.9**	**0.52**	**0.53**
	EBT	A	A	0.0	0.0	0.25	0.53
	WBTR	A	A	0.0	0.0	0.52	0.36
	SBR	C	B	19.2	12.9	0.29	0.17
Emil Kolb Parkway & Street F	**Overall**	**B**	**C**	**12.9**	**32.6**	**0.75**	**1.02**
	EBLTR	A	A	8.0	8.9	0.34	0.30
	WBLTR	B	B	15.1	12.9	0.44	0.27
	NBLTR	A	D	9.0	50.1	0.52	1.02
	SBLTR	B	A	16.1	8.4	0.75	0.56
Highway 50 & Street A	**Overall**	**C**	**C**	**15.1**	**19.1**	**0.49**	**0.57**
	WBR	C	C	15.1	19.1	0.25	0.21
	NBTR	A	A	0.0	0.0	0.39	0.57
	SBL	A	B	9.0	10.9	0.04	0.14
	SBT	A	A	0.0	0.0	0.49	0.42
Highway 50 & Street C	**Overall**	**F**	**F**	**59.5**	**195.5**	**0.83**	**1.13**
	WBLR	F	F	59.5	195.5	0.83	1.13
	NBTR	A	A	0.0	0.0	0.28	0.51
	SBL	A	B	8.5	11.3	0.04	0.17
	SBT	A	A	0.0	0.0	0.46	0.35
Highway 50 & Street D	**Overall**	**A**	**A**	**9.1**	**8.9**	**0.02**	**0.02**
	WBLR	A	A	9.1	8.9	0.01	0.01
	NBTR	A	A	0.0	0.0	0.02	0.02
	SBLT	A	A	0.0	0.0	0.00	0.00
Mount Hope Road & Street H	**Overall**	**C**	**B**	**18.6**	**13.7**	**0.35**	**0.33**
	EBL	A	A	7.5	8.7	0.01	0.04
	EBTR	A	A	0.0	0.0	0.31	0.16
	WBL	A	A	8.5	7.9	0.00	0.03
	WBTR	A	A	0.0	0.0	0.08	0.33
	NBLTR	C	B	18.6	13.6	0.35	0.03
	SBLTR	B	B	10.7	13.7	0.07	0.07
Forest Gate Avenue/Street I & Columbia	**Overall**	**C**	**B**	**21.0**	**17.7**	**0.84**	**0.80**
	EBL	A	A	1.5	0.0	0.05	0.00
	EBTR	E	D	55.2	52.1	0.84	0.77

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Way	WBL	A	A	5.4	6.2	0.34	0.37
	WBTR	B	-	12.3	-	0.02	-
	NBLTR	B	B	13.4	14.9	0.34	0.64
	SBLTR	A	A	2.3	1.7	0.18	0.28

Table 29: 2041 Future Total Traffic Operations

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
King Street and Emil Kolb Parkway	**Overall**	**A**	**A**	**1.76**	**5.64**	**-**	**-**
	SB	A	A	2.38	3.30	-	-
	NB	A	A	1.29	8.79	-	-
	EB	A	A	1.61	2.31	-	-
Highway 50 and Emil Kolb Parkway/ Street B	**Overall**	**A**	**C**	**3.91**	**17.76**	**-**	**-**
	EB	A	A	4.99	5.87	-	-
	SB	A	A	5.04	2.56	-	-
	NB	A	A	1.60	8.79	-	-
	WB	A	F	3.64	124.03	-	-
Highway 50 and Columbia Way	**Overall**	**B**	**B**	**15.7**	**17.6**	**0.78**	**0.80**
	EBLTR	A	A	0.5	0.0	0.06	0.01
	WBL	C	C	31.3	29.0	0.73	0.61
	WBTR	A	A	5.6	2.5	0.40	0.39
	NBL	B		15.7		0.04	
	NBT	B	C	13.0	21.5	0.43	0.80
	NBTR	B	C	13.0	21.5	0.43	0.80
	SBL	A	C	9.4	20.3	0.50	0.66
	SBT	B	A	16.2	7.8	0.78	0.41
	SBR	A	A	0.0	0.0	0.00	0.01
Highway 50 and Bolton Heights Road	**Overall**	**B**	**A**	**16.2**	**8.3**	**0.56**	**0.45**
	EBL	D	C	42.0	34.1	0.11	0.05
	EBTR	C	B	26.2	12.8	0.27	0.21
	WBL	D	D	35.7	40.1	0.43	0.22
	WBTR	B	B	10.1	18.9	0.21	0.11
	NBL	B	A	16.1	8.4	0.09	0.15
	NBT	B	A	11.9	8.6	0.26	0.45
	NBT2	B	A	11.9	8.6	0.26	0.45
	NBR	A	A	3.9	1.9	0.07	0.32
	SBL	B	B	13.6	16.7	0.13	0.42
	SBT	B	A	16.0	6.7	0.56	0.24
	SBTR	B	A	16.0	6.7	0.56	0.24
Highway 50 and King Street	**Overall**	**F**	**F**	**106.9**	**115.5**	**1.33**	**1.45**
	EBL	C	D	34.0	37.3	0.11	0.30
	EBT	F	F	99.0	102.0	0.92	0.95
	EBR	B	B	11.5	16.6	0.29	0.35
	WBL	F	E	104.4	62.3	1.05	0.84
	WBTR	E	E	56.8	71.2	0.68	0.84
	NBL	D	B	40.2	18.6	0.58	0.42
	NBT	C	F	26.6	240.0	0.58	1.45
	NBR	A	B	3.2	16.1	0.17	0.58

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
	SBL	B	C	13.2	22.0	0.17	0.37
	SBTR	F	D	185.1	38.3	1.33	0.81
Columbia Way and Kingsview Drive	**Overall**	**A**	**A**	**8.8**	**7.3**	**0.42**	**0.45**
	EBT	A	A	9.1	9.5	0.36	0.45
	EBTR	A	A	9.1	9.5	0.36	0.45
	WBLT	A	A	9.9	6.1	0.42	0.41
	WBTR	A	A	9.9	6.1	0.42	0.41
	NBLTR	A	A	7.2	5.4	0.23	0.30
	SBLTR	A	A	6.5	6.4	0.42	0.26
Columbia Way and Westchester Boulevard	**Overall**	**C**	**B**	**16.6**	**12.9**	**0.30**	**0.13**
	EBT	A	A	0.0	0.0	0.16	0.11
	EBTR	A	A	0.0	0.0	0.12	0.11
	WBLT	A	A	2.3	2.6	0.04	0.04
	WBT	A	A	0.0	0.0	0.15	0.13
	NBLR	C	B	16.6	12.9	0.30	0.13
Columbia Way and Mount Hope Road	**Overall**	**F**	**C**	**77.0**	**23.3**	**0.95**	**0.35**
	EBL	A	A	8.2	9.3	0.09	0.07
	EBT	A	A	0.0	0.0	0.20	0.11
	EBTR	A	A	0.0	0.0	0.11	0.08
	WBL	A	A	8.5	8.4	0.00	0.02
	WBT	A	A	0.0	0.0	0.11	0.20
	WBTR	A	A	0.0	0.0	0.08	0.19
	NBLTR	D	C	30.2	19.1	0.31	0.12
	SBLTR	F	C	77.0	23.3	0.95	0.35
Columbia Way and Caledon King Townline	**Overall**	**C**	**B**	**23.7**	**10.2**	**0.88**	**0.71**
	EBL	B	C	16.7	20.8	0.08	0.23
	EBR	C	A	25.5	6.8	0.88	0.35
	NBL	B	A	11.7	9.6	0.42	0.59
	NBT	A	A	8.5	5.0	0.13	0.39
	SBTR	C	B	28.3	14.6	0.79	0.71
Emil Kolb Parkway and Duffy's Lane	**Overall**	**A**	**A**	**7.5**	**6.3**	**0.55**	**0.56**
	EBLR	B	A	11.6	8.7	0.36	0.18
	NBL	B	A	10.6	7.9	0.28	0.36
	NBT	A	A	5.5	6.7	0.25	0.56
	NBT2	A	A	5.5	6.7	0.25	0.56
	SBT	A	A	7.4	4.8	0.55	0.34
	SBTR	A	A	7.4	4.8	0.55	0.34
Duffy's Lane & Street A	**Overall**	**B**	**B**	**10.4**	**10.6**	**0.09**	**0.08**
	EBLTR	A	A	9.1	9.1	0.09	0.05
	WBLTR	B	B	10.4	10.6	0.09	0.08
	NBLTR	A	A	3.0	3.1	0.01	0.03

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
	SBLTR	A	A	0.0	0.0	0.00	0.00
Emil Kolb Parkway & Street E	**Overall**	**E**	**F**	**39.5**	**74.4**	**0.60**	**0.30**
	EBL	B	B	10.9	10.8	0.11	0.30
	EBT	A	A	0.0	0.0	0.13	0.26
	EBT2	A	A	0.0	0.0	0.13	0.26
	WBT	A	A	0.0	0.0	0.39	0.24
	WBTR	A	A	0.0	0.0	0.21	0.18
	SBLR	E	F	39.5	74.4	0.60	0.23
Emil Kolb Parkway & Street F	**Overall**	**A**	**A**	**0.0**	**0.0**	**0.36**	**0.26**
	EBT	A	A	0.0	0.0	0.14	0.26
	EBT2	A	A	0.0	0.0	0.14	0.26
	WBT	A	A	0.0	0.0	0.36	0.25
	WBTR	A	A	0.0	0.0	0.19	0.17
Highway 50 & Street A	**Overall**	**A**	**A**	**7.5**	**5.2**	**0.47**	**0.46**
	EBL	B	B	11.0	11.4	0.20	0.07
	EBTR	A	A	6.2	0.2	0.21	0.08
	WBL	B	B	11.9	11.5	0.27	0.10
	WBTR	A	A	0.1	1.4	0.04	0.03
	NBL	A	A	8.1	6.9	0.16	0.28
	NBT	A	A	6.2	5.3	0.29	0.46
	NBTR	A	A	6.2	5.3	0.29	0.46
	SBL	A	A	6.1	5.8	0.03	0.11
	SBT	A	A	7.6	4.1	0.47	0.28
	SBTR	A	A	7.6	4.1	0.47	0.28
Highway 50 & Street C	**Overall**	**B**	**B**	**11.9**	**14.4**	**0.58**	**0.44**
	WBR	B	B	11.9	14.4	0.19	0.15
	NBT	A	A	0.0	0.0	0.27	0.44
	NBTR	A	A	0.0	0.0	0.15	0.26
	SBL	A	B	9.3	12.4	0.05	0.17
	SBT	A	A	0.0	0.0	0.58	0.44
Highway 50 & Street D	**Overall**	**F**	**F**	**155.4**	**149.7**	**1.14**	**1.01**
	WBLR	F	F	155.4	149.7	1.14	1.01
	NBT	A	A	0.0	0.0	0.21	0.43
	NBTR	A	A	0.0	0.0	0.11	0.22
	SBL	A	B	8.7	10.7	0.05	0.15
	SBT	A	A	0.0	0.0	0.56	0.37
Mount Hope Road & Street H	**Overall**	**A**	**A**	**9.1**	**8.9**	**0.02**	**0.02**
	WBLR	A	A	9.1	8.9	0.01	0.01
	NBTR	A	A	0.0	0.0	0.02	0.02
	SBLT	A	A	0.0	0.0	0.00	0.00
Forest Gate	**Overall**	**C**	**B**	**18.1**	**12.3**	**0.36**	**0.24**

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Avenue/Street I & Columbia Way	EBL	A	A	7.6	8.9	0.01	0.04
	EBT	A	A	0.0	0.0	0.23	0.09
	EBTR	A	A	0.0	0.0	0.11	0.08
	WBL	A	A	8.7	8.0	0.00	0.04
	WBT	A	A	0.0	0.0	0.06	0.24
	WBTR	A	A	0.0	0.0	0.03	0.13
	NBLTR	C	B	18.1	11.8	0.36	0.03
	SBLTR	A	B	9.9	12.3	0.07	0.06

Table 30: 2051 Future Total Traffic Operations

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
King Street and Emil Kolb Parkway	**Overall**	**A**	**C**	**2.24**	**16.48**	**-**	**-**
	SB	A	A	3.26	4.96	-	-
	NB	A	D	1.57	29.91	-	-
	EB	A	A	1.52	3.46	-	-
Highway 50 and Emil Kolb Parkway/ Street B	**Overall**	**A**	**C**	**4.91**	**22.22**	**-**	**-**
	EB	A	A	7.10	8.70	-	-
	SB	A	A	5.75	2.54	-	-
	NB	A	B	1.94	10.68	-	-
	WB	A	F	5.06	191.80	-	-
Highway 50 and Columbia Way	**Overall**	**B**	**C**	**18.5**	**20.9**	**0.84**	**0.89**
	EBLTR	A	A	0.7	0.0	0.08	0.01
	WBL	D	C	42.5	30.3	0.83	0.63
	WBTR	A	A	6.0	4.0	0.45	0.46
	NBL	B		17.3		0.06	
	NBT	B	C	13.5	27.2	0.43	0.89
	NBTR	B	C	13.5	27.2	0.43	0.89
	SBL	B	C	10.3	23.1	0.57	0.70
	SBT	B	A	19.3	8.5	0.84	0.48
	SBR	A	A	0.0	0.0	0.00	0.01
Highway 50 and Bolton Heights Road	**Overall**	**D**	**A**	**36.5**	**8.6**	**1.04**	**0.52**
	EBL	D	D	44.6	42.7	0.11	0.05
	EBTR	C	B	28.0	16.0	0.28	0.23
	WBL	D	D	48.8	36.9	0.60	0.17
	WBTR	B	B	12.9	18.6	0.24	0.08
	NBL	C	A	27.0	8.3	0.29	0.17
	NBT	A	A	6.9	8.8	0.25	0.49
	NBT2	A	A	6.9	8.8	0.25	0.49
	NBR	A	A	2.1	2.4	0.07	0.33
	SBL	A	C	8.0	21.1	0.13	0.52
	SBTR	D	A	53.5	6.7	1.04	0.27
Highway 50 and King Street	**Overall**	**F**	**F**	**143.8**	**145.8**	**1.49**	**1.59**
	EBL	C	D	34.3	41.0	0.13	0.41
	EBT	F	F	112.3	135.3	0.99	1.09
	EBR	B	B	14.1	19.8	0.32	0.40
	WBL	F	F	157.7	92.5	1.21	0.99
	WBTR	E	F	59.8	98.4	0.74	0.99
	NBL	D	C	43.9	27.6	0.63	0.58
	NBT	C	F	29.1	297.8	0.64	1.59
	NBR	A	B	3.7	17.8	0.18	0.61
	SBL	B	C	13.7	22.9	0.21	0.39

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
	SBTR	F	D	255.0	47.8	1.49	0.91
Columbia Way and Kingsview Drive	**Overall**	**A**	**A**	**9.0**	**7.8**	**0.46**	**0.47**
	EBT	A	A	9.2	9.7	0.39	0.47
	EBTR	A	A	9.2	9.7	0.39	0.47
	WBLT	B	A	10.1	6.9	0.46	0.44
	WBTR	B	A	10.1	6.9	0.46	0.44
	NBLTR	A	A	7.5	5.6	0.24	0.31
	SBLTR	A	A	6.8	6.6	0.43	0.27
Columbia Way and Westchester Boulevard	**Overall**	**C**	**B**	**18.8**	**13.8**	**0.34**	**0.15**
	EBT	A	A	0.0	0.0	0.18	0.12
	EBTR	A	A	0.0	0.0	0.13	0.13
	WBLT	A	A	2.4	2.7	0.04	0.04
	WBT	A	A	0.0	0.0	0.16	0.15
	NBLR	C	B	18.8	13.8	0.34	0.14
Columbia Way and Mount Hope Road	**Overall**	**F**	**D**	**123.9**	**26.5**	**1.10**	**0.40**
	EBL	A	A	8.3	9.5	0.10	0.07
	EBT	A	A	0.0	0.0	0.22	0.13
	EBTR	A	A	0.0	0.0	0.12	0.09
	WBL	A	A	8.6	8.5	0.00	0.02
	WBT	A	A	0.0	0.0	0.12	0.21
	WBTR	A	A	0.0	0.0	0.08	0.20
	NBLTR	E	C	37.7	21.5	0.40	0.16
	SBLTR	F	D	123.9	26.5	1.10	0.40
Columbia Way and Caledon King Townline	**Overall**	**C**	**B**	**34.6**	**13.3**	**0.94**	**0.77**
	EBL	B	C	16.8	22.1	0.08	0.26
	EBR	D	A	35.3	7.2	0.94	0.42
	NBL	B	C	16.9	20.4	0.54	0.77
	NBT	A	A	9.0	5.9	0.15	0.47
	SBTR	D	B	44.6	16.8	0.94	0.76
Emil Kolb Parkway and Duffy's Lane	**Overall**	**A**	**A**	**8.5**	**6.5**	**0.62**	**0.61**
	EBLR	B	B	15.3	10.1	0.42	0.23
	NBL	B	A	13.5	9.3	0.33	0.43
	NBT	A	A	5.6	6.9	0.28	0.61
	NBT2	A	A	5.6	6.9	0.28	0.61
	SBT	A	A	8.3	4.8	0.62	0.39
	SBTR	A	A	8.3	4.8	0.62	0.39
Duffy's Lane & Street A	**Overall**	**B**	**B**	**10.8**	**10.7**	**0.13**	**0.08**
	EBLTR	A	A	9.5	9.2	0.11	0.06
	WBLTR	B	B	10.8	10.7	0.13	0.08
	NBLTR	A	A	3.0	3.1	0.01	0.03
	SBLTR	A	A	1.2	0.4	0.00	0.00

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Emil Kolb Parkway & Street E	**Overall**	**A**	**A**	**9.3**	**7.3**	**0.52**	**0.57**
	EBL	B	B	13.3	15.4	0.33	0.57
	EBT	A	A	6.6	6.0	0.25	0.45
	EBTR	A	A	6.6	6.0	0.25	0.45
	WBL	A	A	6.7	5.6	0.01	0.08
	WBT	A	A	8.8	4.9	0.52	0.32
	WBTR	A	A	8.8	4.9	0.52	0.32
	NBLTR	B	B	14.2	13.9	0.49	0.32
	SBLTR	B	B	10.1	12.7	0.36	0.08
Emil Kolb Parkway & Street F	**Overall**	**B**	**B**	**13.6**	**11.7**	**0.38**	**0.37**
	EBT	A	A	0.0	0.0	0.21	0.37
	EBTR	A	A	0.0	0.0	0.11	0.21
	WBT	A	A	0.0	0.0	0.38	0.26
	WBTR	A	A	0.0	0.0	0.20	0.17
	NBR	B	B	10.5	10.7	0.09	0.12
	SBR	B	B	13.6	11.7	0.20	0.14
Highway 50 & Street A	**Overall**	**A**	**A**	**7.7**	**5.3**	**0.49**	**0.48**
	EBL	B	B	11.6	12.0	0.21	0.08
	EBTR	A	A	7.4	0.4	0.22	0.09
	WBL	B	B	12.5	12.1	0.27	0.11
	WBTR	A	A	0.1	2.7	0.05	0.03
	NBL	A	A	8.3	7.2	0.17	0.30
	NBT	A	A	6.3	5.4	0.33	0.48
	NBTR	A	A	6.3	5.4	0.33	0.48
	SBL	A	A	6.0	5.8	0.03	0.11
	SBT	A	A	7.6	4.1	0.49	0.31
	SBTR	A	A	7.6	4.1	0.49	0.31
Highway 50 & Street C	**Overall**	**D**	**C**	**34.2**	**19.1**	**0.63**	**0.49**
	EBR	D	C	34.2	19.1	0.45	0.22
	WBR	B	B	12.0	14.5	0.19	0.15
	NBL	B	B	11.1	10.4	0.08	0.16
	NBT	A	A	0.0	0.0	0.28	0.44
	NBTR	A	A	0.0	0.0	0.15	0.26
	SBL	A	B	9.3	12.5	0.05	0.17
	SBTR	A	A	0.0	0.0	0.63	0.49
Highway 50 & Street D	**Overall**	**F**	**F**	**332.7**	**351.6**	**1.55**	**1.48**
	WBLR	F	F	332.7	351.6	1.55	1.48
	NBT	A	A	0.0	0.0	0.24	0.48
	NBTR	A	A	0.0	0.0	0.12	0.25
	SBL	A	B	8.9	11.0	0.05	0.16
	SBT	A	A	0.0	0.0	0.65	0.44

Intersection	Movement	LOS		Delay (s)		v/c Ratio	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Mount Hope Road & Street H	**Overall**	**A**	**A**	**9.1**	**8.9**	**0.02**	**0.02**
	WBLR	A	A	9.1	8.9	0.01	0.01
	NBTR	A	A	0.0	0.0	0.02	0.02
	SBLT	A	A	0.0	0.0	0.00	0.00
Forest Gate Avenue/Street I & Columbia Way	**Overall**	**C**	**B**	**20.6**	**12.8**	**0.43**	**0.26**
	EBL	A	A	7.6	9.1	0.01	0.04
	EBT	A	A	0.0	0.0	0.24	0.10
	EBTR	A	A	0.0	0.0	0.12	0.09
	WBL	A	A	8.8	8.1	0.00	0.04
	WBT	A	A	0.0	0.0	0.07	0.26
	WBTR	A	A	0.0	0.0	0.03	0.13
	NBLTR	C	B	20.6	12.1	0.43	0.03
	SBLTR	B	B	10.1	12.8	0.07	0.06

Table 31: 2031 Future Total Queueing

Intersection	Storage Length	95th Percentile Queue	
		A.M. Peak Hour	P.M. Peak Hour
King Street and Emil Kolb Parkway	-	SB – 7 m NB – 3 m EB – 8 m	SB – 2 m NB – 26 m EB – 7 m
Highway 50 and Emil Kolb Parkway	-	EB – 6 m SB – 8 m NB – 26 m	EB – 7 m SB – 3 m NB – 8 m
Highway 50 and Columbia Way	WBL – 70 m NBL – 140 m SBL – 100 m SBR – 30 m	**WBL – 96 m** NBL – 2 m SBL – 553 m SBR – 0 m	WBL – 68 m NBL – 0 m SBL – 96 m SBR – 0 m
Highway 50 and Bolton Heights Road	WBL – 85 m NBL – 85 m NBR – 75 m SBL – 65 m SBR – 50 m	WBL – 32 NBL – 7 NBR – 14 SBL – 18 SBR – 0 m	WBL – 14 m NBL – 20 m NBR – 0 m SBL – 7 m SBR – 1 m
Highway 50 and King Street	EBL – 30 m EBR – 35 m WBL – 30 m NBL – 55 m SBL – 20 m	EBL – 10 m EBR – 6 m **WBL – 97 m** NBL – 13 m SBL –2 m	EBL – 20 m EBR – 10 m **WBL – 64 m** NBL – 22 m SBL – 11 m
Columbia Way and Kingsview Drive	-	-	-
Columbia Way and Westchester Boulevard	-	-	-
Columbia Way and Mount Hope Road	EBL – 15 m WBL- 15 m	EBL – 2 m WBL- 1 m	EBL – 2 m WBL- 1 m
Columbia Way and Caledon King Townline	-	-	-
Emil Kolb Parkway and Duffy's Lane	NBL – 105 m SBR – 115 m	NBL – 1 m SBR – 0 m	NBL – 3 m SBR – 0 m
Highway 50 and Street C	SBL – 40 m	SBL – 1 m	SBL – 4 m
Highway 50 and Street D	SBL – 55 m	SBL – 1 m	SBL – 5 m
Forest Gate Avenue/Street I & Columbia Way	EBL – 15 m WBL- 15 m	EBL – 1 m WBL - 1 m	EBL – 1 m WBL - 1 m

Table 32: 2041 Future Total Queueing

Intersection	Storage Length	95th Percentile Queue	
		A.M. Peak Hour	P.M. Peak Hour
King Street and Emil Kolb Parkway	-	SB – 7 m NB – 3 m EB – 8 m	SB – 2 m NB – 26 m EB – 7 m
Highway 50 and Emil Kolb Parkway	-	EB – 6 m SB – 8 m NB – 26 m	EB – 7 m SB – 3 m NB – 8 m
Highway 50 and Columbia Way	WBL – 70 m NBL – 140 m SBL – 125 m SBR – 30 m	WBL – 69 m NBL – 3 m SBL – 534 m SBR – 0 m	WBL – 49m NBL – 0 m SBL – 56 m SBR – 0 m
Highway 50 and Bolton Heights Road	EBL – 30 m WBL – 85 m NBL – 90 m NBR – 75 m SBL – 65 m	EBL – 8 m WBL – 32 m NBL –7 m NBR – 8 m SBL – 19 m	EBL – 5 m WBL – 14 m NBL – 20 m NBR – 0 m SBL – 7 m
Highway 50 and King Street	EBL – 30 m EBR – 35 m WBL – 30 m NBL – 55 m SBL – 20 m	EBL – 14 m EBR – 15 m **WBL – 144 m** NBL – 24m SBL –15 m	EBL – 26 m EBR – 23 m **WBL – 95 m** NBL – 20 m SBL – 10 m
Columbia Way and Kingsview Drive	-	-	-
Columbia Way and Westchester Boulevard	-	-	-
Columbia Way and Mount Hope Road	EBL – 15 m WBL- 15 m	EBL – 2 m WBL- 1 m	EBL – 2 m WBL- 1 m
Columbia Way and Caledon King Townline	-	-	-
Emil Kolb Parkway and Duffy's Lane	NBL – 105 m	NBL – 10 m	NBL – 14m
Emil Kolb Parkway and Street E	EBL – 65 m	EBL – 3 m	EBL – 10 m
Highway 50 and Street A	EBL – 25 m WBL – 50 m NBL – 20 m SBL – 20 m	EBL – 18 m WBL – 21 m NBL – 7 m SBL – 3 m	EBL – 10 m WBL – 13 m NBL – 14 m SBL – 4 m
Highway 50 and Street C	SBL – 40 m	SBL – 1 m	SBL – 5 m
Highway 50 and Street D	SBL – 55 m	SBL – 1 m	SBL – 5 m
Forest Gate Avenue/Street I & Columbia Way	EBL – 15 m WBL- 15 m	EBL – 1 m WBL - 1 m	EBL – 1 m WBL - 1 m

Note 1: Passenger Car Equivalent provided in Arcady reports. 7.5 m per vehicle assumed.

Table 33: 2051 Future Total Queueing

Intersection	Storage Length	95th Percentile Queue	
		A.M. Peak Hour	P.M. Peak Hour
King Street and Emil Kolb Parkway	-	SB – 7 m NB – 3 m EB – 8 m	SB – 2 m NB – 26 m EB – 7 m
Highway 50 and Emil Kolb Parkway	-	EB – 6 m SB – 8 m NB – 26 m	EB – 7 m SB – 3 m NB – 8 m
Highway 50 and Columbia Way	WBL – 70 m NBL – 140 m SBL – 125 m SBR – 30 m	**WBL – 72 m** NBL – 3 m SBL – 39 m SBR – 0 m	WBL – 51 m NBL – 0 m SBL – 70 m SBR – 0 m
Highway 50 and Bolton Heights Road	EBL – 30 m WBL – 85 m NBL – 90 m NBR – 75 m SBL – 65 m	EBL – 10 m WBL – 48 m NBL – 10 m NBR – 6 m SBL – 16 m	EBL – 7 m WBL – 17 m NBL – 23 m NBR – 0 m SBL – 7 m
Highway 50 and King Street	EBL – 30 m EBR – 35 m WBL – 30 m NBL – 55 m SBL – 20 m	EBL – 15 m EBR – 19 m **WBL – 180 m** NBL – 26 m SBL –16 m	EBL – 27 m EBR – 27 m **WBL – 130 m** NBL – 20 m SBL – 10 m
Columbia Way and Kingsview Drive	-	-	-
Columbia Way and Westchester Boulevard	-	-	-
Columbia Way and Mount Hope Road	EBL – 15 m WBL- 15 m	EBL – 2 m WBL- 1 m	EBL – 2 m WBL- 1 m
Columbia Way and Caledon King Townline	-	-	-
Emil Kolb Parkway and Duffy's Lane	NBL – 105 m	NBL – 12 m	NBL – 17 m
Emil Kolb Parkway and Street E	EBL – 65 m WBL – 15 m	EBL – 14 m WBL – 2 m	EBL – 50 m WBL – 4 m
Highway 50 and Street A	EBL – 25 m WBL – 50 m NBL – 20 m SBL – 20 m	EBL – 20 m WBL – 23 m NBL – 7 m SBL – 3 m	EBL – 10 m WBL – 13 m NBL – 15 m SBL – 4 m
Highway 50 and Street C	NBL – 40 m SBL – 40 m	NBL – 2 m SBL – 1 m	NBL – 5 m SBL – 5 m
Highway 50 and Street D	SBL – 55 m	SBL – 1 m	SBL – 5 m
Forest Gate Avenue/Street I & Columbia Way	EBL – 15 m WBL- 15 m	EBL – 1 m WBL - 1 m	EBL – 1 m WBL - 1 m

Note 1: Passenger Car Equivalent provided in Arcady reports. 7.5 m per vehicle assumed.

Under 2051 future total conditions, the intersection of Highway 50 and Emil Kolb/Street B is forecasted operate with an overall Level of Service 'A' in the a.m. peak hour and Level of Service 'C' in the p.m. peak hours. However, in the p.m. peak hour the westbound leg of the intersection (Street B) is expected to experience significant delay, due to the high number of vehicles travelling northbound through the roundabout and making eastbound left turns in the p.m. peak hour. Both movements are in conflict with westbound movements entering the intersection. Ongoing monitoring of the intersection should occur as unit are constructed to understand the actual impact of the fourth leg. It is also noted that the geometry of a roundabout impacts the forecasted operations when modelling. As design of the intersection proceeds, updated analysis can be undertaken to reassess forecasted operations.

The intersection of Highway 50 and Bolton Heights Road is forecasted operate with an overall Level of Service 'D' and 'A' in the a.m. peak hour and p.m. peak hours, respectively. However, in the a.m. peak hour the southbound leg of the intersection (Highway 50) is expected to experience less than a minute of delay. Ongoing monitoring of the intersection is recommended to understand the impact of future growth on the boundary road network.

Similar to the future background operations the intersection of Highway 50 and King Street is expected to operate at capacity with extended delays for several movements. Similar to the existing and future background conditions, under both peak hours, the 95th percentile queue lengths are exceeding the designated storage length for the westbound left-turn lane at the intersection. The recommendations of the Queen Street Environmental Assessment should be considered before further mitigations are made. It is expected that additional through lanes would improve operations, however the Town of Caledon is in favour of maintaining the two lane cross-section and providing additional active transportation facilities. Significant delay may encourage more users to by-pass downtown Bolton in favour of parallel routes, which would be supported by future Highway 413 interchanges.

Columbia Way and Mount Hope Road experiences 123.9s of delay for southbound vehicles. Under 2051 future total conditions, the intersection did not warrant signalization or southbound left-turn lanes. The intersection is recommended to be monitored for ongoing improvements to determine if and when additional mitigation measures are required.

The intersection of Columbia Way and Caledon King Townline is expected to experience a maximum v/c ratio of 0.94 in the a.m. peak hour due to the large volume of eastbound right-turning vehicles. The intersection is recommended to be monitored for ongoing improvements such as signal timing optimization as development in the area proceeds.

The intersection of Highway 50 and Street D is expected to experience an LOS of 'F' and a maximum v/c ratio of 1.55 and 1.48 in the a.m. and p.m. peak hours, respectively. These operations are typical on a minor controlled approach along a major roadway. As noted previously in the report, the signalization of the intersection is not warranted. Motorists may choose to alternate their travel behaviour and utilize the signalised intersection of Street G and Columbia Way if delays are observed to be higher in the peak hours at Street D.

All remaining study intersections are forecasted to operate well with acceptable delays and capacity to accept future growth.

It is important to note that the operation at all intersections south of Columbia Way are contingent on the recommendations of the Region's Complete Corridor Study and preliminary design for Queen Street, which should be considered before further mitigations are made. It is noted that the 2051 operations are reviewing 17 years of sustained growth and the addition of more than 3,800 residential units on the Highway 50 corridor. Ongoing monitoring with the build-out of development is recommended to capture changes in travel behaviour and traffic patterns within the community.

9.0 Zoning By-Law Review

The following section reviews the parking and loading requirements outlined in the Town of Caledon's Zoning By-Law 2006-50. Although parking locations and provisions have not been determined at this stage, the requirements have been provided for review and are recommended for implementation at the detailed design stage. Should a reduction in parking or loading be recommended at a future Site Plan phase, supporting documentation will be required for review and approval by the Town of Caledon.

9.1 Vehicle Parking

Vehicle parking requirement are outlined in Section 5: Parking, Loading and Delivery Standards in Zoning By-Law 2006-50. As the proposed development is made up of residential area, commercial areas and school zones, the requirements were obtained from Section 5.2.2: Residential Parking Requirements (Table 5.1) and Section 5.2.3: Non-Residential Parking Requirements (Table 5.2).

Table 34 outlines the vehicle parking requirements according to the Town of Caledon's Zoning By-Law.

Table 34: Zoning By-Law No. 2006-50 Vehicle Parking Requirement Assessment

Land Use (By-Law Land Use)	Residential Parking Space Rate	Visitor Parking Space Rate
Singles (Dwelling, Detached)	2 parking spaces per dwelling unit	
Townhouses (Dwelling, Townhouse)	2 parking spaces per dwelling unit	0.25 parking spaces per dwelling unit
Mid-Density/High-Density Apartments (Building, apartment)	1.5 parking spaces per dwelling unit	0.25 parking spaces per dwelling unit
Commercial/Mixed Use (Retail Store)	1 parking per 20 m^2 of net floor area[1]	
Elementary School (School – Elementary)	1 parking per 20 m^2 of GFA[2]	

9.2 Accessible Parking

The Town of Caledon has updated their Traffic By-Law 2024-048, adding technical guidelines to the design of Off-Street Designated Accessible Parking Spaces. No changes have been made to the number of accessible parking required for a site. Accessible parking will continue to be provided as indicated by the Town of Caledon's Zoning By-Law 2015-058.

The accessible parking requirements are found in Section 1 of Schedule "K" in the Town of Caledon's Zoning By-Law 2015-058. The requirement for apartments, retail store and elementary schools is 11 accessible (barrier-free) parking spaces plus 1% for parking requirements exceeding 1000 spaces.

Please note that accessible parking for single-detached and townhouse units have not been included as individual driveways are assumed.

9.3 Bicycle Parking

The Town of Caledon does not currently have bicycle parking requirements within it's Zoning By-Law. The Town's Active Transportation Master Plan provides sample By-Law recommendations for bicycle parking rates and Town staff recommended that the bike parking requirements of comparable municipalities should be considered for new developments. **Table 35** outlines a variety of land uses and the associated bicycle parking rates from the Town of Orangeville and the Active Transportation Master Plan.

Table 35: Bicycle Parking Rates

Land Use	Active Transportation Master Plan Sample Rate	Town of Orangeville Rates
Residential	10% of the total require motor vehicle parking for buildings that do not have an exclusive use garage	-
Commercial	5% of the total required motor vehicle parking with a minimum of 6 spaces per building	1,000 m^2 of floor area
School	4 per classroom	1 per 20 students
Office	1 per 200 m^2 of net floor area of office space	-
Institutional	10% of the total required motor vehicle parking	2 plus 1 per 1,000 m^2 of floor area
Industrial	-	2 plus 0.25 per 1,000 m^2 of floor area

9.4 Loading

The loading and delivery spaces requirement are outlined in Section 5.3.2 and 5.4.2, respectively, of the Town's Zoning By-Law 2006-50. Should the commercial lands include a supermarket, loading spaces of 14 m by 3.5 m will be required. Other commercial uses such as convenience stores, restaurants and retail stores will require a 9 m by 3.5 m delivery spaces on site.

The school sites will require two loading spaces per lot. The loading requirements will be confirmed and illustrated when Site Plans are prepared for future applications.

10.0 Transportation Demand Management

Transportation Demand Management (TDM) refers to various strategies to reduce traffic congestion, minimize the number of single-occupant vehicles, encourage non-auto modes of travel, and reduce vehicle dependency to create a sustainable transportation system.

TDM strategies have multiple benefits, including the following:

- Reduced auto-related emissions to improve air quality.
- Decreased traffic congestion to reduce travel time.
- Increased travel options for residents and commuters.
- Reduced personal transportation costs and energy consumption.
- Support Provincial Smart Growth Objectives.

10.1 Pedestrian and Cycling Facilities

10.1.1. Existing Facilities

As stated in **Section 3.5**, Bolton has a network of active transportation facilities, composed of hiking trails, bike routes, paved and unpaved multi-use trails and footpaths.

10.1.2. Planned Facilities

The Town of Caledon's Active Transportation Master Plan and Multi-Modal Transportation Plan propose several improvements to the active transportation network within the study area. **Table 36** outlines the planned improvements.

Table 36: Planned Active Transportation Network Improvements

Roadway	Span	Improvement
Columbia Way	Highway 50 to Caledon King Townline	Multi-Use Trail
Highway 50	Mayfield Road to Columbia Way	Regional Pedestrian and Cycling Improvements
Emil Kolb Parkway	Duffy's Lane to King Street	Multi-Use Trail
King Street West	Emil Kolb Parkway to Hurontario Street	Regional Pedestrian and Cycling Improvements
Kingsview Drive	Columbia Way to Woodrow Avenue/ Whitehead Crescent	Signed Cycling Route (Shared Facility)
Mount Hope Road	Guardhouse Drive to Castlederg Side Road	Signed Cycling Route (Shared Facility)
Bolton Heights Drive	Highway 50 to Kingsview Drive	Multi-Use Trail
Duffy's Lane	Emil Kolb Parkway to Castlederg Side Road	Multi-Use Trail

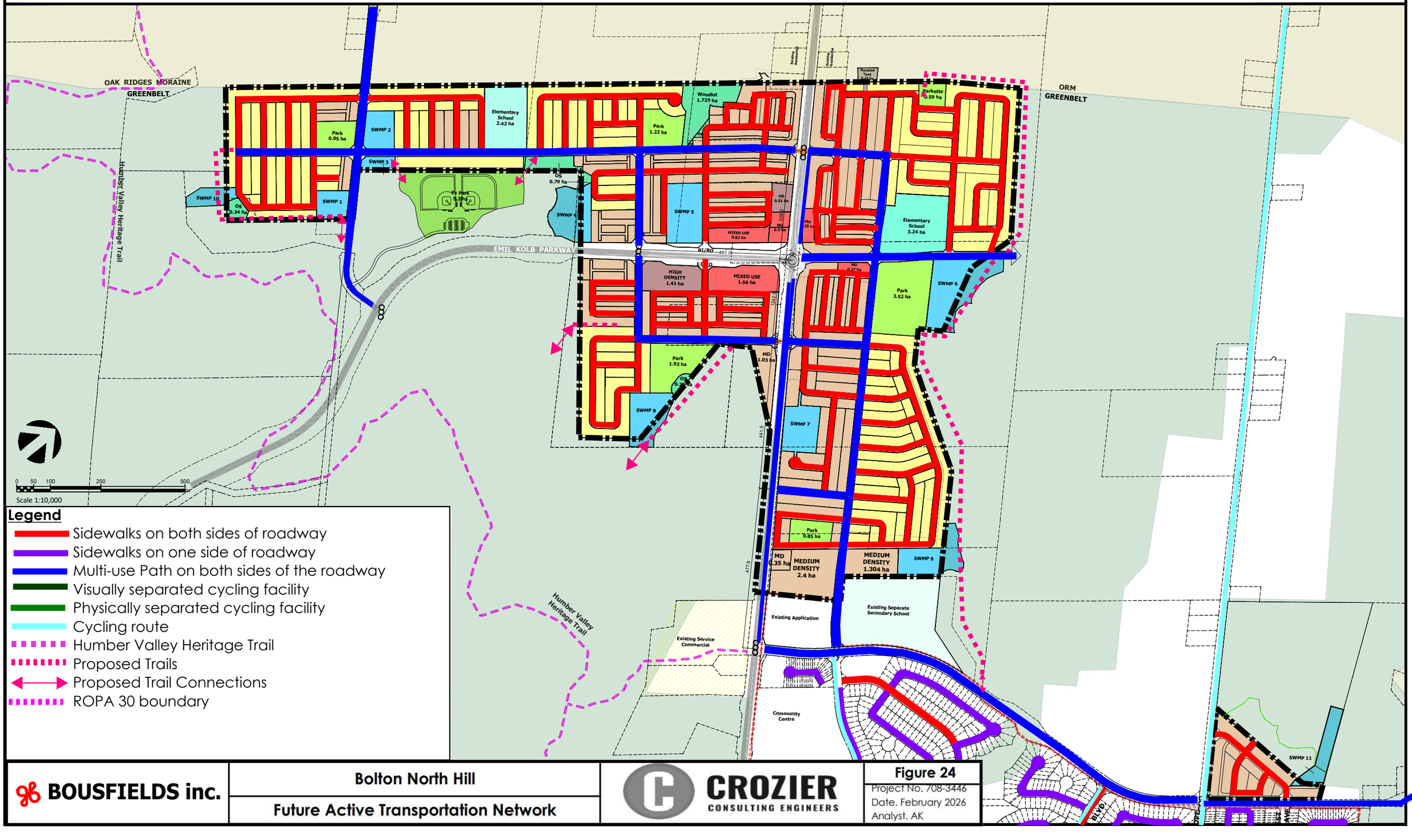
It is recommended that findings of the Region's Complete Corridor Study of Highway 50 between Queensgate and Columbia Way be considered for extension to Street A along the frontage of the development lands for consistent active transportation facilities providing cycling and pedestrian connectivity.

Connection been the boundary road network and proposed roadway will increase pedestrian and cycling accessibility encouraging residents and employees to commute via walking or cycling. The use of cross-ride pavement markings and/or designated cycling and pedestrian signal heads are recommended to be used at intersections with Multi-Use Paths and bike lanes as appropriate based on Ontario Traffic Manual Book 15 and Book 18. Such intersection elements will be confirmed through detailed design.

Appendix N includes excerpts from the Town's Active Transportation Master Plan. **Figure 24** illustrates the future active transportation network.

Bolton North Hill
Tertiary Plan

Owner's Plans Consolidation



BOUSFIELDS inc.

Bolton North Hill

Future Active Transportation Network

CROZIER CONSULTING ENGINEERS

Figure 24

Project No. 708-3446

Date. February 2026

Analyst. AK

10.2 TDM Strategies

There are several opportunities for the development to promote TDM measures to support reduced automobile use. As the tenants of the mixed-use land designated areas have not been confirmed, these site specific TDM measures are only recommended at this time and should be finalized upon occupancy. The recommendations outlined are expected to reduce SOV trips and increased sustainable mode share.

10.2.1. Bicycle Parking Spaces

It is recommended that the provided bicycle parking spaces are secure and equipped with overhead weather protection. Access to safe and secure bicycle parking will increase the confidence of prospective cyclists to cycle as their mode of transportation. The overhead weather protection encourages people to cycle as the parked bicycles are protected from poor weather conditions, such as rain and snow.

10.2.2. Shower and Changeroom Facilities

Amenities such as showers and change rooms are recommended to allow employees who use active transportation the ability to comfortably prepare for the workday.

10.2.3. Preferential Carpool and Rideshare Parking Spaces

The Subject Development also could provide preferential carpool and/or rideshare parking spaces via pavement marking and custom signage. These parking spaces should be easily identifiable and should be located closest to the principal building entrances. In providing preferential carpool and rideshare spaces, employees are incentivized to reduce unnecessary SOV usage.

It is also recommended that the employer provide a centralize system for carpool sign up, to help ease the coordination between employees. Carpool sign ups via paper and pen in employee lounge or lunchroom, and/or via centralized employee computer system is expected to encourage and aid the process of employee carpool coordination, especially for those with varying shifts from week to week.

10.3 Transit Expansion

The use of public transportation is a proven Transportation Demand Management measure. Existing transit facilities outlined in **Section 3.4** should be expanded to include the full buildout of the Bolton North Hill development. **Figure 25** illustrates a recommended expansion of Route 41 and the location of potential transit stops to provide 400 m of transit coverage to the majority of the development.

10.3.1. Proposed Transit Network

The Town of Caledon's Multi-Modal Transportation Master Plan, Figure ES-3 illustrates the proposed transit network for the Town. The existing Bolton Line is shown, alongside a proposed transit corridor along Highway 50, north of Columbia Way, continuing on Emil Kolb towards King Street and the future Caledon GO Station.

10.3.2. Proposed GO Transit Station

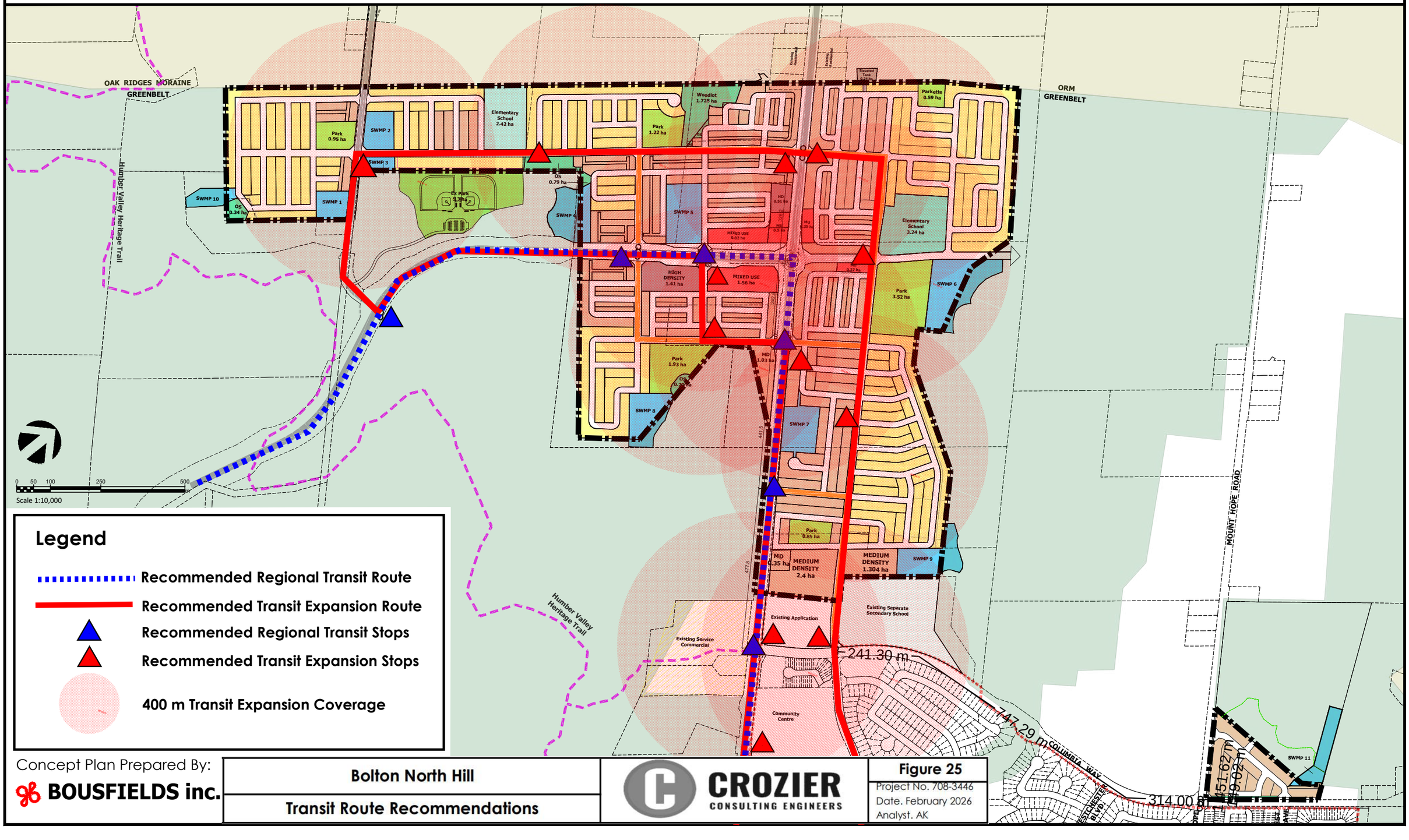
As outlined in the Caledon Station Secondary Plan Transportation Study (BA Group, 2023) the Caledon GO Station was identified by the Province and Peel Region's Official Plan as a Major Transit

Station. The GO Station will provide rail and bus services, the latter planned to operate along the planned Highway 413. The station is expected to be supported by existing bus services in Bolton, operated by Brampton Transit.

The proposed transit corridor along Emil Kolb and King Street, as presented in the Town's Multi-Modal Transportation Master Plan, are opportunities for local connection to the Go Station.

Bolton North Hill
Tertiary Plan

Owner's Plans Consolidation



Legend

- Recommended Regional Transit Route
- Recommended Transit Expansion Route
- Recommended Regional Transit Stops
- Recommended Transit Expansion Stops
- 400 m Transit Expansion Coverage

Concept Plan Prepared By:
BOUSFIELDS inc.

Bolton North Hill	Figure 25
Transit Route Recommendations	Project No. 708-3446 Date. February 2026 Analyst. AK

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11.0 Recommendations

A number of recommendations have been made to mitigate the increase of volumes on the boundary road network and improve the operations of existing and proposed intersections. **Table 37** outlines the future background and future total road network recommendations and provides an approximate timeline for their construction.

Table 37: Timeline of Recommendations

Roadway	Segment or Intersection	Recommendation	Timeline
Highway 50	North of Emil Kolb	Widening to a four-lane cross-section	Future Background – 2041 Horizon Year
	Columbia Way	Optimization of signals in a.m. and p.m. peak hours	Future Total – 2041 Horizon Year
	Bolton Heights	Optimization of signals a.m. and p.m. peak hours	Future Total – 2051 Horizon Year
	Street A	Signalization	With construction of Street A
		Auxiliary left-turn lane on each approach	
	Emil Kolb to Columbia Way	Additional northbound lane	Future Total – 2041 Horizon Year
	Emil Kolb / Street B	Revised circulation/signage	With construction of Street B
	Street C	Northbound and southbound left turn lanes	With construction of Street C
	Street D	Southbound left-turn lane	With construction of Street D
Columbia Way	Kingsview Drive/Street G	Optimization of splits in the a.m. and p.m. peak hours	With construction of Street G
	Mount Hope Road	Eastbound left-turn lane	With Widening of Columbia Way
		Westbound left-turn lane	
	Forest Gate Avenue/Street I	Eastbound left-turn lane	With construction of Street I
		Westbound left-turn lane	
Emil Kolb Parkway	Highway 50 to King Street	Widening to a four-lane cross-section	Future Total – 2041 Horizon Year
	Duffy's Lane	Signalization	Future Total – 2041 Horizon Year
		Convert southbound right-turn lane to southbound through/right-turn lane	With Widening of Emil Kolb Parkway
	Street E	Eastbound left-turn lane	With construction of Street E (north)
		Signalization	With construction of Street E (south)
		Westbound left-turn lane	

Multi-modal recommendations include the expansion of existing transit into the development area and the implementation of pedestrian and cycling facilities to promote active transportation connections to the existing services, pedestrian/cycling networks and trails within Bolton.

12.0 Conclusions

The key findings of the analysis within this study are as follows:

2024 Existing Conditions

- All intersections in the study area are currently operating efficiently with minimal delays and with reserve capacity to accommodate future increases in traffic volume.

Planned Improvements

- The Region of Peel is undertaking and 2051 Transportation Master Plan. They are in the process of updating and combining a number of existing studies.
    - The 2019 Long Range Transportation Plan identified Highway 50 as a four lane cross-section while the Town's Queen Street Corridor Study Report recommends maintaining the two-lane cross section in the Downtown Core.
- The Region is currently undertaking an EA for Queen Street and the recommendations of that study are not yet known.
- The Town of Caledon completed a Multi-Modal Transportation Master Plan in April 2024.
    - The report illustrates the planned widening of both Columbia Way and the Caledon King Townline (south of Columbia Way) to four lanes by the 2051 horizon.
- The Caledon Station Secondary Plan Transportation Study presents a future lane configuration of two through lanes per direction on King Street west of Emil Kolb.
- The Town's Multi-Modal Transportation Master Plan also identifies the planned GTA-West Transportation Corridor (Highway 413) with interchanges planned for Coleraine Drive and with Highway 427, both south of Bolton.

2051 Future Background Conditions

- The boundary road network is expected to operate at overall acceptable levels of service under 2051 future background conditions, with the exception of the intersection of Highway 50 and King Street.
- Highway 50 and King Street is expected to operate at LOS "D and "E", and a maximum volume-to-capacity ratio of 1.13 and 1.16 during the weekday a.m. and p.m. peak hours, respectively.
    - Similar to the existing conditions, under both peak hours the 95th percentile queue lengths are exceeding the designated storage length for the westbound left-turn lane.
    - Monitoring of the intersection for signal optimization is recommended as development of Bolton continues over the next 20 years.
- The traffic operations on the boundary road network are expected to be acceptable under 2051 future background conditions.

Site Generated Traffic

- The proposed development is expected to generate 3,416 two-way trips during the weekday a.m. peak hour, and 3,182 two-way trips during the weekday p.m. peak hour at full build-out.
- Development volumes are dispersed onto the internal and external road networks. Collector roads internal to the Option 1 lands act as site accesses to the boundary road network.

2051 Future Total Conditions

- With integration of recommendations and mitigations, the study intersections are expected to operate with minimal delay and additional capacity with the exception of
    - Highway 50 and Bolton Heights Road
    - Highway 50 and King Street
    - Columbia Way and Mount Hope Road
    - Columbia Way and Caledon King Townline
    - Highway 50 and Street D
- Highway 50 and Bolton Heights Road is forecasted to operate with an overall Level of Service 'D' and 'A' in the a.m. and p.m. peak hours respectively. However, in the a.m. peak hour the southbound leg of the intersection (Highway 50) is expected to experiences less than a minute of delay.
    - Ongoing monitoring of the intersection is recommended to understand the impact of future growth on the boundary road network.
- Highway 50 and King is expected to continue operating at capacity with extended delays for several movements.
    - Similar to the existing and future background conditions, under both peak hours, the 95th percentile queue lengths are exceeding the designated storage length for the westbound left-turn lane at the intersection.
    - The recommendations of the Queen Street Environmental Assessment should be considered before further mitigation are made.
    - Significant delays may encourage users to bypass downtown Bolton in favor of parallel routes, which would be supported by future Highway 413 interchanges.
- Columbia Way and Mount Hope Road experiences 123.9s of delay for southbound outbound vehicles.
    - The intersection is recommended to be monitored for ongoing improvements to determine if and when additional mitigation measures are required.
    - Under 2051 future total conditions, the intersection was not recommended for signalization or southbound left-turn lanes as it was not warranted based on traffic volumes.
- Columbia Way and Caledon King Townline is expected to experience a maximum v/c ratio of 0.94 in the a.m. peak hour due to the large volume of eastbound right-turning vehicles conflicting with the southbound through volumes.
    - This is typically observed on the minor approach of a three-legged intersection.
    - The intersection is recommended to be monitored for ongoing improvements to determine if and when additional mitigation measures are required.
- Highway 50 and Street D is expected to experience an LOS of 'F' and a maximum v/c ratio of 1.55 and 1.48 in the a.m. and p.m. peak hours, respectively.
    - These operations are typical on a minor controlled approach along a major roadway.
    - The signalization of the intersection is not warranted.
    - Motorists may choose to alternate their travel beahviour and utilize the signalised intersection of Street G and Columbia Way if delays are observed to be higher in the peak hours at Street D.

Multi-Modal Conditions

- Sidewalks are to be provided on both sides of local roads and sidewalks or multi-use paths is recommended for collector roadways.
    - The use of cross-ride pavement markings and/or pedestrian/cycling signal heads is recommended to be considered for detailed design.

- Extension of the existing multi-use path on Highway 50 is recommended along the site frontage to Street A.
- Bike parking should be provided for high density residential units as well as commercial and institutional buildings to promote cycling as an alternative for motor vehicle trips.
- Expansion of Brampton Transit Route 41 through the development will provide transit coverage within 400 m of walking distance to the majority of the development.
- Future expansion of transit within Caledon and the proposed GO Transit Station will provide an increase in multi-modal travel option for the development and the existing community of Bolton.

In conclusion, the development can be accommodated on the boundary road network with the noted recommendations and ongoing monitoring. Future reports prepared to support Subdivision Draft Plan Applications and Site Plan Applications can monitor experienced growth as well as provide greater detail regarding mitigations and timelines required to support the construction and occupancy of the development.

Respectfully submitted by,

C.F. CROZIER & ASSOCIATES INC.

Alexander Fleming, P.Eng., MBA.
Partner, Vice President of Transportation

C.F. CROZIER & ASSOCIATES INC.

Kerianne Hagan, P.Eng.
Project Engineer, Transportation

AK/kh

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APPENDIX A

Comment Response Matrix

Bolton North Hill Secondary Plan - 2nd Submission Comments						
Comment Number	**Commenting Agency**	**Heading**	**Subheading(s)**	**Comment**	**Responsibility**	**Response**
84	Development Services	Development Engineering	General	The developer will be required to obtain and dedicate easements as required by the Region for Regional infrastructure.	Crozier and Owners?	Noted.
95	Development Services	Transportation Development	Regional Road ROW and Access Spacing Requirements	There are two Regional Roads within the planning area - Regional Road 50 (Highway 50) and Regional Road 150 (Emil Kolb Parkway)	Crozier	Acknowledged
96	Development Services	Transportation Development	Regional Road ROW and Access Spacing Requirements	Land dedication requirements along Regional Roads are as below:	Crozier	Acknowledged and flagged to proponents. Dedication of land shall be made as part of individual draft plan applicaitons and not at the Secondary Plan level.
97	Development Services	Transportation Development	Regional Road ROW and Access Spacing Requirements	Picture	Crozier	
98	Development Services	Transportation Development	Regional Road ROW and Access Spacing Requirements	Minimum Spacing requirement between proposed new intersection/access:	Crozier	Noted.
99	Development Services	Transportation Development	Regional Road ROW and Access Spacing Requirements	Picture	Crozier	Noted.
100	Development Services	Transportation Development	Regional Road ROW and Access Spacing Requirements	An updated detailed concept plan which includes proposed spacing measurements of any new roadways connections is to be provided for our review and comment. Although Table 15 on page 31 of the TIS states the spacing of the proposed road network it is requested a concept plan be provided that clearly indicates the proposed spacing;	Crozier and Bousfields	The Tertiary Plan prepared by Bousfields illustrates spacing measurements from the intersection of Highway 50 and Emil Kolb. A detailed vewview of spacing can be undertaken as part of Draft Plan applications when curb locations are confirmed.
101	Development Services	Transportation Development	Regional Road ROW and Access Spacing Requirements	Please ensure any proposed new road connections on to Regional Roads meet the minimum spacing requirements noted within the Region's Road Characterization Study (as per the above table);	Crozier and Bousfields	Noted. The proposed road connections now meet the Road Characterization requirements, based on the proposed intersection confiurations as outlined in Section 5.3 of the February 2026 Transportation Assessment.
102	Development Services	Transportation Development	Regional Road ROW and Access Spacing Requirements	Please note due to the limited frontage available access to the proposed mixed use blocks located at all corners of Highway 50 and Emil Kolb Parkway will only be considered as restricted; full moves access will not be permitted.	Crozier and Bousfields	Noted. Mixed-Use blocks are intended to only have internal accesses.
103	Development Services	Transportation Development	Regional Road ROW and Access Spacing Requirements	Please note due to the limited frontage available access to the proposed mixed use blocks located at the NE and SE corners of Emil Kolb Parkway and Street F, access will only be considered as restricted; full moves access will not be permitted .	Crozier and Bousfields	Noted. Mixed-Use blocks are intended to only have internal accesses. Street F is proposed as a Right-In/Right-Out local road connection due to the proximity to Street E and Highway 50.

Bolton North Hill Secondary Plan - 2nd Submission Comments						
Comment Number	**Commenting Agency**	**Heading**	**Subheading(s)**	**Comment**	**Responsibility**	**Response**
104	Development Services	Transportation Development	Concept Plan	Concept plan does not have spacing of proposed new roadways along Regional roads. Please provide;	Crozier and Bousfields	The details included on the Tertiary Plan as part of the submission include intersection spacing. Spacing is also illustreated in Figure 12 of the February 2026 Transportation Assessment.
105	Development Services	Transportation Development	Concept Plan	Concept plan should indicate “future potential traffic control signals” for Highway 50 @ Street A & D;	Crozier and Bousfields	Lable has been updated on Tertiary Plan. Please note Street D does not warrant signalization.
106	Development Services	Transportation Development	Concept Plan	Concept plan should indicate “future potential traffic control signals” for Emil Kolb Parkway @ Street E;	Crozier and Bousfields	Lable has been updated on Tertiary Plan.
107	Development Services	Transportation Development	Concept Plan	Revised concept plan is to be updated to reflect the noted access types addressed within the TIS comments below.	Crozier and Bousfields	Noted.
108	Development Services	Transportation Development	Traffic Impact Study	Traffic Impact Study dated February 2025 has been reviewed and we wish to offer the below comments to be addressed within a revised report;	Crozier	Ackowledged.
109	Development Services	Transportation Development	Traffic Impact Study	Sightline analysis for the proposed intersection of Emil Kolb Parkway at Street E is to be completed;	Crozier	Noted. Please refernce Section 5.4 of the February 2026 Transportation Assessment.
110	Development Services	Transportation Development	Traffic Impact Study	Traffic Signal warrants for future proposed signalized intersections along Highway 50 and Emil Kolb Parkway have been provided within the revised study to the Region’s satisfaction. It is to be noted that signals will not be supported from the onset of development. Once full build out is completed and signals become warranted they will be supported for installation;	Crozier	Noted.
111	Development Services	Transportation Development	Traffic Impact Study	Table 15 on page 31 of the study indicates the spacing requirement along Emil Kolb Parkway as 300 meters between full moves when in fact the Region’s Road Characterization Study speaks to 450 metre spacing requirement as this roadway is classified as an Industrial Connector. The current proposed roadways do not meet the above noted spacing requirements for full movement access. As such, Street F will be supported as a right-in/right-out access only. The existing round-a-bout can be utilized for vehicles destined westbound along Emil Kolb Parkway. Please update the study accordingly;	Crozier	Acknowledged. Street F has been revised to a local road with a Right-In/Right-Out configuration to support the adjacent mixed-use blocks.

Bolton North Hill Secondary Plan - 2nd Submission Comments						
Comment Number	**Commenting Agency**	**Heading**	**Subheading(s)**	**Comment**	**Responsibility**	**Response**
112	Development Services	Transportation Development	Traffic Impact Study	Table 15 on page 31 of the study indicates the spacing requirement along Highway 50 as 300 meters between full moves is classified as a Suburban Connector. The current proposed roadways do not meet the above noted spacing requirements for full movement access. As such, Street C will be supported as a restricted right-in/right-out access only. The existing round-aboutcan be utilized for vehicles destined southbound along Highway 50. Please update the study accordingly.	Crozier	As a Suburban Connector, the availabe spacing (210 m) meets the requirement for a Left-In/Right-In/Right-Out configuration (>150m). As such this configuaration is proposed.
118	Development Services	Waste Management	-	All single and non-stacked townhouse units would be eligible to receive Region of Peel curbside cart-based waste collection of garbage, recycling, and organics provided that the requirements outlined in Sections 2.0 and 3.0 of the Waste Collection Design Standards Manual (WCDSM) are met;	Crozier	Acknowledged - Not in the scope of a Secondary Plan.
119	Development Services	Waste Management	-	All multi-residential Apartment and stacked townhouse units would be eligible to receive Region of Peel front-end waste collection of garbage and recycling provided that the requirements outlined in Section 2.0 and 4.0 of the waste collection design standards manual are met;	Crozier	Acknowledged - Not in the scope of a Secondary Plan.
120	Development Services	Waste Management	-	Retail and Employment units will be required to receive private waste collection	Crozier	Acknowledged - Not in the scope of a Secondary Plan.
121	Development Services	Waste Management	-	The Waste Collection Design Standards Manual available at: https://peelregion.ca/public-works/design-standards/pdf/waste-collection-designstandards-manual.pdf	Crozier	Acknowledged - Not in the scope of a Secondary Plan.
122	Development Services	Waste Management	-	Through proceeding development stages, a Waste Management Plan will be required to demonstrate how the requirements of WCDSM will be met.	Crozier	Acknowledged - Not in the scope of a Secondary Plan.
396	Development Engineering	Road Network	2.9	The Town has reviewed the proposed road network and provide the following comments:	Bousfields/Crozier	Acknowledged
397	Development Engineering	Road Network	a	Road right of way widths determined prior to draft plan approval will be based on the functions of the right of way and may include stormwater management measures in the form of low impact development. 26m ROW possibly extending to the east is proposed; comment addressed.	Bousfields/Crozier	Please reference Section 5.1 within the February 2026 Transportation Assessment for review of ROWs

Bolton North Hill Secondary Plan - 2nd Submission Comments						
Comment Number	**Commenting Agency**	**Heading**	**Subheading(s)**	**Comment**	**Responsibility**	**Response**
398	Development Engineering	Road Network	b	The Town will require that Emil Kolb Parkway extend to the eastern limit of the plan so that it can be connected to the Option 2 lands when they develop. The Subwatershed Study is to evaluate this extension, recommend a suitable cross-section through the Greenbelt and recommend mitigation measures that may be required to offset the impacts of achieving the connection in the future.	Bousfields/Crozier	Street B/Emil Kolb Extension is proposed to extend to the limit of the of the plan.
399	Development Engineering	Road Network	c	Emil Kolb Parkway extension to east is very conceptual and lacks recommended cross section of the road. It is recommended that a full environmental assessment to be done for such road extension and recommend any mitigation measures for the road extension. Comments remains outstanding. The Town requires that Kingsview Drive extend into the Bolton North Hill Secondary plan at its current right of way width of 26 meters. This right of way (ROW) is to extend through the development. N-S road connecting to Kingsview Drive is proposed as 20m ROW, comment remains outstanding.	Bousfields/Crozier	Please reference Section 5.1 within the February 2026 Transportation Assessment for review of ROWs
400	Development Engineering	Road Network	d	A road connection is to be provide to the north on the west side of Highway 50. The ROW width is to be determined through the Transportation Impact study. A 20m ROW is provided. Comment addressed.	Bousfields/Crozier	On the north side of Highway 50, outside the limits of the plan is Greenbelt lands. These lands are not developable and therefore extension of the roadway is not required as there is no internal access to support.
401	Development Engineering	Road Network	e	Duffy's Lane is to be an urbanized collector with a 26 m ROW from the north end of the development to Emil Kolb Parkway. Duffy's Lane appears to be 23m ROW, comment remains outstanding.	Bousfields/Crozier	Duffy's lane has been illustrated with a 26 m ROW on the included Tertiary Plan.
402	Development Engineering	Road Network	f	The current ROW width of Emil Kolb Parkway near Highway 50 currently exceeds the proposed ROW width of 35 m shown on the secondary plan. Further conversations with the Region and Town are required to determine the appropriate ROW width of Emil Kolb Parkway. Emil Kolb Parkway ROW of will need to be determined and reflected on the concept plan and in the applicable studies. Comment remains outstanding.	Bousfields/Crozier	The ROW width of Emil Kolb at Highway 50 has been revised within the included Tertiary Plan.

Bolton North Hill Secondary Plan - 2nd Submission Comments						
Comment Number	**Commenting Agency**	**Heading**	**Subheading(s)**	**Comment**	**Responsibility**	**Response**
421	Transportation Engineering	Proposed Road Network Review	1.a	The Future Caledon Official Plan (Schedule C1) designates the extensions of Emil Kolb Parkway and Kingsview Drive as collector roads. However, in the proposed concept plan, both roads end as local roads. Please clarify and incorporate the following:	Bousfields /Crozier	Both roads are intended to be Collector Roadways as reviewed in Section 5.2 of the February 2026 Transportation Assessment. Kingsview Drive ends at a east-west collector as north of the development lands is designated Greenbelt Lands.
422	Transportation Engineering	Proposed Road Network Review	1.b	The extension of Emil Kolb parkway beyond the Bolton North Hill study area should be illustrated as a conceptual collector road with yellow dotted line, consistent with Schedule C1 of the Future Caledon Official Plan, extending up to Mount Hope West Road.	Bousfields /Crozier	Extension of the roadway has been indicated by an arrow on the Tertiary Plan.
423	Transportation Engineering	Truck Bypass Review	2	Given the potential conflicts between pedestrians and trucks, propose mitigation measures to enhance safety, including the feasibility of grade-separated solutions — including for pedestrians and full traffic separation — and reducing access points from Emil Kolb Parkway and Highway 50 along the existing truck route.	Crozier	Two new acceses loactions are proposed to Emil Kolb, Street E and full-moves signalized intersection and Street F a Right-In/Right-Out configured intersection. The spacing adheres to the Region's requirements and limits potential conflic points.
424	Transportation Engineering	Truck Bypass Review	3	Remove the proposed north-south access onto Emil Kolb Parkway immediately west of Hwy 50 to reduce the number of conflict points and crossings with the existing truck route.	Crozier	Two new access locations are proposed. Street F, which is immediatly west of Highway 50 is propoed to be a Right-In/Right-Out access limiting vehicle conflict points. Crossing of Emil Kolb will not be permited at this location.
426	Transportation Engineering	Truck Bypass Review	5	Please ensure the secondary plan includes a policy to assess the feasibility of a signalized intersection versus a roundabout as the development progresses.	Crozier	Roundabouts have not been pursued due to space requirement. Consideration for a roundabout could be reassassed as independent landowners move forward.
427	Transportation Engineering	Section 3.2 Boundary Road Network	6.a	The Multi-Use Path (MUP) on Columbia Way exists between Kingsview Drive and Westchester Boulevard, but not between Highway 50 and Kingsview Drive. Please revise Figure 2 and Table 4 accordingly.	Crozier	Noted. Table 4 and Figure 2 have been updated accordingly.
428	Transportation Engineering	Section 3.2 Boundary Road Network	6.b	The existing shared cycling route on Columbia Way extends between Westchester Boulevard and Mount Hope Road. Please correct Table 4 accordingly.	Crozier	Noted. Table 4 has been updated accordingly.
429	Transportation Engineering	Section 3.2 Boundary Road Network	6.c	Please update the legend label from “On-Street Cycling” to “On-Road Signed Cycling Route”.	Crozier	Noted. Figure 2 has been updated accordingly.

Bolton North Hill Secondary Plan - 2nd Submission Comments						
Comment Number	**Commenting Agency**	**Heading**	**Subheading(s)**	**Comment**	**Responsibility**	**Response**
430	Transportation Engineering	Section 3.3 Transit Operations	7.a	Figure 2 doesn't illustrate the transit stop locations. Please provide a map showing existing transit routes and transit locations. Also, note that there is a bus stop at the Columbia Way and Kingsview Drive intersection.	Crozier	Noted. Figure 2 has been updated accordingly.
431	Transportation Engineering	Section 3.3 Transit Operations	7.b	Route 41 service improvements have been approved recently. Please incorporate this into the report.	Crozier	Noted. Section 3.4 (updated section number) has been updated to reflect the current transit service timing and headways.
432	Transportation Engineering	Section 4.2 Horizon Years	8.a	The future conditions are assessed for the horizons 2031 and 2041. The 2051 horizon should also be assessed: i. The construction is expected to be completed by 2051. ii. To ensure the proposed road network is evaluated and validated against long-term growth and planned transportation infrastructure identified in the Town's MMTMP and Future Caledon Official Plan (OP).	Crozier	The analysis within the Transportation Assessment has been updated to reflect a 2051 horizon. The phasing of development has been updated to reflect the additional horizon.
433	Transportation Engineering	Section 4.2 Horizon Years	8.b	The report lacks a phasing plan. It should provide approximate buildout projections for each phase, and identify corresponding transportation improvements needed to support ultimate buildout.	Crozier	Phasing of development has been proposed solely for the purposes of this assessesment. Please refernce Figure 4 within the February 2026 Transportation Assessment for the phasing plan. The timing of development will ultimately be based on the progression of individual Draft Plans.
434	Transportation Engineering	Section 4.4 Background Developments	9	Please include the Mount Hope West Development, located in the northwest quadrant of Columbia Way and Mount Hope Road, as it will generate traffic on Columbia Way, Mount Hope Road and Highway 50.	Crozier	Noted. The development has been added as a background development within Section 4.4 of the February 2026 Transportation Assessment.
435	Transportation Engineering	Section 4.6 Future Background Recommended Network Improvements	10	Please clarify whether the proposed signal optimization at the Highway 50 and Columbia Way intersection, as well as the widening of Highway 50 north of Emil Kolb Parkway, were included in the future background scenario models and the future total conditions models.	Crozier	As triggered by Future Background volumes, the widening of Highway 50 north of Emil Kolb was accounted for in the Future Background and Future Total models. Signal optimization at Highway 50 and Columbia Way is only included in the Future Total Scenario in the 2026 Transportaiton Assessment Update.
436	Transportation Engineering	Section 5.1 Rights-of-Way	11.a	The required ROW width for the roads are as follows: 23.5 m for Residential Collector Road, and 26 m for Major Collector Roads (Emil Kolb Parkway Extension, Kingsview Dr Extension, and Duffys Lane).	Crozier	Please reference Section 5.1 for review of ROWs

Bolton North Hill Secondary Plan - 2nd Submission Comments						
Comment Number	**Commenting Agency**	**Heading**	**Subheading(s)**	**Comment**	**Responsibility**	**Response**
437	Transportation Engineering	Section 5.1 Rights-of-Way	11.b	The proposed lane width of 3.3 m for shared cycling is insufficient. According to the MMTMP, shared lanes with cyclists should be at least 4.5 m wide.	Crozier	Please reference Section 5.1 for review of ROWs. Please note collector roadways provide a MUP to support off-road cycling connectivity.
438	Transportation Engineering	Section 5.1 Rights-of-Way	11.c	To accommodate transit operations on collector roads, the outer travel line should be at least 3.5 m wide.	Crozier	Please reference Section 5.1 for review of ROWs. The 22 m and 26 m collector road cross-sections illustrate lanes 3.5 m or wider.
439	Transportation Engineering	Section 5.1 Rights-of-Way	11.d	The Future Caledon Official Plan (Schedule C1) identifies 26 m ROW for Duffys Lane. Please explain how the recommend ROW width will be protected with the proposed 20 m ROW width.	Crozier	Duffy's lane has been illustrated with a 26 m ROW on the included Tertiary Plan.
440	Transportation Engineering	Section 5.1 Rights-of-Way	11.e	In consideration for Operations and Maintenance capacity, local roads only require sidewalks on one side of the road, with the exception of areas in close proximity to main generators of pedestrian traffic. Please see section 4.2.10 of the ATMP for details.	Crozier	Please reference Section 5.1 for review of ROWs and cross-sections. The 18 m ROW is proposed for sidewalks on both sides of the roadway.
441	Transportation Engineering	Section 5.1 Rights-of-Way	11.f	The collector roads are terminating as local roads, resulting in a transition in their cross-section. Active transportation (AT) facilities should be seamless and continuous throughout.	Crozier	All collector roads terminate at the existing road network or at proposed internal collector road. MUP facility on collector roads will connect to each other. Pedestrians can transition to sidewalks and cyclists to local roadways as required for their journeys.
442	Transportation Engineering	Section 5.2 Collector Roadways	12	The report outlines traffic calming features and references design elements such as stop-controlled intersections, on-street bike lanes, and visual narrowing techniques. However, the key design parameters considered in developing the internal road layout—such as block lengths, design speeds, intersection spacing, and curb radii—should also be clearly outlined to demonstrate how the layout supports safety, connectivity, and traffic calming through its foundational design.	Crozier	Traffic calming features are mentioned within the report. As the mentioned items - block length, deisgn speeds and curb radii - are all dependant on the Draft Plans and detailed design proposed, they are not been discussed further at the Secondary Plan stage.

Bolton North Hill Secondary Plan - 2nd Submission Comments						
Comment Number	**Commenting Agency**	**Heading**	**Subheading(s)**	**Comment**	**Responsibility**	**Response**
443	Transportation Engineering	Section 5.3 Site Accesses	13.a	The section should be revised to address intersection spacing rather than spacing between site accesses. For the minimum spacing requirements referenced, please cite the appropriate table/figure and chapter number from the TAC guidelines. Also, include a map that clearly illustrates the spacing between the proposed intersections.	Crozier	The purpose of the Secondary Plan is to assess the proposed collector road network and the proposed access intersection for the development lands. The detailed review of intersection spacing within the development lands is a level of detial beyond the Secondary Plan. Each individaul Draft Plan should be required to show that they adhere to the requirements of the Town and the standards outlined in TAC.
444	Transportation Engineering	Section 5.3 Site Accesses	13.b	We understand that the proposed roads are relatively straight and flat; however, preliminary review of sight distance and intersection angles for all the proposed new roads along Columbia Way, Mount Hope Road and the Regional Roads (at the discretion of the Region) is required at this stage to ensure feasibility. A detailed assessment can be deferred to detailed design stage.	Crozier	Noted. Please refernce Section 5.4 in the February 2026 Transportation Assessment
445	Transportation Engineering	Section 7.2.2 Signal Warrant Analysis	14	Please confirm whether the intersections warranted for signals under 2041 traffic conditions (e.g., Highway 50 and Street A intersection) were also assessed for signal warrant analysis at earlier horizon.	Crozier	Signalization has been proposed for the warranted horizon with the exception of Duffy's Lane and Emil Kolb Parkway which is recommended based on forecasted operations and not the signal warrant. Please refernce Table 25 for a breakdown signalization through the horizon years.
446	Transportation Engineering	Section 7.3 Future Total Recommended Network Improvements	15.a	Figure 13 should clearly indicate which improvements are planned/recommended for the years 2031 and 2041.	Crozier	Noted. Figure 20 (updated figure number) has been revised.
447	Transportation Engineering	Section 7.3 Future Total Recommended Network Improvements	15.b	The proposed improvements along Highway 50 are not consistent with the Region of Peel's Complete Corridor Study and the Preliminary Design for Queen Street.	Crozier	Noted. Our recommendation for a road widening south of Columbia Way has been removed from the assessment to reflect the current corridor study finding.

Bolton North Hill Secondary Plan - 2nd Submission Comments						
Comment Number	**Commenting Agency**	**Heading**	**Subheading(s)**	**Comment**	**Responsibility**	**Response**
448	Transportation Engineering	Section 7.3 Future Total Recommended Network Improvements	15.c	No mitigation measures have been proposed to address the poor westbound (WB) operations at the Emil Kolb Parkway/Street B and Highway 50. The WB queue is expected to spill back to the upstream intersection.	Crozier	The fourth leg of the roundabout will be a dual entry, therefore no futher mitigation measures can be provided at the intersection. The poor westbound operations are due to the high volumes of through and eastbound left turning volumes in conflict with westbound entry. , The operational forecast of a roundabout in the Arcady model is dependant on the geometry of the model. As design of the rounabout proceeds the model can be updated to better forecast the expected operations.
449	Transportation Engineering	Section 7.3 Future Total Recommended Network Improvements	15.d	Please confirm whether the proposed network improvements under Future Background conditions were considered in the Future Total Conditions analysis. Table 24 should be updated accordingly.	Crozier	Table 27 (updated table number) outlines the "Additional Future Total Roadway Improvements" which are in addition to the Future Background improvements and planned improvements already introduced to the analysis.
450	Transportation Engineering	Section 8.1 Intersection Operations	16.a	Please correct the headers of Table 25 and Table 26.	Crozier	Revised. Please note the table numbers have changed in the February 2026 Transportaiton Assessment
451	Transportation Engineering	Section 8.1 Intersection Operations	16.b	Report the WBL queue for the Highway 50 and Columbia Way intersection for the 2041 Future Total Conditions in Table 28.	Crozier	With the widening of the Columbia Way to 4 lanes, the WBL movement is an independant lane, without a storage length. The queueing assessment reviews the 95th percentile queues in relation to the avalable storage lengths. As such the WBL movement is not included in the table.
452	Transportation Engineering	Section 8.1 Intersection Operations	16.c	SB queues for Emil Kolb Parkway intersections with Street E and Street F should be reported for the 2041 Future Total Conditions. Revise Table 28 accordingly.	Crozier	The southbound queuing at Street F and Street E is within a continuous lane and is not compared to a storage length within the summary tables. It is noted that the queueing in the 2051 horizon is less than 40m.
453	Transportation Engineering	Section 9.2 Accessible Parking	17	Revise it according to the Town's new Traffic By-Law, BL-2024-48, Schedule O.	Crozier	Noted. Section 9.2 references BL-2024-48.

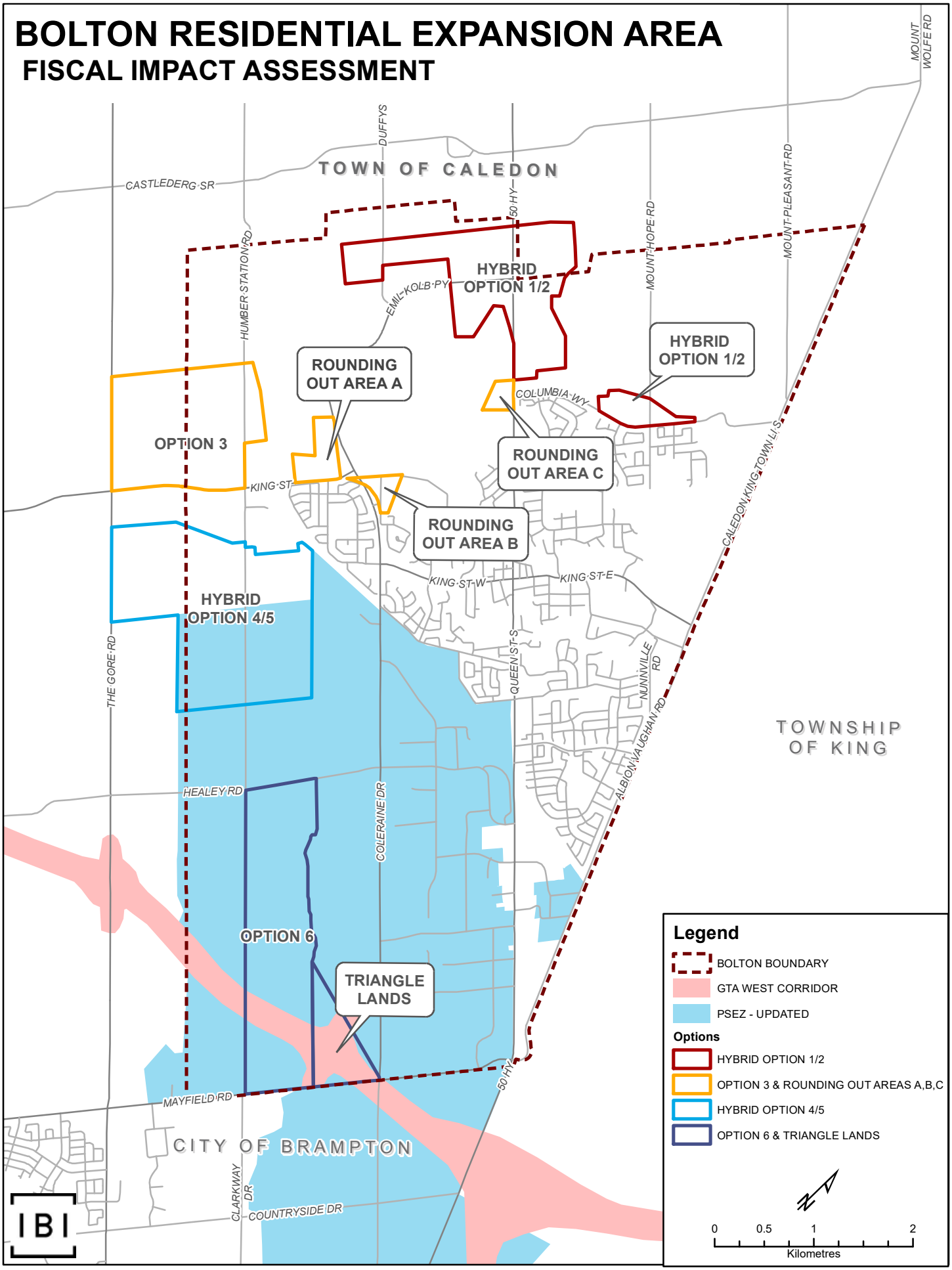
Bolton North Hill Secondary Plan - 2nd Submission Comments						
Comment Number	**Commenting Agency**	**Heading**	**Subheading(s)**	**Comment**	**Responsibility**	**Response**
454	Transportation Engineering	Section 10.1 Pedestrian and Cycling Facilities	18.a	Please ensure the comments listed under Item #7 are incorporated.	Crozier	Comment 7.a and 7.b relate to transit and don't impact the zoning by-law review. We have done our best to incorporate all applicable comments. Should Item 7 refer to something additional, it can be addressed through the furtue Tertiary Plan application.
455	Transportation Engineering	Section 10.1 Pedestrian and Cycling Facilities	18.b	Clearly distinguish between the existing and planned facilities, particularly within the existing SABE area.	Crozier	Existing and planned active transportaiton facilites are reviewed in seperate sections of the report. Table 4 review the exisitng facilities, while Table 36 review the planned facilites.
456	Transportation Engineering	Section 10.1 Pedestrian and Cycling Facilities	18.c	The proposed active transportation facilities on Duffys Lane do not align with Section 5.1. As a collector road, it should include pedestrian and cycling infrastructure on both sides.	Crozier	Noted. Table 36 has been updated to note a future multi-use trail on Duffy's lane
457	Transportation Engineering	Section 10.1 Pedestrian and Cycling Facilities	18.d	Verify that the proposed cycling facilities along Columbia Way are consistent with the Active Transportation Master Plan (ATMP).	Crozier	Noted. Table 36 has been updated to note a future multi-use trail on Columbia Way.
458	Transportation Engineering	Section 10.1 Pedestrian and Cycling Facilities	18.e	Revise Figure 16 and Table 31 to reflect the updates.	Crozier	Noted these items have been revised.
459	Transportation Engineering	Section 10.1 Pedestrian and Cycling Facilities	19	The Transportation Demand Management (TDM) section only mentions the planned active transportation and transit improvements but does not specify high-level TDM strategies (e.g., carpooling incentives, bike amenities, and shared parking) that could support the Town's modal split targets and reduce single-occupant vehicle reliance, as originally requested.	Crozier	Please reference Section 10.2 in the February 2026 Transportation Assessment.
460	Transportation Engineering	Section 10.1 Pedestrian and Cycling Facilities	20	20. Please include the following separate Schedules in the next submission:- a. Road Network and Road Related Infrastructure (e.g., control type and intersection spacing) b. Active Transportation Facilities c. Transit Network	Crozier	Please refer to Figure 12, Figure 20, Figure 24 and Figure 25, respectiveley, for the proposed roadway spacing, network configuration, future active transportation network and, transit route recommendations.

APPENDIX B

Original Bolton Residential Expansion Areas

BOLTON RESIDENTIAL EXPANSION AREA

FISCAL IMPACT ASSESSMENT



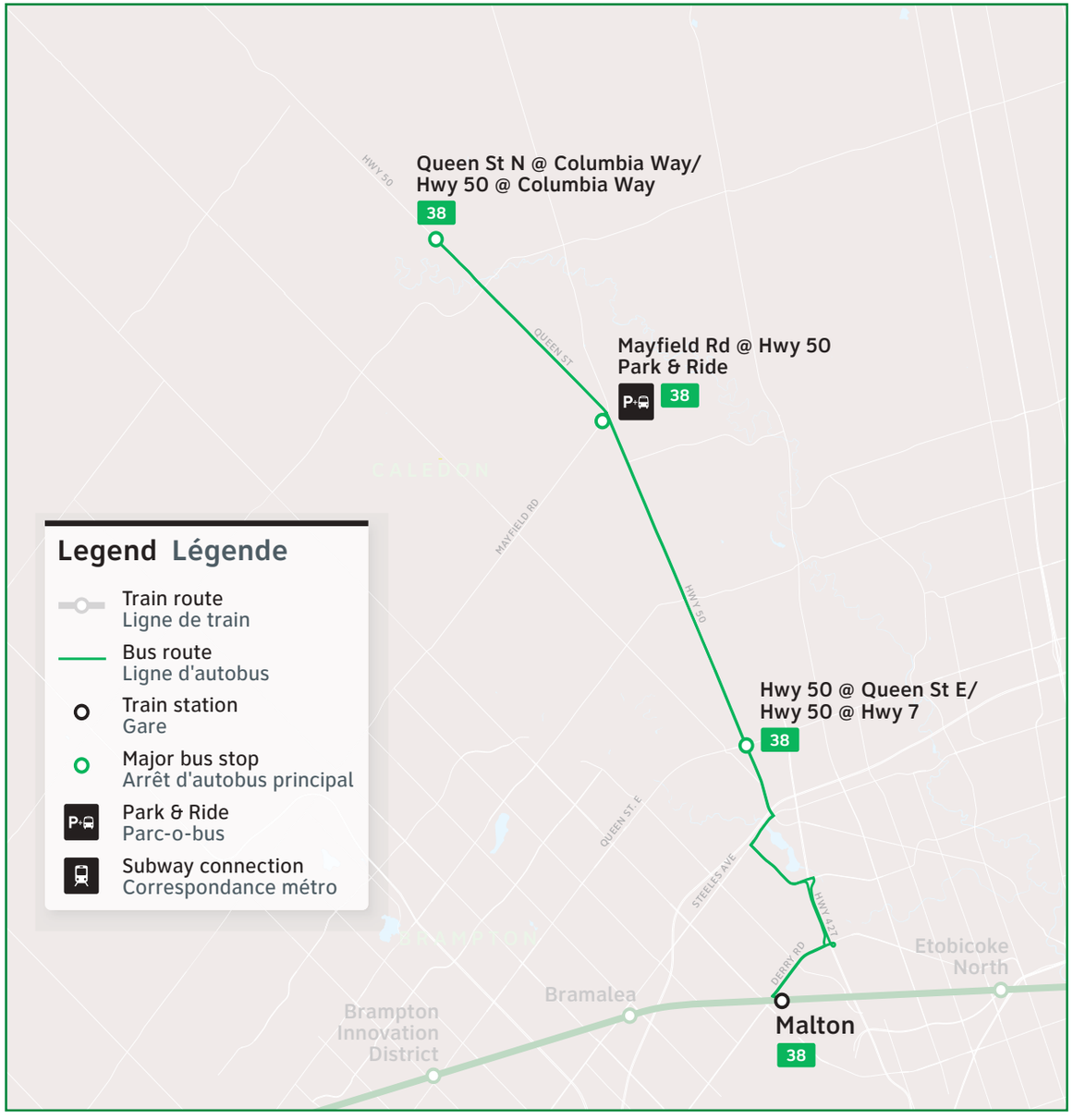
APPENDIX C

Transit & Active Transportation Information

38

Route number
Nombre d'itinéraire

Bolton/Malton



CONTACT US

1-888-438-6646
416-869-3200
TTY: #711 or call
1-800-855-0511

gotransit.com/schedules

@GOtransitBus
@GOtransitKT

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

Bolton

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

METROLINX

38 **KT**

- Bolton
- Bolton South Park & Ride
- Woodbridge
- Malton GO
- Union Station

Daily / Quotidiennement
Includes GO Bus route 38 / Inclut la route 38
Includes Kitchener GO Train
Inclut la train GO Kitchener

Effective / À partir de:
24 JUNE JUIN **2023**

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.

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.

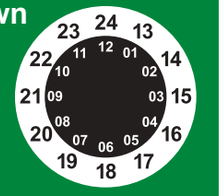
Étape 4
Les trains ou les autobus ne s'arrêtent pas tous à chaque gare. Si vous voyez le symbole → le train ou l'autobus ne s'arrêtera pas à cette gare.

Legend/Légende

- Train trips/Horaire des trains
- Bus trips/Horaire des autobus
- Separate bus/Autobus distinct
- → Trip does not serve this location. Trajet ne sert pas cette station.
- ↓ Check below for connecting trips./ Vérifiez les trajets de correspondance cidessous.
- GO Bus service is accessible to passengers using mobility devices at this location./ Service d'autobus GO accessible aux personnes utilisant des aides à la mobilité à cet endroit.
- GO Train & GO Bus service is accessible to passengers using mobility devices at this location. Les services de trains et d'autobus GO sont accessibles aux utilisateurs d'un appareil d'aide à la mobilité à cet endroit.
- Ⓟ Parking available./ Stationnement disponible.

Schedule times shown in 24-hour clock

Indications selon un système horaire de 24 heures



Midnight to noon
00 01 - 12 00

De minuit à midi:
00 01 - 12 00

Noon to midnight
12 01 - 24 00

De midi à minuit:
12 01 - 24 00

Notes

h Trip holds for connection./ Attentes des trajets pour les connexions.

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

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

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

SOUTHBOUND / EN DIRECTION SUD

Route Number / Numéro du trajet	Trip Number / Numéro du parcours	Zone→	58 Dp Caledon **Queen St. N. @ Columbia Way**	58 Bolton **Queen St. S. @ Allan Dr.**	56 Brampton Ⓟ **Mayfield Rd. @ Hwy. 50**	56 Brampton **Hwy. 50 @ Queen St. E.**	31 Ar Mississauga Ⓟ **Malton GO**	Transfer - Correspondances	31 Dp Mississauga Ⓟ **Malton GO**	2 Ar Toronto **Union Station**
38	38170		05 05	05 10	05 17	05 28	05 45	3604	06 00	06 29
38	38220		06 05	06 10	06 17	06 28	06 45	3606	07 00	07 29

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

NORTHBOUND / EN DIRECTION NORD

Route Number / Numéro du trajet	Trip Number / Numéro du parcours	Zone→	2 Dp Toronto **Union Station**	31 Ar Mississauga Ⓟ **Malton GO**	Transfer - Correspondances	31 Dp Mississauga Ⓟ **Malton GO**	56 Woodbridge **Hwy. 50 @ Hwy. 7**	56 Brampton Ⓟ **Mayfield Rd. @ Hwy. 50**	58 Bolton **Queen St. S. @ Wilton Dr.**	58 Ar Caledon **Hwy. 50 @ Columbia Way**
38	3923		15 34	16 02	38631	16 12**h**	16 30	16 55	17 02	17 17
38	3829		18 04	18 32	38801	18 42**h**	19 00	19 20	19 27	19 37

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.

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.

Weekday Service Map

Legend

- Zūm Station Stops/Service
- Brampton Transit Route
- One Direction Only
- Bus Terminal
- Connections at Terminals to: MiWay, TTC, YRT, Milton Transit and GO Transit
- Brampton Transit On-Demand
- Other Transit Routes
- GO Transit Terminal
- Parkland
- Recreation Trails
- Industrial Areas
- Shopping & Commercial Areas
- Institutional Areas
- College/University
- Peel Police Station
- Fire Station
- Hospital
- Recreation Centre
- Library
- Public Secondary Schools
- Catholic Secondary Schools

Zūm Main Inset

Brampton Gateway Terminal, Steeles Ave W, Steeles Ave E, Main St, Nanwood Dr, County Court Blvd, Ray Lawson Blvd, Hwy 407, Derry Rd W, Derry Rd E, Hwy 401, Courtneypark Dr E, Britannia Rd W, Matheson Blvd W, Bristol Rd W, Eglinton Ave W, Eglinton Ave E, Mississauga City Centre Terminal, Hwy 403, Burnhamthorpe Rd W, Burnhamthorpe Rd E

Bolton Inset

Columbia Way, Kingsview Dr, Bolton Heights Rd, Hwy 50, King St W, Albion-Bolton Community Centre, Holland Dr, Healey Rd, Coleraine Dr, George Bolton Pkwy, Dovecote Blvd, Mayfield Rd, Mayfield & Hwy 50 Park and Ride

Route 81 Inset to Caledon

Kennedy Rd, Hwy 410

Route 18 Inset to Caledon

Dixie Rd, Mayfield Rd

Route 18 Inset

Courtneypark Dr E, Meyerside Dr, Dixie Rd, Hwy 410, Airport Rd

Zūm Queen Inset

Queen St E, Hwy 7, Hwy 427, Hwy 407, Steeles Ave W, Finch Ave W, York University, SmartVMC Terminal

Route 115 / 505A Inset

Lester B. Pearson International Airport, Terminal 1, Airport Rd, Hwy 409

Downtown Brampton Terminal & Main Street Zūm Stations

1 1A 2 24 25 52 56 501 501C

Flower City Community Campus

1 1A 3A 55 57

1 1A Limited Weekday Service to Flower City Community Campus

Sandalwood Loop

28 81 502

Heart Lake Terminal

2 3 3A 7 7A 23

Trinity Common Terminal

5 5A 17 22 32 33 505 505A

Bramalea Terminal

1 1A 8 9 10 12 13 15 15A 16 17 18 19 20 20A 115 501 501C

Peel Memorial Hospital

2 24 25

Bramalea

11 11A 13 15 15A 16 115 511 511A 511C

Sheridan College

2 3 3A 4 4A 11 11A 51 52 56 200 511 511A 511C

Brampton Gateway Terminal

11 11A 13 15 15A 16 115 511 511A 511C

Pedestrian connection between Mount Pleasant GO Station and Mount Pleasant Village

Mount Pleasant Village

6 22 26 27 28

Mount Pleasant

1 4 4A 5 5A 6 29 29A 55 60 505 561

Maple Lodge Farms Extension Limited Service

110

Maple Lodge Farms

Lisgar

11 511 MILTON TRANSIT

Argentia Rd

11

Hurontario & 407 Park and Ride

2 6

Top Flight

Malton

Etobicoke General Hospital

Humber College

Lisgar Rd

Kingknoll Dr

Ray Lawson Blvd

Dixie Rd

Torbram Rd

Airport Rd

Hwy 407

Hwy 410

Hwy 427

Hwy 401

Derry Rd W

Derry Rd E

Steeles Ave W

Steeles Ave E

Bovaird Dr W

Bovaird Dr E

Queen St W

Queen St E

Williams Pkwy W

Williams Pkwy E

Sandalwood Pkwy W

Sandalwood Pkwy E

Wanless Dr

Mayfield Rd

Countryside Dr

Father Tobin Rd

Castlemore Rd

Cottrelle Blvd

Gore Meadow Community Centre

35 36 50 50A

Clairville Dr

Saturdays, Sundays and Holidays Service only

Zūm Limited Service to York University, Weekday Peak Service only

501C

See Zūm Queen Inset for Continuation

See Zūm Main Inset for Continuation

See Route 18 Inset for Continuation

See Route 115 / 505A Inset for Continuation

Scale 1:35,000

0 .25 .5 .75 1 km

Brampton Transit Rider Guide

Published by the Corporation of the City of Brampton

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Triplinx

https://www.triplinx.ca/ Printing date: 6/18/2024

Brampton Transit

41 **Bolton**

Towards 41 BOLTON NORTHBOUND

Date: **Tuesday, 6/18/2024**

Schedule

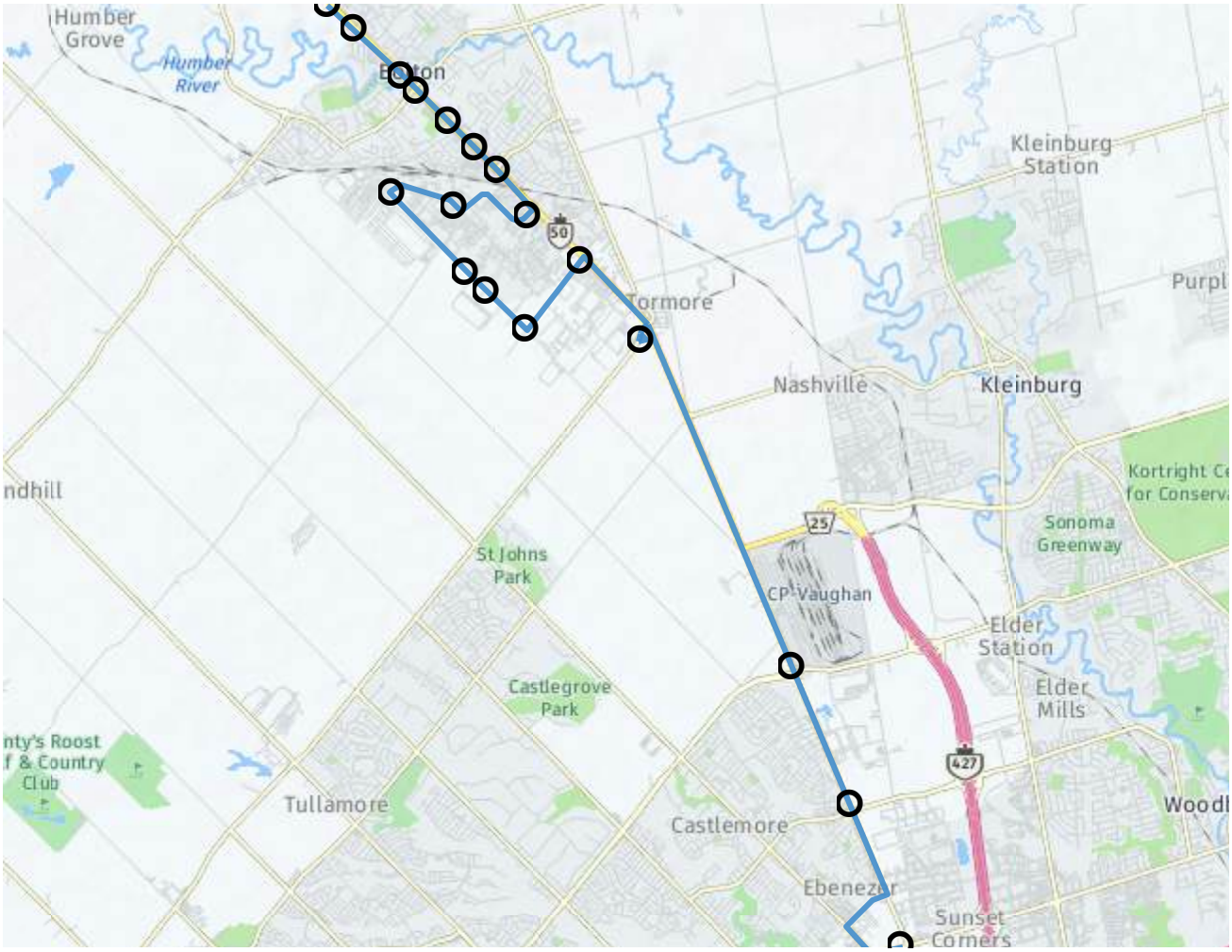
Stop	Trips		
Transport modes			
City : BRAMPTON			
Highway 50 - Zum Queen Station Stop WB	2:35 pm	4:25 pm	6:20 pm
City : VAUGHAN			
Highway 50 n/of Langstaff Rd	2:40 pm	4:30 pm	6:25 pm
Highway 50 n/of Rutherford Rd	2:43 pm	4:33 pm	6:28 pm
City : BRAMPTON			
Mayfield GO Park & Ride - Route 41 NB Stop	2:51 pm	4:41 pm	6:36 pm
City : CALEDON			
George Bolton Pkwy w/of Highway 50	2:54 pm	4:44 pm	6:40 pm
George Bolton Pkwy e/of Coleraine Dr	2:57 pm	4:47 pm	6:43 pm

Stop	Trips		
Coleraine Dr at 12724 Coleraine Dr	2:58 pm	4:48 pm	6:45 pm
Coleraine Dr at 12880 Coleraine Dr	2:59 pm	4:49 pm	6:46 pm
Holland Dr e/of Coleraine Dr	3:02 pm	4:52 pm	6:50 pm
Holland Dr n/of Browning Crt	3:04 pm	4:54 pm	6:52 pm
Healey Rd w/of Highway 50	3:07 pm	4:57 pm	6:55 pm
Highway 50 s/of Queensgate Blvd	3:08 pm	4:58 pm	6:57 pm
Highway 50 s/of Allan Dr	3:09 pm	4:59 pm	6:58 pm
Highway 50 s/of Downey Dr	3:10 pm	5:00 pm	6:59 pm
Highway 50 s/of King St	3:12 pm	5:02 pm	7:01 pm
Highway 50 at Hickman St	3:12 pm	5:02 pm	7:01 pm
Highway 50 s/of Bolton Heights Dr	3:14 pm	5:04 pm	7:04 pm
Highway 50 at Caledon Recreation Centre	3:15 pm	5:05 pm	7:05 pm

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

Bus Drop off only Boarding only

Route map



Legend

Real time

Bus Stop

Visit | CALEDON





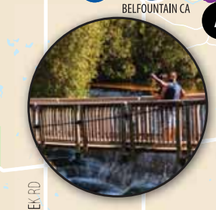








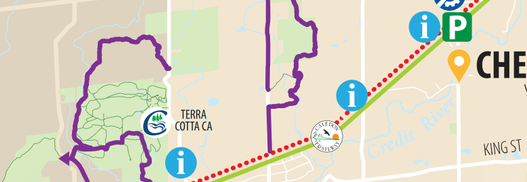


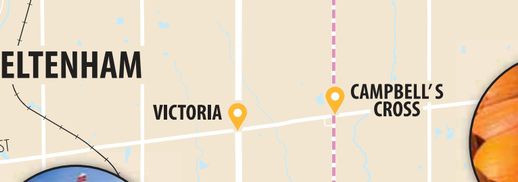


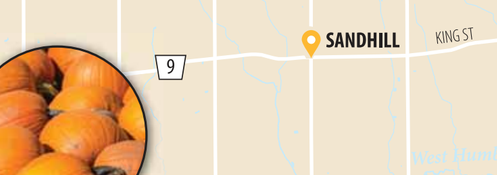







A HOFFMAN LIME KILN RUINS


B UPPER CREDIT CONSERVATION AREA


C ALBION HILLS CONSERVATION PARK


D GLEN HAFFY CONSERVATION AREA


E CHELTENHAM BADLANDS



F HUMBER RIVER HERITAGE PARK


HERITAGE WALKING TOURS

Scan the code for details about Caledon's trails and cycling routes

BICYCLE FRIENDLY COMMUNITY BRONZE
SHARE THE ROAD 2020
SHARETHEROAD.CA

1:38,000
0 1 2 3 4 5
Kilometres

LEGEND

- Bruce Trail
- Caledon Trailway
- Trans Canada Trail
- Elora Cataract Trail
- Etobicoke Creek Trail
- Grand Valley Trail
- Greenbelt Route
- Humber Valley Heritage Trail
- New Tecumseth Trail
- Oak Ridges Trail
- Conservation Area Trails
- Etobicoke Creek Trail connector
- Settlement
- Lake/River
- Park/Open Space
- Conservation Area
- Toilet
- Hospital
- Provincial Park
- Parking
- Trail Kiosk
- Seasonal Bike Repair Stand


Trails & Cycling Routes
Caledon Maps
Layers
Layers...
Filter
Elora Cataract Trailway
Grand Valley Trail
Humber Valley Heritage Trail
Humber Valley Heritage Side Trail
Oak Ridges Trail
Richard Whitehead Memorial Trail
Etobicoke Creek Trail
Etobicoke Creek Trail Connector
Cycling Network
Cycling Network
Bike Lane
Multi-Use Path
On-Road Signed Cycling Route
Parks & Recreation Facilities
Tourist Attractions
Amenities
Community Works
Airphoto 2023
Hwy 50
Emil Kolb Pkwy
Foxchase Dr
Westchester Blvd
Highbury Dr
Taylorwood Ave
Hersey Cres
Longwood Dr
Whitehead Cres
Cross Country Blvd
Gray Park Dr
Queen St N
Centennial Dr
Glasgow Rd
Mill St
Hickman St
Foundry St
Jane St
0 0.15 0.3km
Town of Caledon | Esri, HERE, Gar

APPENDIX D

Traffic Data & Signal Timing Plans

Turning Movement Count (1 . KING ST & EMIL KOLB PKWY) CustID: 00904510

Start Time	E Approach EMIL KOLB PKWY					S Approach KING ST					W Approach EMIL KOLB PKWY					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	UTurn W:W	Peds W:	Approach Total		
06:00:00	4	13	0	0	17	34	11	0	0	45	23	19	0	0	42	104	
06:15:00	10	26	0	0	36	59	9	0	0	68	30	47	0	0	77	181	
06:30:00	9	29	2	0	40	56	19	0	0	75	23	49	0	0	72	187	
06:45:00	10	33	0	0	43	93	18	0	0	111	28	74	1	0	103	257	729
07:00:00	14	47	0	0	61	54	12	0	0	66	30	54	1	0	85	212	837
07:15:00	19	48	0	0	67	63	12	0	0	75	38	60	0	0	98	240	896
07:30:00	20	55	0	0	75	61	20	0	0	81	50	58	1	0	109	265	974
07:45:00	22	34	0	0	56	75	32	0	0	107	43	73	0	0	116	279	996
08:00:00	14	35	0	0	49	56	30	0	0	86	40	65	0	0	105	240	1024
08:15:00	15	35	1	0	51	87	31	0	0	118	46	57	0	0	103	272	1056
08:30:00	11	37	1	0	49	54	17	1	0	72	37	69	0	0	106	227	1018
08:45:00	7	41	0	0	48	60	20	0	0	80	26	57	0	0	83	211	950
09:00:00	13	46	1	0	60	68	16	0	0	84	28	32	0	0	60	204	914
09:15:00	15	31	0	0	46	71	22	1	0	94	24	34	0	0	58	198	840
09:30:00	12	32	0	0	44	45	14	0	0	59	21	31	0	0	52	155	768
09:45:00	9	28	0	0	37	58	19	1	0	78	14	29	0	0	43	158	715
BREAK																	
15:00:00	46	79	1	1	126	43	27	0	0	70	20	18	0	0	38	234	
15:15:00	46	91	0	0	137	49	29	0	0	78	11	19	0	0	30	245	
15:30:00	69	78	0	0	147	58	32	0	0	90	25	25	0	0	50	287	
15:45:00	71	83	1	0	155	78	52	0	0	130	25	17	0	0	42	327	1093
16:00:00	73	121	0	0	194	65	64	0	0	129	13	10	0	0	23	346	1205
16:15:00	63	98	0	0	161	73	56	0	0	129	20	17	0	0	37	327	1287
16:30:00	74	113	0	0	187	62	41	0	0	103	19	18	0	0	37	327	1327
16:45:00	73	119	0	0	192	72	43	0	0	115	20	17	0	0	37	344	1344
17:00:00	95	110	0	0	205	69	61	0	0	130	38	12	0	0	50	385	1383
17:15:00	69	114	0	0	183	47	42	0	0	89	32	21	0	0	53	325	1381
17:30:00	52	106	0	0	158	66	53	0	0	119	27	28	0	0	55	332	1386
17:45:00	59	117	1	0	177	50	40	0	0	90	28	20	0	0	48	315	1357
18:00:00	50	80	0	0	130	45	26	0	0	71	22	14	0	0	36	237	1209
18:15:00	34	63	0	0	97	42	21	0	0	63	28	21	0	0	49	209	1093
18:30:00	20	62	0	0	82	43	24	0	1	67	17	30	0	1	47	196	957
18:45:00	34	50	0	0	84	30	23	0	0	53	18	21	0	0	39	176	818

Grand Total	1132	2054	8	1	3194	1886	936	3	1	2825	864	1116	3	1	1983	**8002**	-
Approach%	35.4%	64.3%	0.3%		-	66.8%	33.1%	0.1%		-	43.6%	56.3%	0.2%		-	**-**	-
Totals %	14.1%	25.7%	0.1%		39.9%	23.6%	11.7%	0%		35.3%	10.8%	13.9%	0%		24.8%	**-**	-
Heavy	105	153	1		-	132	55	2		-	56	96	3		-	**-**	-
Heavy %	9.3%	7.4%	12.5%		-	7%	5.9%	66.7%		-	6.5%	8.6%	100%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

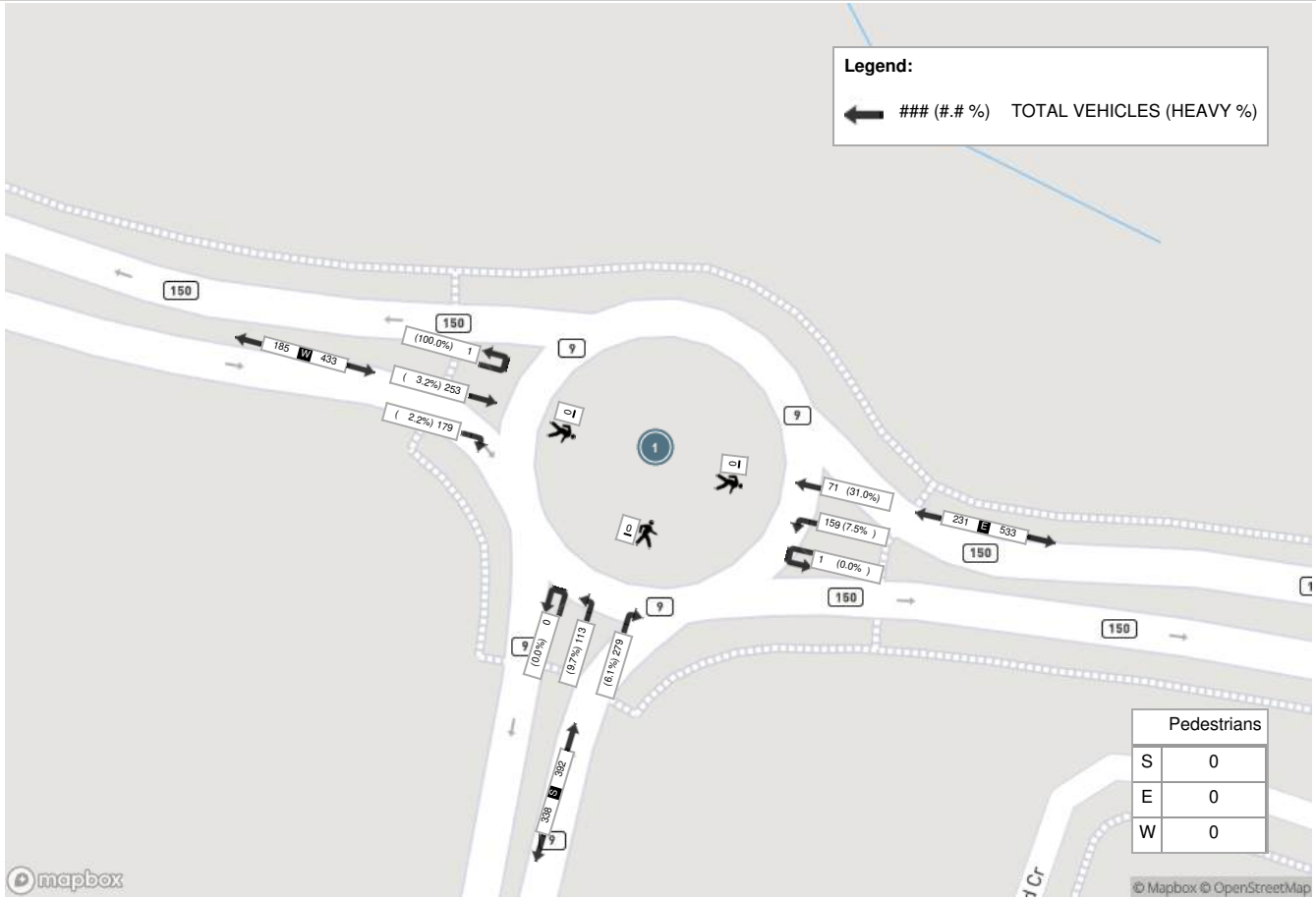
Peak Hour: 07:30 AM - 08:30 AM Weather:

Start Time	E Approach EMIL KOLB PKWY					S Approach KING ST					W Approach EMIL KOLB PKWY					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
07:30:00	20	55	0	0	75	61	20	0	0	81	50	58	1	0	109	265
07:45:00	22	34	0	0	56	75	32	0	0	107	43	73	0	0	116	279
08:00:00	14	35	0	0	49	56	30	0	0	86	40	65	0	0	105	240
08:15:00	15	35	1	0	51	87	31	0	0	118	46	57	0	0	103	272
Grand Total	71	159	1	0	231	279	113	0	0	392	179	253	1	0	433	**1056**
Approach%	30.7%	68.8%	0.4%		-	71.2%	28.8%	0%		-	41.3%	58.4%	0.2%		-	**-**
Totals %	6.7%	15.1%	0.1%		21.9%	26.4%	10.7%	0%		37.1%	17%	24%	0.1%		41%	**-**
PHF	0.81	0.72	0.25		0.77	0.8	0.88	0		0.83	0.9	0.87	0.25		0.93	**-**
Heavy	22	12	0		34	17	11	0		28	4	8	1		13	**-**
Heavy %	31%	7.5%	0%		14.7%	6.1%	9.7%	0%		7.1%	2.2%	3.2%	100%		3%	**-**
Lights	49	147	1		197	262	102	0		364	175	245	0		420	**-**
Lights %	69%	92.5%	100%		85.3%	93.9%	90.3%	0%		92.9%	97.8%	96.8%	0%		97%	**-**
Single-Unit Trucks	9	8	0		17	11	6	0		17	3	6	1		10	**-**
Single-Unit Trucks %	12.7%	5%	0%		7.4%	3.9%	5.3%	0%		4.3%	1.7%	2.4%	100%		2.3%	**-**
Buses	0	2	0		2	0	0	0		0	0	0	0		0	**-**
Buses %	0%	1.3%	0%		0.9%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Articulated Trucks	13	2	0		15	6	5	0		11	1	2	0		3	**-**
Articulated Trucks %	18.3%	1.3%	0%		6.5%	2.2%	4.4%	0%		2.8%	0.6%	0.8%	0%		0.7%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

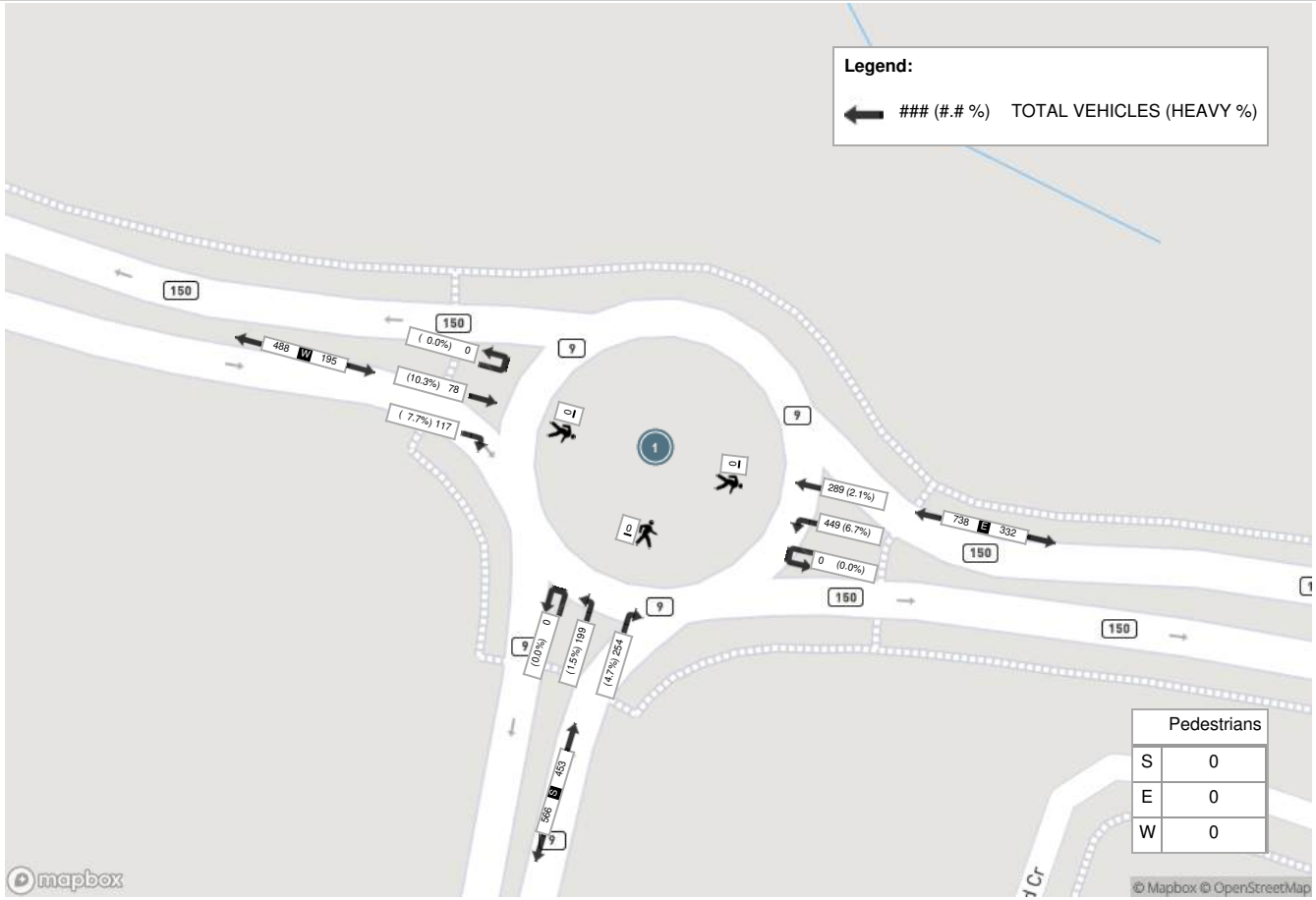
Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (2.15 °C)

Start Time	E Approach EMIL KOLB PKWY					S Approach KING ST					W Approach EMIL KOLB PKWY					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
16:45:00	73	119	0	0	192	72	43	0	0	115	20	17	0	0	37	344
17:00:00	95	110	0	0	205	69	61	0	0	130	38	12	0	0	50	385
17:15:00	69	114	0	0	183	47	42	0	0	89	32	21	0	0	53	325
17:30:00	52	106	0	0	158	66	53	0	0	119	27	28	0	0	55	332
Grand Total	289	449	0	0	738	254	199	0	0	453	117	78	0	0	195	**1386**
Approach%	39.2%	60.8%	0%		-	56.1%	43.9%	0%		-	60%	40%	0%		-	**-**
Totals %	20.9%	32.4%	0%		53.2%	18.3%	14.4%	0%		32.7%	8.4%	5.6%	0%		14.1%	**-**
PHF	0.76	0.94	0		0.9	0.88	0.82	0		0.87	0.77	0.7	0		0.89	**-**
Heavy	6	30	0		36	12	3	0		15	9	8	0		17	**-**
Heavy %	2.1%	6.7%	0%		4.9%	4.7%	1.5%	0%		3.3%	7.7%	10.3%	0%		8.7%	**-**
Lights	283	419	0		702	242	196	0		438	108	70	0		178	**-**
Lights %	97.9%	93.3%	0%		95.1%	95.3%	98.5%	0%		96.7%	92.3%	89.7%	0%		91.3%	**-**
Single-Unit Trucks	5	20	0		25	5	1	0		6	3	1	0		4	**-**
Single-Unit Trucks %	1.7%	4.5%	0%		3.4%	2%	0.5%	0%		1.3%	2.6%	1.3%	0%		2.1%	**-**
Buses	0	0	0		0	1	0	0		1	0	0	0		0	**-**
Buses %	0%	0%	0%		0%	0.4%	0%	0%		0.2%	0%	0%	0%		0%	**-**
Articulated Trucks	1	10	0		11	6	2	0		8	6	7	0		13	**-**
Articulated Trucks %	0.3%	2.2%	0%		1.5%	2.4%	1%	0%		1.8%	5.1%	9%	0%		6.7%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

Peak Hour: 07:30 AM - 08:30 AM Weather:



Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (2.15 °C)



Turning Movement Count (2 . HWY 50 & EMIL KOLB PKWY) CustID: 05019685

Start Time	N Approach HWY 50					S Approach HWY 50					W Approach EMIL KOLB PKWY					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	39	58	0	0	97	15	8	0	0	23	3	13	0	0	16	136	
06:15:00	58	82	0	0	140	22	6	0	0	28	1	16	0	0	17	185	
06:30:00	67	95	0	0	162	33	11	0	0	44	3	21	0	0	24	230	
06:45:00	79	102	0	0	181	32	11	0	0	43	5	23	0	0	28	252	803
07:00:00	84	86	0	0	170	29	7	0	0	36	5	18	0	0	23	229	896
07:15:00	85	81	0	0	166	39	16	0	0	55	4	23	1	0	28	249	960
07:30:00	88	87	0	0	175	42	16	0	0	58	7	33	0	0	40	273	1003
07:45:00	76	95	0	0	171	48	27	0	0	75	9	34	0	0	43	289	1040
08:00:00	78	108	0	0	186	37	16	0	0	53	5	23	0	0	28	267	1078
08:15:00	89	104	0	0	193	47	15	0	0	62	10	28	0	0	38	293	1122
08:30:00	75	92	1	0	168	55	17	0	0	72	11	27	0	0	38	278	1127
08:45:00	63	74	0	0	137	64	6	0	0	70	7	15	0	0	22	229	1067
09:00:00	54	69	0	0	123	43	7	0	0	50	5	22	0	0	27	200	1000
09:15:00	47	65	0	0	112	28	10	0	0	38	6	22	0	0	28	178	885
09:30:00	34	68	0	0	102	36	6	0	0	42	8	18	0	0	26	170	777
09:45:00	28	62	0	0	90	46	7	0	0	53	7	13	0	0	20	163	711
BREAK																	
15:00:00	19	46	0	0	65	111	18	0	0	129	11	57	0	0	68	262	
15:15:00	24	66	0	0	90	106	6	0	0	112	8	56	0	0	64	266	
15:30:00	43	66	0	0	109	113	7	0	0	120	21	78	0	0	99	328	
15:45:00	25	58	0	0	83	90	7	1	0	98	20	76	0	0	96	277	1133
16:00:00	26	49	0	0	75	111	9	0	0	120	28	95	0	0	123	318	1189
16:15:00	25	51	0	0	76	105	4	1	0	110	18	87	0	0	105	291	1214
16:30:00	24	47	0	0	71	118	2	0	0	120	10	93	0	0	103	294	1180
16:45:00	27	56	0	0	83	118	4	0	0	122	26	87	0	0	113	318	1221
17:00:00	34	52	0	0	86	132	13	0	0	145	21	107	0	0	128	359	1262
17:15:00	41	67	0	0	108	112	10	2	0	124	18	84	0	0	102	334	1305
17:30:00	32	57	0	0	89	109	11	0	0	120	13	74	0	0	87	296	1307
17:45:00	32	43	0	0	75	113	8	0	0	121	19	77	0	0	96	292	1281
18:00:00	27	62	0	0	89	97	6	0	0	103	12	55	0	0	67	259	1181
18:15:00	20	48	0	0	68	99	12	1	0	112	10	44	0	0	54	234	1081
18:30:00	36	48	0	0	84	87	11	0	0	98	8	26	0	0	34	216	1001
18:45:00	31	45	0	0	76	79	5	0	0	84	12	41	0	0	53	213	922

Grand Total	1510	2189	1	0	3700	2316	319	5	0	2640	351	1486	1	0	1838	**8178**	-
Approach%	40.8%	59.2%	0%		-	87.7%	12.1%	0.2%		-	19.1%	80.8%	0.1%		-	**-**	-
Totals %	18.5%	26.8%	0%		45.2%	28.3%	3.9%	0.1%		32.3%	4.3%	18.2%	0%		22.5%	**-**	-
Heavy	142	32	1		-	42	10	1		-	15	138	1		-	**-**	-
Heavy %	9.4%	1.5%	100%		-	1.8%	3.1%	20%		-	4.3%	9.3%	100%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

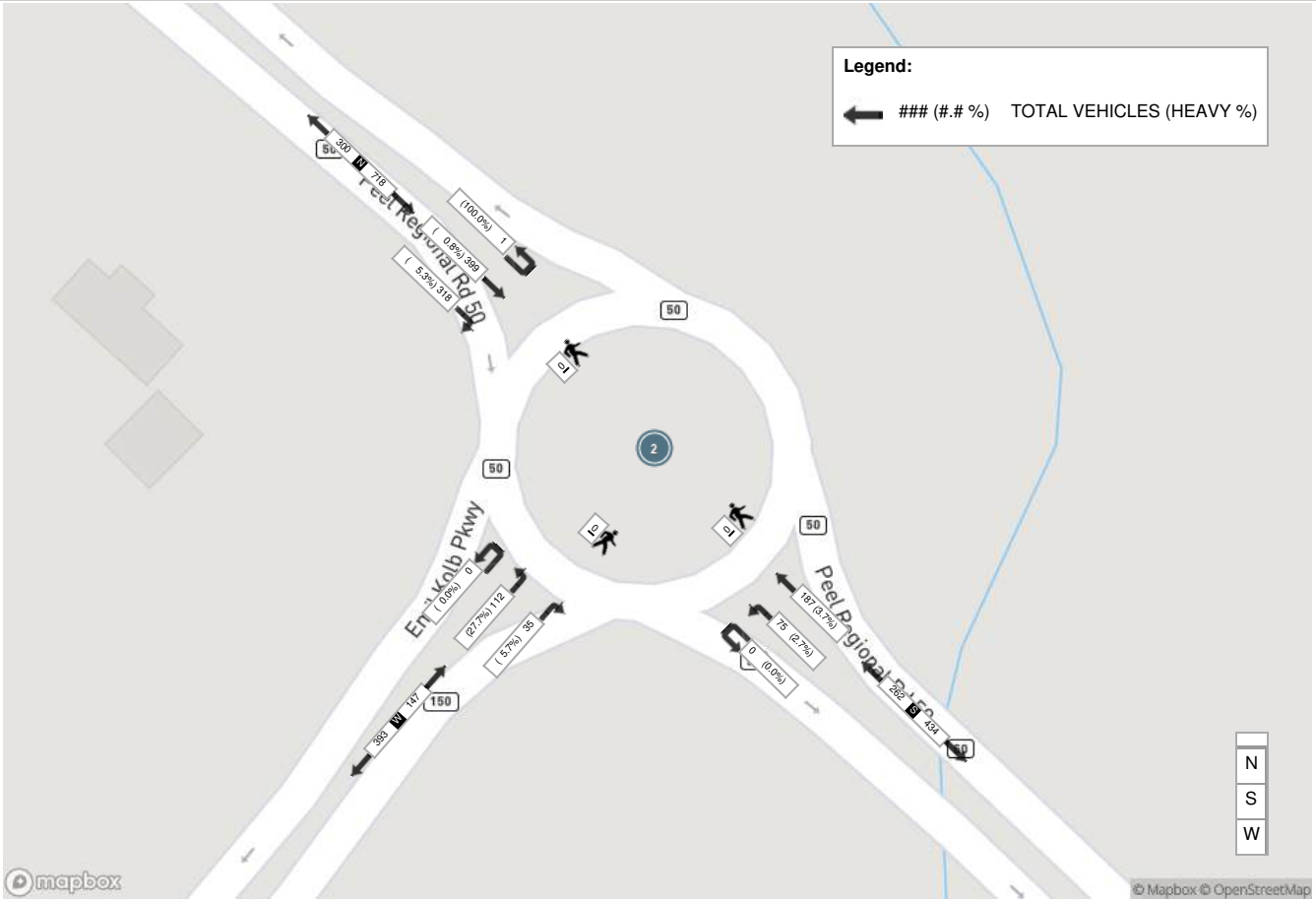
Peak Hour: 07:45 AM - 08:45 AM Weather:

Start Time	N Approach HWY 50					S Approach HWY 50					W Approach EMIL KOLB PKWY					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
07:45:00	76	95	0	0	171	48	27	0	0	75	9	34	0	0	43	289
08:00:00	78	108	0	0	186	37	16	0	0	53	5	23	0	0	28	267
08:15:00	89	104	0	0	193	47	15	0	0	62	10	28	0	0	38	293
08:30:00	75	92	1	0	168	55	17	0	0	72	11	27	0	0	38	278
Grand Total	318	399	1	0	718	187	75	0	0	262	35	112	0	0	147	**1127**
Approach%	44.3%	55.6%	0.1%		-	71.4%	28.6%	0%		-	23.8%	76.2%	0%		-	**-**
Totals %	28.2%	35.4%	0.1%		63.7%	16.6%	6.7%	0%		23.2%	3.1%	9.9%	0%		13%	**-**
PHF	0.89	0.92	0.25		0.93	0.85	0.69	0		0.87	0.8	0.82	0		0.85	**-**
Heavy	17	3	1		21	7	2	0		9	2	31	0		33	**-**
Heavy %	5.3%	0.8%	100%		2.9%	3.7%	2.7%	0%		3.4%	5.7%	27.7%	0%		22.4%	**-**
Lights	301	396	0		697	180	73	0		253	33	81	0		114	**-**
Lights %	94.7%	99.2%	0%		97.1%	96.3%	97.3%	0%		96.6%	94.3%	72.3%	0%		77.6%	**-**
Single-Unit Trucks	10	3	1		14	4	2	0		6	1	12	0		13	**-**
Single-Unit Trucks %	3.1%	0.8%	100%		1.9%	2.1%	2.7%	0%		2.3%	2.9%	10.7%	0%		8.8%	**-**
Buses	0	0	0		0	1	0	0		1	1	0	0		1	**-**
Buses %	0%	0%	0%		0%	0.5%	0%	0%		0.4%	2.9%	0%	0%		0.7%	**-**
Articulated Trucks	7	0	0		7	2	0	0		2	0	19	0		19	**-**
Articulated Trucks %	2.2%	0%	0%		1%	1.1%	0%	0%		0.8%	0%	17%	0%		12.9%	**-**

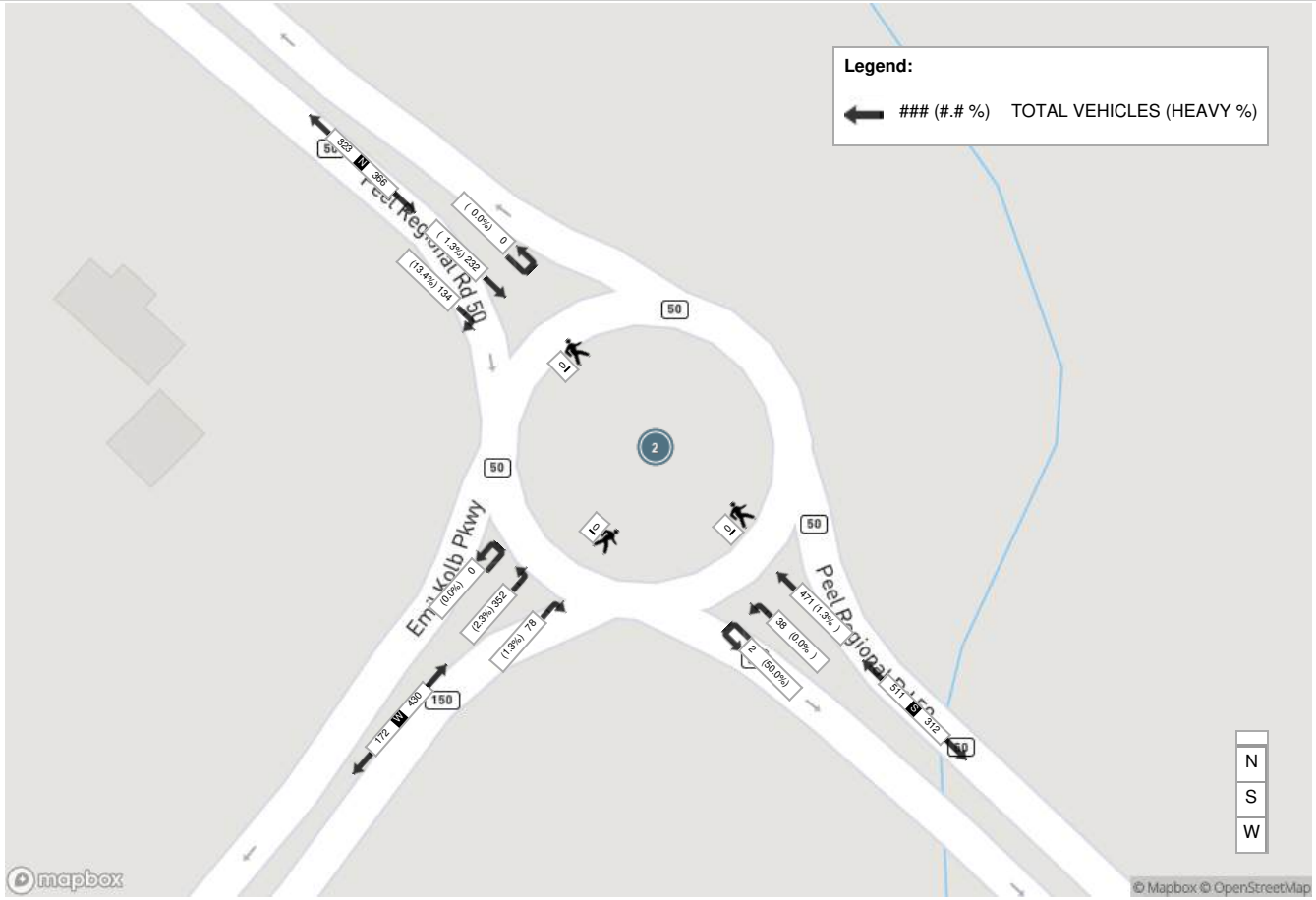
Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (2.15 °C)

Start Time	N Approach HWY 50					S Approach HWY 50					W Approach EMIL KOLB PKWY					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
16:45:00	27	56	0	0	83	118	4	0	0	122	26	87	0	0	113	318
17:00:00	34	52	0	0	86	132	13	0	0	145	21	107	0	0	128	359
17:15:00	41	67	0	0	108	112	10	2	0	124	18	84	0	0	102	334
17:30:00	32	57	0	0	89	109	11	0	0	120	13	74	0	0	87	296
Grand Total	134	232	0	0	366	471	38	2	0	511	78	352	0	0	430	**1307**
Approach%	36.6%	63.4%	0%		-	92.2%	7.4%	0.4%		-	18.1%	81.9%	0%		-	**-**
Totals %	10.3%	17.8%	0%		28%	36%	2.9%	0.2%		39.1%	6%	26.9%	0%		32.9%	**-**
PHF	0.82	0.87	0		0.85	0.89	0.73	0.25		0.88	0.75	0.82	0		0.84	**-**
Heavy	18	3	0		21	6	0	1		7	1	8	0		9	**-**
Heavy %	13.4%	1.3%	0%		5.7%	1.3%	0%	50%		1.4%	1.3%	2.3%	0%		2.1%	**-**
Lights	116	229	0		345	465	38	1		504	77	344	0		421	**-**
Lights %	86.6%	98.7%	0%		94.3%	98.7%	100%	50%		98.6%	98.7%	97.7%	0%		97.9%	**-**
Single-Unit Trucks	4	1	0		5	4	0	0		4	1	5	0		6	**-**
Single-Unit Trucks %	3%	0.4%	0%		1.4%	0.8%	0%	0%		0.8%	1.3%	1.4%	0%		1.4%	**-**
Buses	0	2	0		2	2	0	1		3	0	0	0		0	**-**
Buses %	0%	0.9%	0%		0.5%	0.4%	0%	50%		0.6%	0%	0%	0%		0%	**-**
Articulated Trucks	14	0	0		14	0	0	0		0	0	3	0		3	**-**
Articulated Trucks %	10.4%	0%	0%		3.8%	0%	0%	0%		0%	0%	0.9%	0%		0.7%	**-**

Peak Hour: 07:45 AM - 08:45 AM Weather:



Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (2.15 °C)



Turning Movement Count (3 . EMIL KOLB PKWY & DUFFYS LANE) CustID: 15011137

Start Time	N Approach EMIL KOLB PARKWAY					S Approach EMIL KOLB PARKWAY					W Approach DUFFYS LANE N					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	50	0	0	50	13	0	0	0	13	1	0	0	0	1	64	
06:15:00	1	58	0	0	59	19	1	0	0	20	2	0	0	0	2	81	
06:30:00	0	80	0	0	80	23	2	0	0	25	4	0	0	0	4	109	
06:45:00	1	88	0	0	89	26	0	0	0	26	4	0	0	0	4	119	373
07:00:00	0	89	0	0	89	27	2	0	0	29	4	0	0	0	4	122	431
07:15:00	0	98	0	0	98	28	2	0	0	30	5	0	0	0	5	133	483
07:30:00	0	105	0	0	105	38	2	0	0	40	8	1	0	0	9	154	528
07:45:00	1	104	0	0	105	46	2	0	0	48	10	1	0	0	11	164	573
08:00:00	0	95	0	0	95	25	7	0	0	32	13	1	0	0	14	141	592
08:15:00	2	87	0	0	89	36	5	0	0	41	3	0	0	0	3	133	592
08:30:00	0	101	0	0	101	36	2	0	0	38	5	0	0	0	5	144	582
08:45:00	0	77	0	0	77	23	1	0	0	24	5	0	0	0	5	106	524
09:00:00	2	54	0	0	56	26	5	0	0	31	3	0	0	0	3	90	473
09:15:00	0	61	0	0	61	30	5	0	0	35	4	0	0	0	4	100	440
09:30:00	1	43	0	0	44	23	4	0	0	27	3	0	0	0	3	74	370
09:45:00	1	32	0	0	33	23	0	0	0	23	6	1	0	0	7	63	327
BREAK																	
15:00:00	1	33	0	0	34	66	8	0	0	74	3	0	0	0	3	111	
15:15:00	0	29	0	0	29	67	6	0	0	73	5	0	0	0	5	107	
15:30:00	0	49	0	0	49	94	9	0	0	103	2	2	0	0	4	156	
15:45:00	0	36	0	0	36	98	16	0	0	114	5	1	0	0	6	156	530
16:00:00	0	26	0	0	26	125	11	0	0	136	0	1	0	0	1	163	582
16:15:00	0	34	0	0	34	107	10	0	0	117	5	0	0	0	5	156	631
16:30:00	1	28	0	0	29	101	10	0	0	111	5	0	0	0	5	145	620
16:45:00	0	29	0	0	29	113	15	0	0	128	4	1	0	0	5	162	626
17:00:00	0	48	0	0	48	130	18	0	0	148	3	2	0	0	5	201	664
17:15:00	0	50	0	0	50	97	11	0	0	108	3	0	0	0	3	161	669
17:30:00	4	39	0	0	43	86	15	0	0	101	5	0	0	0	5	149	673
17:45:00	2	40	0	0	42	89	8	0	0	97	6	1	0	0	7	146	657
18:00:00	0	33	0	0	33	69	10	0	0	79	5	0	0	0	5	117	573
18:15:00	0	34	0	0	34	51	4	0	0	55	6	1	0	0	7	96	508
18:30:00	0	45	0	0	45	42	2	0	0	44	5	0	0	0	5	94	453
18:45:00	0	38	0	0	38	50	6	0	0	56	6	0	0	0	6	100	407

Grand Total	17	1813	0	0	1830	1827	199	0	0	2026	148	13	0	0	161	**4017**	-
Approach%	0.9%	99.1%	0%		-	90.2%	9.8%	0%		-	91.9%	8.1%	0%		-	**-**	-
Totals %	0.4%	45.1%	0%		45.6%	45.5%	5%	0%		50.4%	3.7%	0.3%	0%		4%	**-**	-
Heavy	1	151	0		-	157	4	0		-	1	0	0		-	**-**	-
Heavy %	5.9%	8.3%	0%		-	8.6%	2%	0%		-	0.7%	0%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

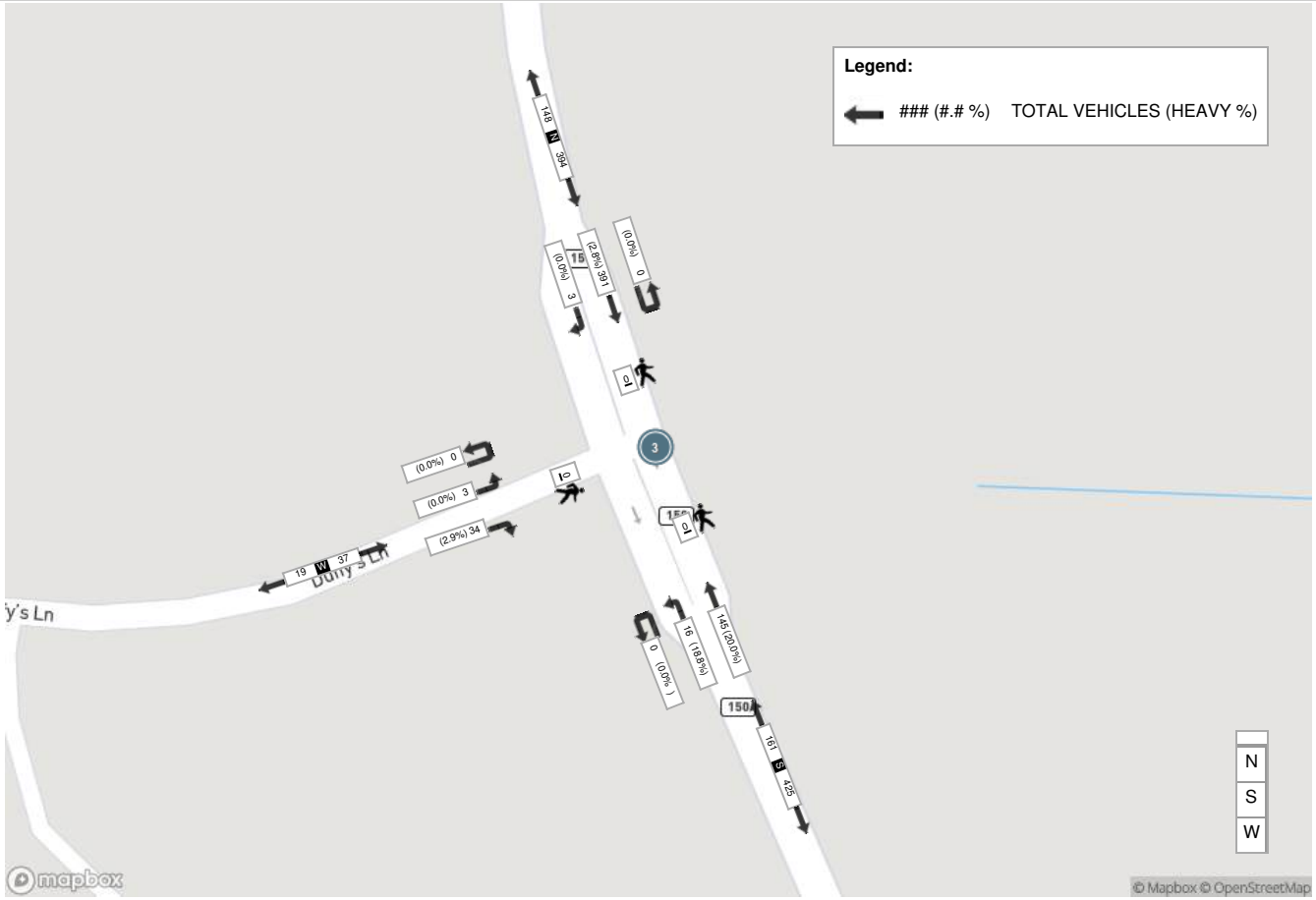
Peak Hour: 07:30 AM - 08:30 AM Weather:

Start Time	N Approach EMIL KOLB PARKWAY					S Approach EMIL KOLB PARKWAY					W Approach DUFFYS LANE N					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
07:30:00	0	105	0	0	105	38	2	0	0	40	8	1	0	0	9	154
07:45:00	1	104	0	0	105	46	2	0	0	48	10	1	0	0	11	164
08:00:00	0	95	0	0	95	25	7	0	0	32	13	1	0	0	14	141
08:15:00	2	87	0	0	89	36	5	0	0	41	3	0	0	0	3	133
Grand Total	3	391	0	0	394	145	16	0	0	161	34	3	0	0	37	**592**
Approach%	0.8%	99.2%	0%		-	90.1%	9.9%	0%		-	91.9%	8.1%	0%		-	**-**
Totals %	0.5%	66%	0%		66.6%	24.5%	2.7%	0%		27.2%	5.7%	0.5%	0%		6.3%	**-**
PHF	0.38	0.93	0		0.94	0.79	0.57	0		0.84	0.65	0.75	0		0.66	**-**
Heavy	0	11	0		11	29	3	0		32	1	0	0		1	**-**
Heavy %	0%	2.8%	0%		2.8%	20%	18.8%	0%		19.9%	2.9%	0%	0%		2.7%	**-**
Lights	3	380	0		383	116	13	0		129	33	3	0		36	**-**
Lights %	100%	97.2%	0%		97.2%	80%	81.3%	0%		80.1%	97.1%	100%	0%		97.3%	**-**
Single-Unit Trucks	0	7	0		7	11	3	0		14	1	0	0		1	**-**
Single-Unit Trucks %	0%	1.8%	0%		1.8%	7.6%	18.8%	0%		8.7%	2.9%	0%	0%		2.7%	**-**
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	4	0		4	18	0	0		18	0	0	0		0	**-**
Articulated Trucks %	0%	1%	0%		1%	12.4%	0%	0%		11.2%	0%	0%	0%		0%	**-**
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%	**-**

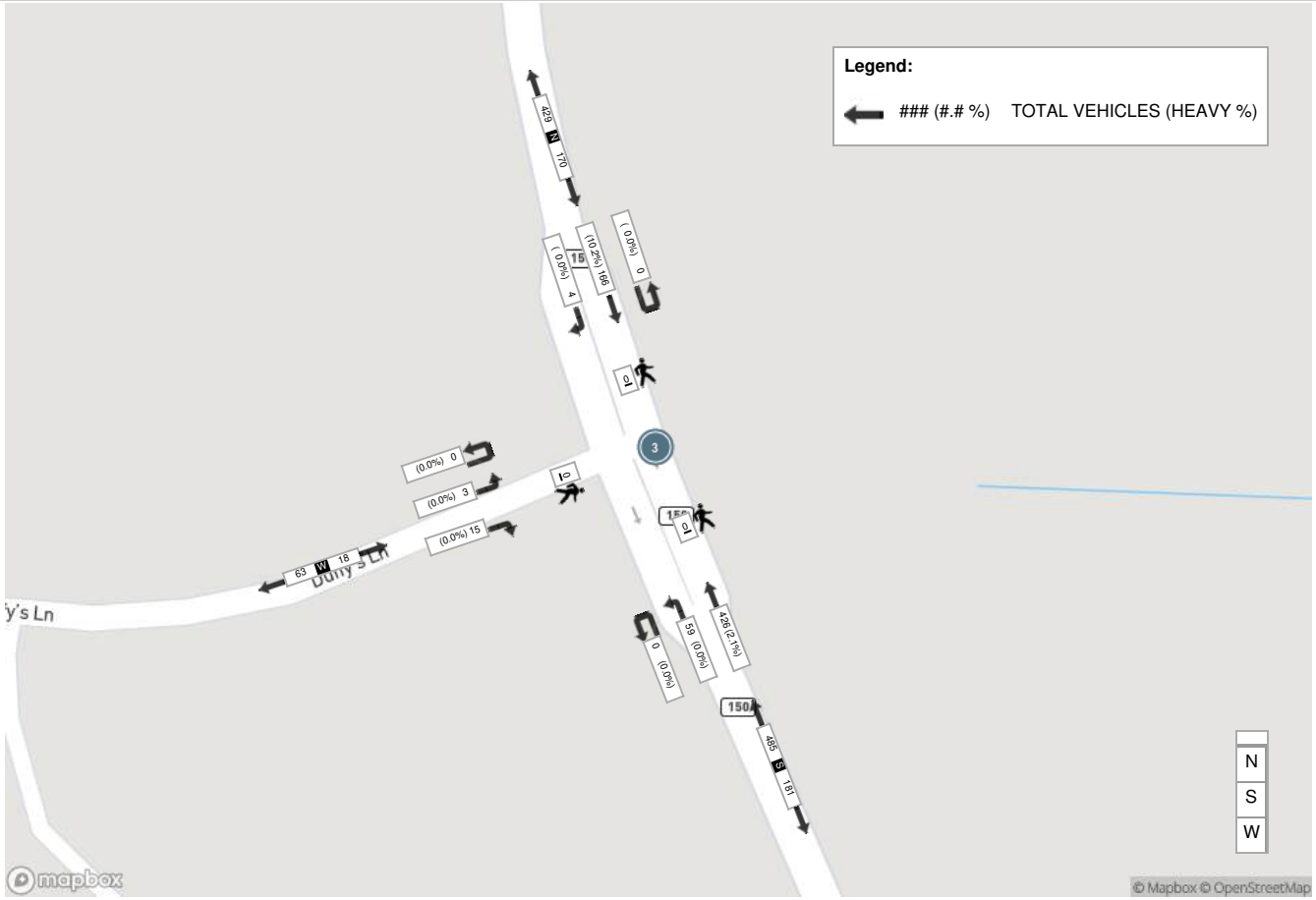
Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (2.15 °C)

Start Time	N Approach EMIL KOLB PARKWAY					S Approach EMIL KOLB PARKWAY					W Approach DUFFYS LANE N					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
16:45:00	0	29	0	0	29	113	15	0	0	128	4	1	0	0	5	162
17:00:00	0	48	0	0	48	130	18	0	0	148	3	2	0	0	5	201
17:15:00	0	50	0	0	50	97	11	0	0	108	3	0	0	0	3	161
17:30:00	4	39	0	0	43	86	15	0	0	101	5	0	0	0	5	149
Grand Total	4	166	0	0	170	426	59	0	0	485	15	3	0	0	18	**673**
Approach%	2.4%	97.6%	0%		-	87.8%	12.2%	0%		-	83.3%	16.7%	0%		-	**-**
Totals %	0.6%	24.7%	0%		25.3%	63.3%	8.8%	0%		72.1%	2.2%	0.4%	0%		2.7%	**-**
PHF	0.25	0.83	0		0.85	0.82	0.82	0		0.82	0.75	0.38	0		0.9	**-**
Heavy	0	17	0		17	9	0	0		9	0	0	0		0	**-**
Heavy %	0%	10.2%	0%		10%	2.1%	0%	0%		1.9%	0%	0%	0%		0%	**-**
Lights	4	149	0		153	417	59	0		476	15	3	0		18	**-**
Lights %	100%	89.8%	0%		90%	97.9%	100%	0%		98.1%	100%	100%	0%		100%	**-**
Single-Unit Trucks	0	4	0		4	6	0	0		6	0	0	0		0	**-**
Single-Unit Trucks %	0%	2.4%	0%		2.4%	1.4%	0%	0%		1.2%	0%	0%	0%		0%	**-**
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	13	0		13	3	0	0		3	0	0	0		0	**-**
Articulated Trucks %	0%	7.8%	0%		7.6%	0.7%	0%	0%		0.6%	0%	0%	0%		0%	**-**
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:



Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (2.15 °C)



Turning Movement Count (4 . HWY 50 & COLUMBIA WAY) CustID: 05018520

Start Time	N Approach HWY 50						E Approach COLUMBIA WAY						S Approach HWY 50						W Approach COLUMBIA WAY						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	2	68	1	0	0	71	9	0	14	0	0	23	3	13	0	0	0	16	1	0	1	0	0	2	112	
06:15:00	0	76	3	0	0	79	5	0	8	0	0	13	0	21	0	0	0	21	1	0	0	0	0	1	114	
06:30:00	0	85	7	0	0	92	10	0	12	0	0	22	3	34	0	0	0	37	0	0	0	0	0	0	151	
06:45:00	7	97	2	0	0	106	14	0	20	0	0	34	7	31	0	0	0	38	0	0	1	0	0	1	179	556
07:00:00	2	82	1	0	0	85	6	1	19	0	0	26	10	29	1	0	0	40	0	0	0	0	0	0	151	595
07:15:00	1	83	2	0	0	86	17	0	24	0	0	41	2	37	0	0	0	39	1	0	1	0	0	2	168	649
07:30:00	0	86	6	0	0	92	19	0	26	0	0	45	10	39	0	0	0	49	0	0	2	0	0	2	188	686
07:45:00	1	98	12	0	0	111	28	0	32	0	0	60	15	46	0	0	0	61	1	0	0	0	0	1	233	740
08:00:00	0	94	10	0	0	104	19	0	19	0	0	38	16	35	0	0	0	51	3	0	0	0	0	3	196	785
08:15:00	0	104	15	0	0	119	16	0	16	0	0	32	25	54	1	0	0	80	2	0	1	0	0	3	234	851
08:30:00	0	87	10	0	0	97	10	1	14	0	0	25	12	62	0	0	0	74	1	0	1	0	0	2	198	861
08:45:00	1	74	5	0	0	80	9	0	24	0	0	33	15	57	1	0	0	73	1	0	0	0	0	1	187	815
09:00:00	0	69	5	0	0	74	7	0	14	0	0	21	12	43	0	0	0	55	3	0	1	0	0	4	154	773
09:15:00	0	65	5	0	0	70	6	0	13	0	0	19	12	29	1	0	0	42	0	0	0	0	0	0	131	670
09:30:00	0	62	8	0	0	70	5	1	15	0	0	21	7	38	0	0	0	45	0	0	0	0	0	0	136	608
09:45:00	0	67	6	0	0	73	6	0	22	0	0	28	9	47	0	0	0	56	1	0	0	0	0	1	158	579
BREAK																										
15:00:00	0	45	9	0	0	54	17	1	13	0	0	31	37	113	1	0	0	151	0	0	1	0	0	1	237	
15:15:00	0	61	14	0	0	75	9	0	15	0	0	24	21	96	1	0	0	118	0	0	4	0	0	4	221	
15:30:00	0	59	15	0	0	74	8	0	15	0	0	23	28	109	0	0	0	137	0	2	5	0	0	7	241	
15:45:00	1	71	11	0	0	83	10	0	22	0	0	32	37	86	0	0	0	123	0	0	0	0	0	0	238	937
16:00:00	1	57	18	0	0	76	13	0	15	0	0	28	33	105	0	0	0	138	0	0	1	0	1	1	243	943
16:15:00	0	51	21	0	0	72	5	0	23	0	0	28	30	107	0	0	0	137	0	0	1	0	0	1	238	960
16:30:00	1	43	13	0	0	57	5	0	7	0	0	12	43	116	0	0	0	159	0	0	0	0	0	0	228	947
16:45:00	0	62	18	0	0	80	10	0	18	0	0	28	38	117	0	0	0	155	0	0	0	0	0	0	263	972
17:00:00	0	61	17	0	0	78	10	0	14	0	0	24	43	123	0	0	0	166	1	0	0	0	0	1	269	998
17:15:00	0	67	21	0	0	88	14	0	18	0	0	32	36	98	0	0	0	134	0	0	0	0	0	0	254	1014
17:30:00	1	58	14	0	0	73	13	0	13	0	0	26	39	107	0	0	0	146	0	0	0	0	0	0	245	1031
17:45:00	0	50	14	0	0	64	11	0	11	0	0	22	27	108	1	0	2	136	0	0	1	0	0	1	223	991
18:00:00	0	56	17	0	0	73	7	0	22	0	0	29	27	101	0	0	0	128	0	0	0	0	0	0	230	952
18:15:00	0	52	13	0	0	65	9	0	13	0	0	22	39	98	0	0	0	137	0	0	0	0	0	0	224	922
18:30:00	2	40	9	0	0	51	6	0	19	0	0	25	23	89	0	0	0	112	0	0	0	0	0	0	188	865
18:45:00	0	47	15	0	0	62	3	0	23	0	0	26	15	77	0	0	0	92	2	0	0	0	0	2	182	824
Grand Total	20	2177	337	0	0	2534	336	4	553	0	0	893	674	2265	7	0	2	2946	18	2	21	0	1	41	**6414**	-
Approach%	0.8%	85.9%	13.3%	0%		-	37.6%	0.4%	61.9%	0%		-	22.9%	76.9%	0.2%	0%		-	43.9%	4.9%	51.2%	0%		-	**-**	-
Totals %	0.3%	33.9%	5.3%	0%		39.5%	5.2%	0.1%	8.6%	0%		13.9%	10.5%	35.3%	0.1%	0%		45.9%	0.3%	0%	0.3%	0%		0.6%	**-**	-
Heavy	6	29	6	0		-	5	2	8	0		-	7	41	2	0		-	10	0	5	0		-	**-**	-
Heavy %	30%	1.3%	1.8%	0%		-	1.5%	50%	1.4%	0%		-	1%	1.8%	28.6%	0%		-	55.6%	0%	23.8%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Peak Hour: 07:45 AM - 08:45 AM **Weather:**

Start Time	N Approach HWY 50						E Approach COLUMBIA WAY						S Approach HWY 50						W Approach COLUMBIA WAY						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:45:00	1	98	12	0	0	111	28	0	32	0	0	60	15	46	0	0	0	61	1	0	0	0	0	1	233
08:00:00	0	94	10	0	0	104	19	0	19	0	0	38	16	35	0	0	0	51	3	0	0	0	0	3	196
08:15:00	0	104	15	0	0	119	16	0	16	0	0	32	25	54	1	0	0	80	2	0	1	0	0	3	234
08:30:00	0	87	10	0	0	97	10	1	14	0	0	25	12	62	0	0	0	74	1	0	1	0	0	2	198
Grand Total	1	383	47	0	0	431	73	1	81	0	0	155	68	197	1	0	0	266	7	0	2	0	0	9	**861**
Approach%	0.2%	88.9%	10.9%	0%		-	47.1%	0.6%	52.3%	0%		-	25.6%	74.1%	0.4%	0%		-	77.8%	0%	22.2%	0%		-	**-**
Totals %	0.1%	44.5%	5.5%	0%		50.1%	8.5%	0.1%	9.4%	0%		18%	7.9%	22.9%	0.1%	0%		30.9%	0.8%	0%	0.2%	0%		1%	**-**
PHF	0.25	0.92	0.78	0		0.91	0.65	0.25	0.63	0		0.65	0.68	0.79	0.25	0		0.83	0.58	0	0.5	0		0.75	**-**
Heavy	0	4	2	0		6	1	1	1	0		3	1	9	1	0		11	5	0	2	0		7	**-**
Heavy %	0%	1%	4.3%	0%		1.4%	1.4%	100%	1.2%	0%		1.9%	1.5%	4.6%	100%	0%		4.1%	71.4%	0%	100%	0%		77.8%	**-**
Lights	1	379	45	0		425	72	0	80	0		152	67	188	0	0		255	2	0	0	0		2	**-**
Lights %	100%	99%	95.7%	0%		98.6%	98.6%	0%	98.8%	0%		98.1%	98.5%	95.4%	0%	0%		95.9%	28.6%	0%	0%	0%		22.2%	**-**
Single-Unit Trucks	0	4	1	0		5	1	1	0	0		2	0	6	1	0		7	4	0	1	0		5	**-**
Single-Unit Trucks %	0%	1%	2.1%	0%		1.2%	1.4%	100%	0%	0%		1.3%	0%	3%	100%	0%		2.6%	57.1%	0%	50%	0%		55.6%	**-**
Buses	0	0	1	0		1	0	0	1	0		1	1	2	0	0		3	0	0	0	0		0	**-**
Buses %	0%	0%	2.1%	0%		0.2%	0%	0%	1.2%	0%		0.6%	1.5%	1%	0%	0%		1.1%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	1	0	1	0		2	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.4%	14.3%	0%	50%	0%		22.2%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: HWY 50 & COLUMBIA WAY
Date: Thu, Apr 04, 2024 Deployment Lead: David Chu

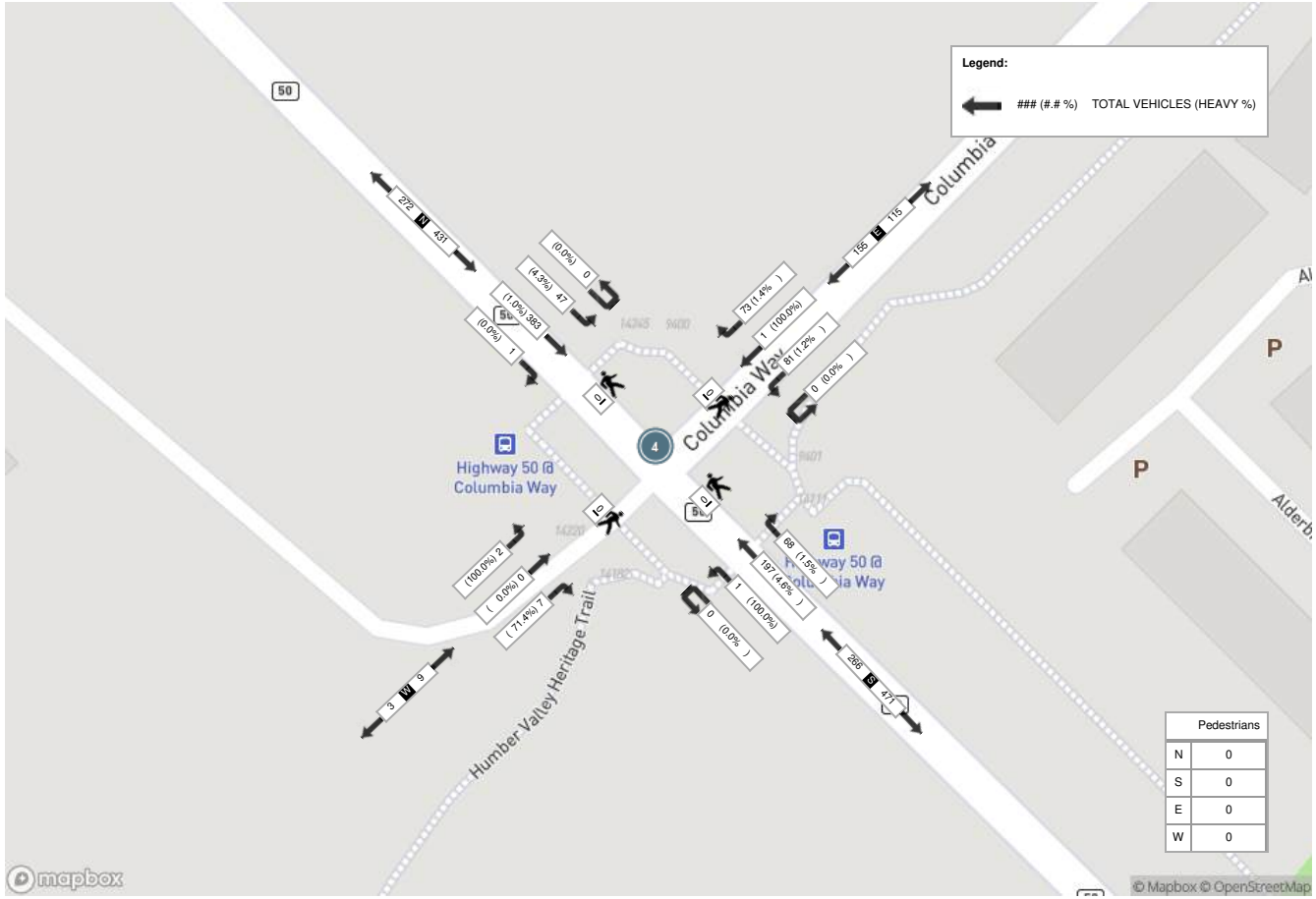
Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (2.15 °C)

Start Time	N Approach HWY 50						E Approach COLUMBIA WAY						S Approach HWY 50						W Approach COLUMBIA WAY						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	0	62	18	0	0	80	10	0	18	0	0	28	38	117	0	0	0	155	0	0	0	0	0	0	263
17:00:00	0	61	17	0	0	78	10	0	14	0	0	24	43	123	0	0	0	166	1	0	0	0	0	1	269
17:15:00	0	67	21	0	0	88	14	0	18	0	0	32	36	98	0	0	0	134	0	0	0	0	0	0	254
17:30:00	1	58	14	0	0	73	13	0	13	0	0	26	39	107	0	0	0	146	0	0	0	0	0	0	245
Grand Total	1	248	70	0	0	319	47	0	63	0	0	110	156	445	0	0	0	601	1	0	0	0	0	1	**1031**
Approach%	0.3%	77.7%	21.9%	0%		-	42.7%	0%	57.3%	0%		-	26%	74%	0%	0%		-	100%	0%	0%	0%		-	**-**
Totals %	0.1%	24.1%	6.8%	0%		30.9%	4.6%	0%	6.1%	0%		10.7%	15.1%	43.2%	0%	0%		58.3%	0.1%	0%	0%	0%		0.1%	**-**
PHF	0.25	0.93	0.83	0		0.91	0.84	0	0.88	0		0.86	0.91	0.9	0	0		0.91	0.25	0	0	0		0.25	**-**
Heavy	1	3	0	0		4	2	0	1	0		3	0	6	0	0		6	0	0	0	0		0	**-**
Heavy %	100%	1.2%	0%	0%		1.3%	4.3%	0%	1.6%	0%		2.7%	0%	1.3%	0%	0%		1%	0%	0%	0%	0%		0%	**-**
Lights	0	245	70	0		315	45	0	62	0		107	156	439	0	0		595	1	0	0	0		1	**-**
Lights %	0%	98.8%	100%	0%		98.7%	95.7%	0%	98.4%	0%		97.3%	100%	98.7%	0%	0%		99%	100%	0%	0%	0%		100%	**-**
Single-Unit Trucks	0	1	0	0		1	1	0	0	0		1	0	3	0	0		3	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	0.4%	0%	0%		0.3%	2.1%	0%	0%	0%		0.9%	0%	0.7%	0%	0%		0.5%	0%	0%	0%	0%		0%	**-**
Buses	1	2	0	0		3	1	0	1	0		2	0	3	0	0		3	0	0	0	0		0	**-**
Buses %	100%	0.8%	0%	0%		0.9%	2.1%	0%	1.6%	0%		1.8%	0%	0.7%	0%	0%		0.5%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

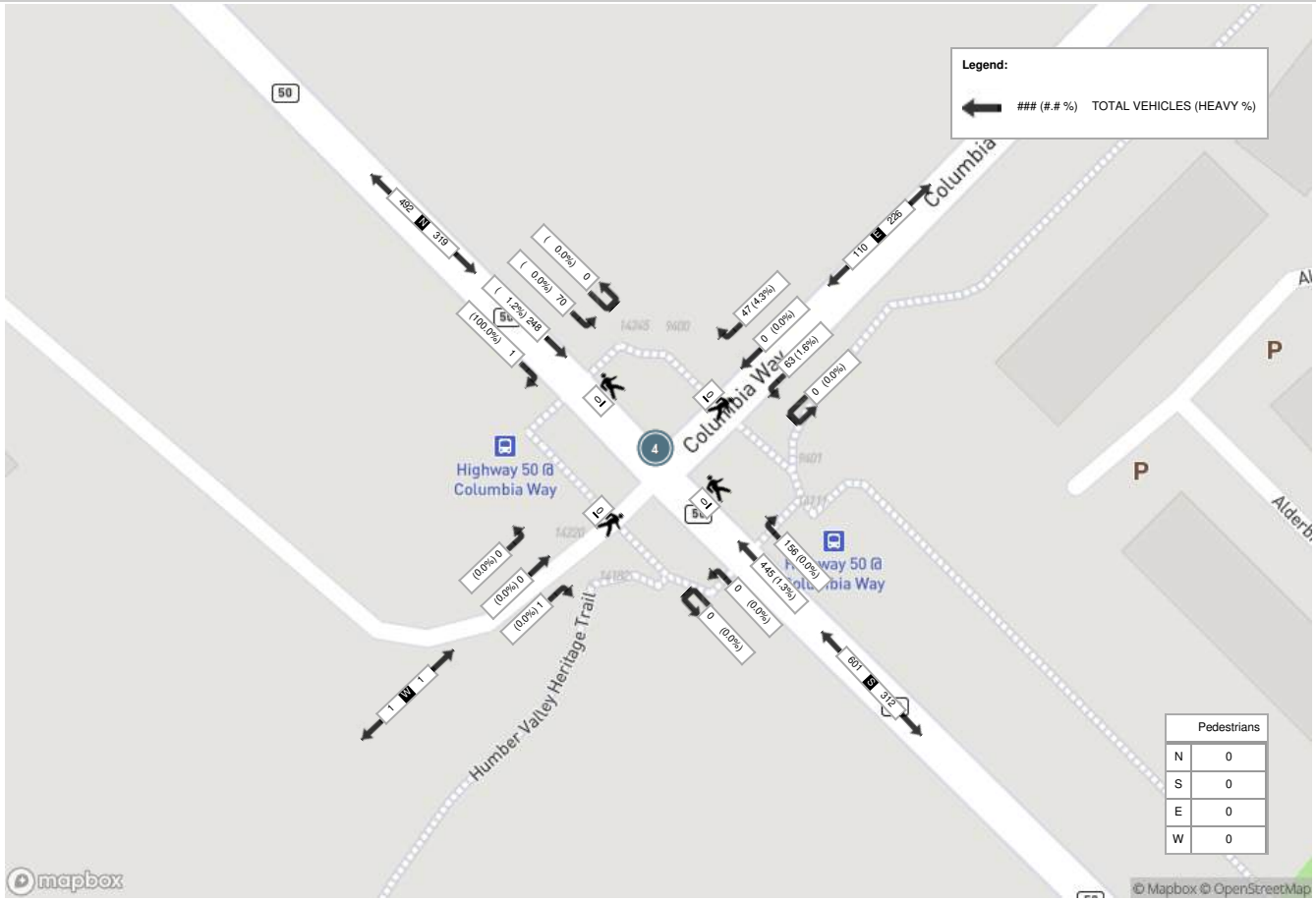
Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Peak Hour: 07:45 AM - 08:45 AM **Weather:**



Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Peak Hour: 04:45 PM - 05:45 PM **Weather: Overcast Clouds (2.15 °C)**



Spectrum

Turning Movement Count
Location Name: HWY 50 & CROSS COUNTRY BLVD / BOLTON HEIGHTS RD
Date: Thu, Apr 04, 2024 Deployment Lead: David Chu

Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Turning Movement Count (5 . HWY 50 & CROSS COUNTRY BLVD / BOLTON HEIGHTS RD) CustID: 05017889

Start Time	N Approach QUEEN ST / HWY 50						E Approach BOLTON HEIGHTS						S Approach QUEEN ST / HWY 50						W Approach CROSS COUNTRY BLVD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	80	3	0	1	83	3	0	12	0	0	15	1	17	0	0	0	18	6	0	0	0	0	6	122	
06:15:00	0	86	0	0	0	86	1	0	9	0	0	10	1	21	0	0	0	22	7	0	0	0	0	7	125	
06:30:00	1	93	4	0	0	98	1	2	8	0	0	11	1	40	3	0	0	44	3	0	3	0	0	6	159	
06:45:00	0	120	3	0	0	123	6	3	18	0	0	27	1	42	6	0	0	49	4	3	0	0	0	7	206	612
07:00:00	2	97	1	0	0	100	3	0	14	0	0	17	2	41	2	0	0	45	6	1	2	0	0	9	171	661
07:15:00	1	107	2	0	1	110	4	0	21	0	0	25	4	33	1	0	0	38	12	0	3	0	0	15	188	724
07:30:00	2	110	9	0	0	121	5	0	20	0	0	25	5	43	1	0	0	49	11	2	3	0	0	16	211	776
07:45:00	1	123	4	0	5	128	2	0	23	0	0	25	9	50	2	0	0	61	10	3	5	0	0	18	232	802
08:00:00	1	114	17	0	0	132	8	2	10	0	0	20	20	54	3	0	0	77	6	4	3	1	3	14	243	874
08:15:00	1	98	22	0	12	121	27	7	65	0	0	99	20	55	0	0	0	75	3	14	2	0	3	19	314	1000
08:30:00	3	100	6	0	0	109	19	5	30	0	0	54	6	65	6	0	0	77	7	6	4	0	2	17	257	1046
08:45:00	1	85	5	0	0	91	13	2	24	0	0	39	10	59	5	0	0	74	1	1	0	0	0	2	206	1020
09:00:00	2	77	3	0	0	82	2	1	9	0	0	12	11	65	4	0	0	80	6	1	3	0	0	10	184	961
09:15:00	1	71	2	0	0	74	4	1	9	0	1	14	5	54	5	0	1	64	6	2	3	0	0	11	163	810
09:30:00	1	78	2	0	0	81	1	1	9	0	0	11	10	41	4	0	0	55	2	1	1	0	0	4	151	704
09:45:00	1	97	1	0	0	99	1	1	14	0	0	16	8	55	4	0	0	67	5	1	2	0	0	8	190	688
BREAK																										
15:00:00	1	58	3	0	13	62	39	11	40	0	0	90	12	118	16	0	0	146	3	0	2	0	8	5	303	
15:15:00	2	74	4	0	0	80	7	3	11	0	1	21	13	105	21	0	1	139	1	3	1	0	4	5	245	
15:30:00	3	66	5	0	0	74	6	0	9	0	0	15	15	133	11	0	0	159	1	0	1	0	0	2	250	
15:45:00	1	85	5	0	1	91	9	2	13	0	0	24	15	124	15	0	0	154	3	1	2	0	0	6	275	1073
16:00:00	5	78	4	0	0	87	5	0	10	0	0	15	16	143	18	0	0	177	2	2	3	0	1	7	286	1056
16:15:00	3	72	2	0	0	77	6	4	10	0	0	20	19	143	18	0	0	180	0	0	1	0	0	1	278	1089
16:30:00	1	51	5	0	0	57	4	1	17	0	0	22	22	157	14	0	0	193	1	1	5	0	0	7	279	1118
16:45:00	4	60	7	0	0	71	6	2	6	0	0	14	23	166	13	0	0	202	4	2	1	0	0	7	294	1137
17:00:00	4	74	8	0	2	86	4	4	10	0	0	18	16	164	21	0	0	201	0	1	4	0	2	5	310	1161
17:15:00	5	82	4	0	0	91	4	1	10	0	0	15	29	143	23	0	3	195	7	3	1	0	0	11	312	1195
17:30:00	6	68	6	0	0	80	4	2	14	0	0	20	20	153	18	0	0	191	1	1	2	0	0	4	295	1211
17:45:00	3	68	5	0	1	76	8	1	14	0	0	23	18	137	10	0	0	165	5	2	1	0	1	8	272	1189
18:00:00	3	79	4	0	0	86	3	2	12	0	0	17	16	139	13	0	0	168	5	2	1	0	0	8	279	1158
18:15:00	1	59	8	0	1	68	4	1	13	0	0	18	21	137	7	0	1	165	5	2	0	0	0	7	258	1104
18:30:00	4	70	7	0	9	81	9	1	8	0	0	18	14	112	20	0	0	146	2	2	2	0	0	6	251	1060
18:45:00	2	76	7	0	6	85	5	2	8	0	2	15	15	70	13	0	2	98	4	3	2	0	0	9	207	995
Grand Total	66	2656	168	0	52	2890	223	62	500	0	4	785	398	2879	297	0	8	3574	139	64	63	1	24	267	**7516**	-
Approach%	2.3%	91.9%	5.8%	0%		-	28.4%	7.9%	63.7%	0%		-	11.1%	80.6%	8.3%	0%		-	52.1%	24%	23.6%	0.4%		-	-	-
Totals %	0.9%	35.3%	2.2%	0%		38.5%	3%	0.8%	6.7%	0%		10.4%	5.3%	38.3%	4%	0%		47.6%	1.8%	0.9%	0.8%	0%		3.6%	-	-
Heavy	5	39	1	0		-	2	1	1	0		-	5	43	2	0		-	3	1	2	0		-	-	-
Heavy %	7.6%	1.5%	0.6%	0%		-	0.9%	1.6%	0.2%	0%		-	1.3%	1.5%	0.7%	0%		-	2.2%	1.6%	3.2%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

Spectrum

Turning Movement Count
Location Name: HWY 50 & CROSS COUNTRY BLVD / BOLTON HEIGHTS RD
Date: Thu, Apr 04, 2024 Deployment Lead: David Chu

Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Peak Hour: 07:45 AM - 08:45 AM **Weather:**

Start Time	N Approach QUEEN ST / HWY 50						E Approach BOLTON HEIGHTS						S Approach QUEEN ST / HWY 50						W Approach CROSS COUNTRY BLVD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:45:00	1	123	4	0	5	128	2	0	23	0	0	25	9	50	2	0	0	61	10	3	5	0	0	18	232
08:00:00	1	114	17	0	0	132	8	2	10	0	0	20	20	54	3	0	0	77	6	4	3	1	3	14	243
08:15:00	1	98	22	0	12	121	27	7	65	0	0	99	20	55	0	0	0	75	3	14	2	0	3	19	314
08:30:00	3	100	6	0	0	109	19	5	30	0	0	54	6	65	6	0	0	77	7	6	4	0	2	17	257
Grand Total	6	435	49	0	17	490	56	14	128	0	0	198	55	224	11	0	0	290	26	27	14	1	8	68	**1046**
Approach%	1.2%	88.8%	10%	0%		-	28.3%	7.1%	64.6%	0%		-	19%	77.2%	3.8%	0%		-	38.2%	39.7%	20.6%	1.5%		-	**-**
Totals %	0.6%	41.6%	4.7%	0%		46.8%	5.4%	1.3%	12.2%	0%		18.9%	5.3%	21.4%	1.1%	0%		27.7%	2.5%	2.6%	1.3%	0.1%		6.5%	**-**
PHF	0.5	0.88	0.56	0		0.93	0.52	0.5	0.49	0		0.5	0.69	0.86	0.46	0		0.94	0.65	0.48	0.7	0.25		0.89	**-**
Heavy	0	6	0	0		6	1	0	0	0		1	0	9	1	0		10	1	1	0	0		2	**-**
Heavy %	0%	1.4%	0%	0%		1.2%	1.8%	0%	0%	0%		0.5%	0%	4%	9.1%	0%		3.4%	3.8%	3.7%	0%	0%		2.9%	**-**
Lights	6	429	49	0		484	55	14	128	0		197	55	215	10	0		280	25	26	14	1		66	**-**
Lights %	100%	98.6%	100%	0%		98.8%	98.2%	100%	100%	0%		99.5%	100%	96%	90.9%	0%		96.6%	96.2%	96.3%	100%	100%		97.1%	**-**
Single-Unit Trucks	0	4	0	0		4	0	0	0	0		0	0	7	1	0		8	1	1	0	0		2	**-**
Single-Unit Trucks %	0%	0.9%	0%	0%		0.8%	0%	0%	0%	0%		0%	0%	3.1%	9.1%	0%		2.8%	3.8%	3.7%	0%	0%		2.9%	**-**
Buses	0	1	0	0		1	1	0	0	0		1	0	1	0	0		1	0	0	0	0		0	**-**
Buses %	0%	0.2%	0%	0%		0.2%	1.8%	0%	0%	0%		0.5%	0%	0.4%	0%	0%		0.3%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	0	1	0	0		1	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	**-**
Articulated Trucks %	0%	0.2%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.3%	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	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	17	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	8	-	**-**
Pedestrians%	-	-	-	-	68%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	32%		**-**

Spectrum

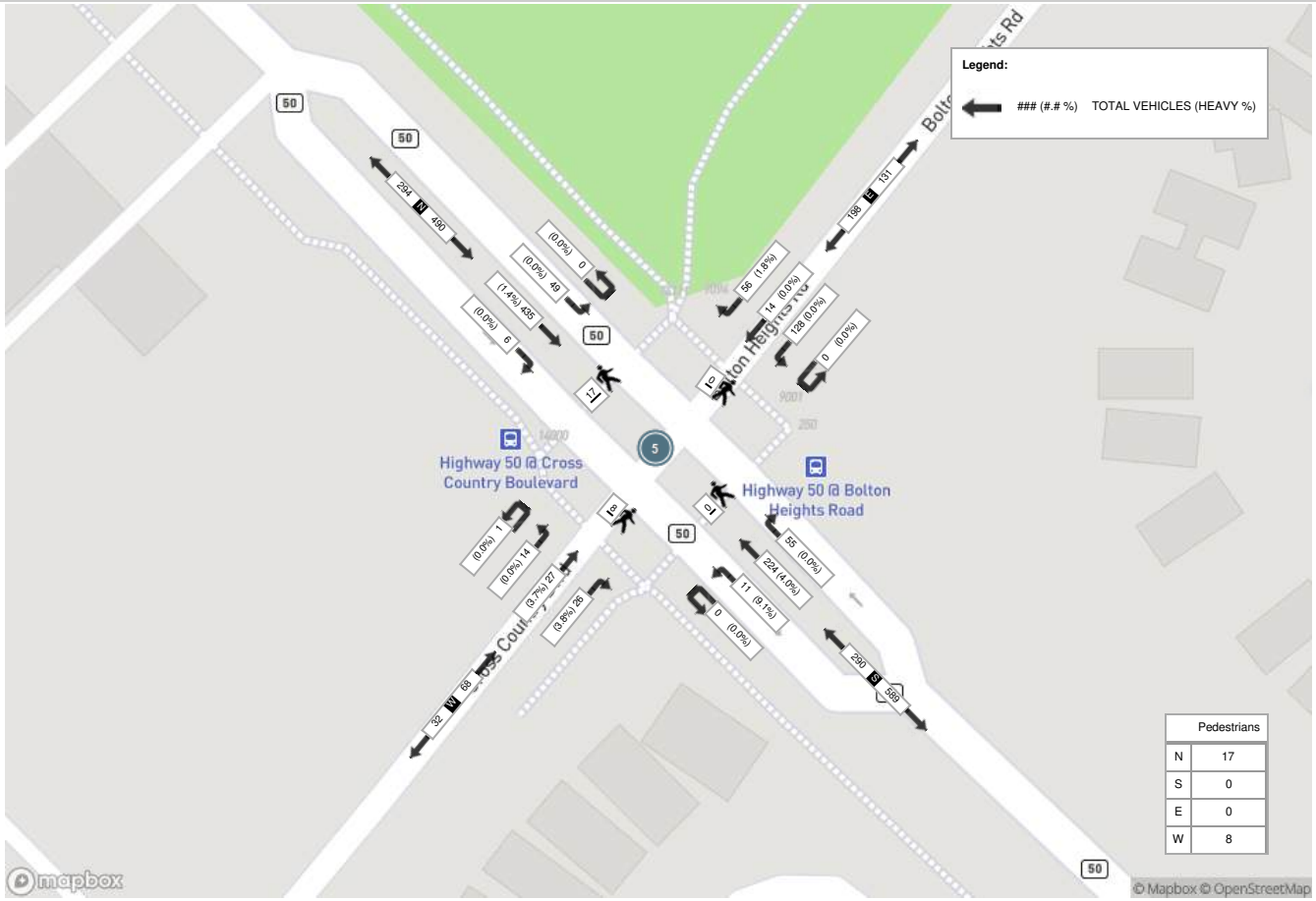
Turning Movement Count
Location Name: HWY 50 & CROSS COUNTRY BLVD / BOLTON HEIGHTS RD
Date: Thu, Apr 04, 2024 Deployment Lead: David Chu

Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (2.15 °C)

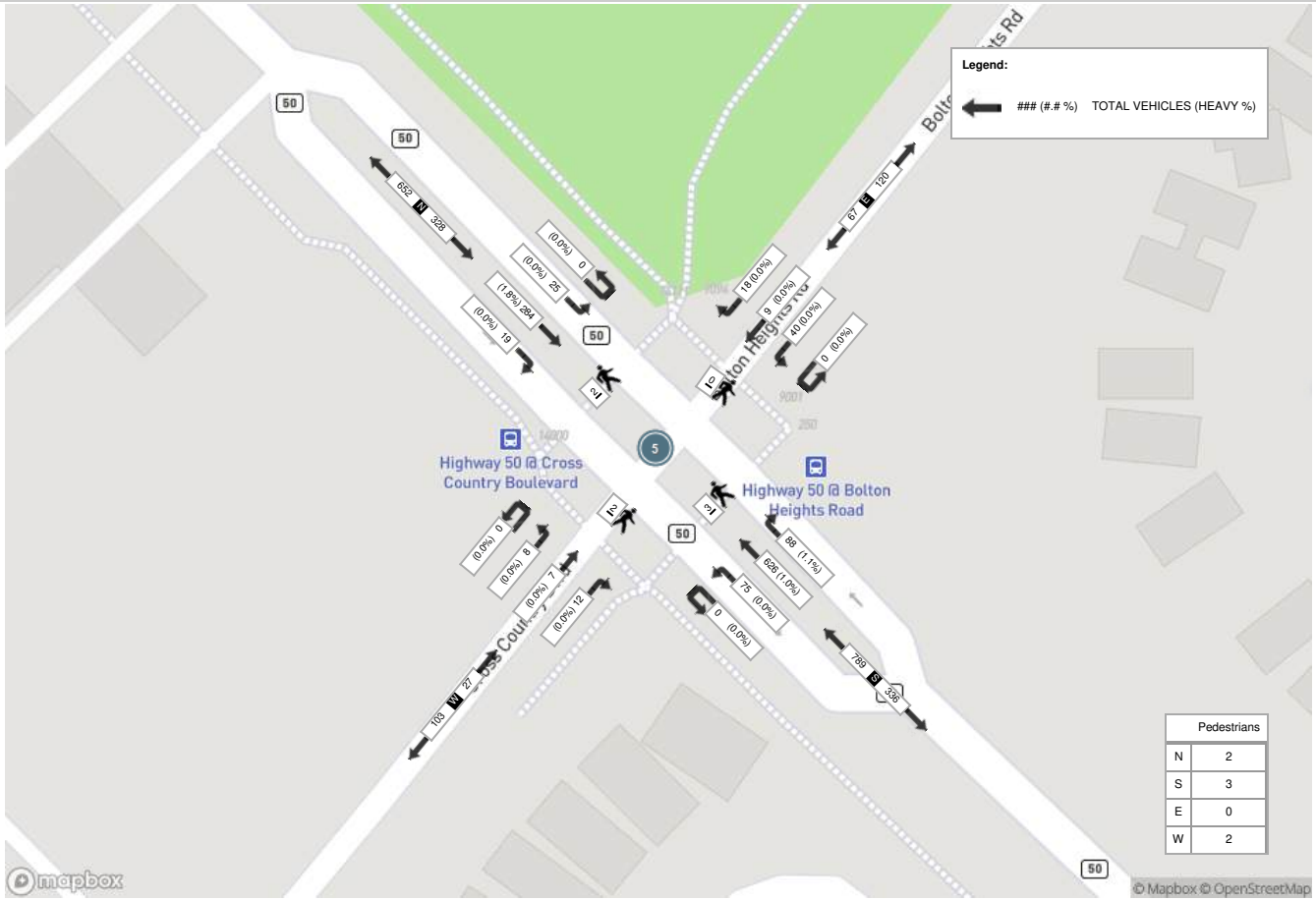
Start Time	N Approach QUEEN ST / HWY 50						E Approach BOLTON HEIGHTS						S Approach QUEEN ST / HWY 50						W Approach CROSS COUNTRY BLVD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	4	60	7	0	0	71	6	2	6	0	0	14	23	166	13	0	0	202	4	2	1	0	0	7	294
17:00:00	4	74	8	0	2	86	4	4	10	0	0	18	16	164	21	0	0	201	0	1	4	0	2	5	310
17:15:00	5	82	4	0	0	91	4	1	10	0	0	15	29	143	23	0	3	195	7	3	1	0	0	11	312
17:30:00	6	68	6	0	0	80	4	2	14	0	0	20	20	153	18	0	0	191	1	1	2	0	0	4	295
Grand Total	19	284	25	0	2	328	18	9	40	0	0	67	88	626	75	0	3	789	12	7	8	0	2	27	**1211**
Approach%	5.8%	86.6%	7.6%	0%		-	26.9%	13.4%	59.7%	0%		-	11.2%	79.3%	9.5%	0%		-	44.4%	25.9%	29.6%	0%		-	**-**
Totals %	1.6%	23.5%	2.1%	0%		27.1%	1.5%	0.7%	3.3%	0%		5.5%	7.3%	51.7%	6.2%	0%		65.2%	1%	0.6%	0.7%	0%		2.2%	**-**
PHF	0.79	0.87	0.78	0		0.9	0.75	0.56	0.71	0		0.84	0.76	0.94	0.82	0		0.98	0.43	0.58	0.5	0		0.61	**-**
Heavy	0	5	0	0		5	0	0	0	0		0	1	6	0	0		7	0	0	0	0		0	**-**
Heavy %	0%	1.8%	0%	0%		1.5%	0%	0%	0%	0%		0%	1.1%	1%	0%	0%		0.9%	0%	0%	0%	0%		0%	**-**
Lights	19	279	25	0		323	18	9	40	0		67	87	620	75	0		782	12	7	8	0		27	**-**
Lights %	100%	98.2%	100%	0%		98.5%	100%	100%	100%	0%		100%	98.9%	99%	100%	0%		99.1%	100%	100%	100%	0%		100%	**-**
Single-Unit Trucks	0	2	0	0		2	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	0.7%	0%	0%		0.6%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.4%	0%	0%	0%	0%		0%	**-**
Buses	0	3	0	0		3	0	0	0	0		0	1	3	0	0		4	0	0	0	0		0	**-**
Buses %	0%	1.1%	0%	0%		0.9%	0%	0%	0%	0%		0%	1.1%	0.5%	0%	0%		0.5%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
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	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	2	-	**-**
Pedestrians%	-	-	-	-	28.6%		-	-	-	-	0%		-	-	-	-	42.9%		-	-	-	-	28.6%		**-**

Peak Hour: 07:45 AM - 08:45 AM Weather:



Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Peak Hour: 04:45 PM - 05:45 PM **Weather: Overcast Clouds (2.15 °C)**



Spectrum

Turning Movement Count
Location Name: HWY 50 & KING ST E
Date: Thu, Apr 04, 2024 Deployment Lead: David Chu

Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Turning Movement Count (6 . HWY 50 & KING ST E) CustID: 00901958

Start Time	N Approach HWY 50						E Approach KING ST						S Approach HWY 50						W Approach KING ST						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	3	100	5	0	0	108	3	16	16	0	0	35	8	22	2	0	0	32	7	15	2	0	0	24	199	
06:15:00	4	107	13	0	0	124	2	14	18	0	0	34	8	18	3	0	0	29	3	28	8	0	0	39	226	
06:30:00	5	93	7	0	0	105	5	18	31	0	0	54	10	38	5	0	0	53	6	33	4	0	0	43	255	
06:45:00	8	136	14	0	0	158	7	39	43	0	0	89	14	40	12	0	0	66	15	31	9	0	1	55	368	1048
07:00:00	3	115	15	0	0	133	3	31	59	0	0	93	10	36	9	0	0	55	11	47	6	0	0	64	345	1194
07:15:00	8	148	10	0	2	166	4	35	55	0	2	94	21	41	10	0	0	72	19	36	4	0	0	59	391	1359
07:30:00	9	126	14	0	0	149	6	30	51	0	1	87	15	36	10	0	1	61	10	44	9	0	0	63	360	1464
07:45:00	6	146	11	0	0	163	6	37	66	0	0	109	26	43	5	0	1	74	7	44	6	0	0	57	403	1499
08:00:00	4	108	15	0	0	127	14	40	64	0	1	118	20	56	8	0	0	84	15	41	8	0	0	64	393	1547
08:15:00	9	132	13	0	0	154	9	42	56	0	0	107	31	59	10	0	0	100	28	52	6	0	0	86	447	1603
08:30:00	5	140	15	0	0	160	18	52	67	0	0	137	24	53	9	0	0	86	20	60	2	0	0	82	465	1708
08:45:00	4	113	11	0	0	128	10	57	66	0	2	133	35	74	22	0	0	131	8	43	6	0	2	57	449	1754
09:00:00	7	105	13	0	2	125	10	29	52	0	0	91	24	76	14	0	0	114	14	41	3	0	0	58	388	1749
09:15:00	5	89	14	0	1	108	8	19	43	0	0	70	29	54	19	0	0	102	16	27	3	0	0	46	326	1628
09:30:00	5	86	14	0	0	105	6	29	44	0	5	79	27	65	12	0	0	104	11	31	2	0	0	44	332	1495
09:45:00	6	117	11	0	0	134	13	23	44	0	2	80	30	60	20	0	0	110	18	29	6	0	0	53	377	1423
BREAK																										
15:00:00	7	90	17	0	8	114	6	57	56	0	4	119	80	129	27	0	0	236	17	38	11	0	2	66	535	
15:15:00	6	83	11	0	3	100	10	54	52	0	2	116	78	133	31	0	0	242	16	20	9	0	0	45	503	
15:30:00	6	82	10	0	2	98	10	55	45	0	0	110	67	133	21	0	3	221	17	46	9	0	0	72	501	
15:45:00	8	93	6	0	3	107	11	61	48	0	0	120	73	142	26	0	4	241	16	56	10	1	2	83	551	2090
16:00:00	4	80	10	0	2	94	11	52	54	0	4	117	80	136	19	0	2	235	13	46	15	0	3	74	520	2075
16:15:00	6	74	14	0	0	94	12	62	56	0	0	130	107	160	15	0	9	282	15	41	11	0	6	67	573	2145
16:30:00	4	61	7	0	3	72	8	65	38	0	2	111	113	162	21	0	4	296	22	60	9	0	2	91	570	2214
16:45:00	7	78	8	0	0	93	10	73	41	0	2	124	116	173	14	0	0	303	29	54	8	0	2	91	611	2274
17:00:00	4	68	11	0	3	83	9	57	53	0	1	119	101	164	26	0	2	291	23	54	16	0	4	93	586	2340
17:15:00	3	103	7	0	6	113	8	58	50	0	3	116	103	158	12	0	1	273	18	65	11	0	2	94	596	2363
17:30:00	8	75	6	0	2	89	12	62	52	0	2	126	95	167	26	0	3	288	17	51	16	0	2	84	587	2380
17:45:00	8	80	7	0	2	95	8	48	52	0	4	108	80	134	28	0	4	242	18	49	17	0	2	84	529	2298
18:00:00	7	77	2	0	1	86	7	56	48	0	2	111	77	150	29	0	0	256	16	42	9	0	1	67	520	2232
18:15:00	6	89	7	0	5	102	7	36	50	0	1	93	62	119	25	0	2	206	17	41	13	0	1	71	472	2108
18:30:00	7	75	8	0	2	90	5	35	51	0	3	91	64	129	25	0	3	218	10	30	8	0	0	48	447	1968
18:45:00	7	84	10	0	0	101	8	34	41	0	4	83	40	98	24	0	1	162	16	29	6	0	2	51	397	1836
Grand Total	189	3153	336	0	47	3678	266	1376	1562	0	47	3204	1668	3058	539	0	40	5265	488	1324	262	1	34	2075	**14222**	-
Approach%	5.1%	85.7%	9.1%	0%		-	8.3%	42.9%	48.8%	0%		-	31.7%	58.1%	10.2%	0%		-	23.5%	63.8%	12.6%	0%		-	-	-
Totals %	1.3%	22.2%	2.4%	0%		25.9%	1.9%	9.7%	11%	0%		22.5%	11.7%	21.5%	3.8%	0%		37%	3.4%	9.3%	1.8%	0%		14.6%	-	-
Heavy	5	31	5	0		-	1	19	8	0		-	9	36	6	0		-	6	16	6	0		-	-	-
Heavy %	2.6%	1%	1.5%	0%		-	0.4%	1.4%	0.5%	0%		-	0.5%	1.2%	1.1%	0%		-	1.2%	1.2%	2.3%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

Spectrum

Turning Movement Count
Location Name: HWY 50 & KING ST E
Date: Thu, Apr 04, 2024 Deployment Lead: David Chu

Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Peak Hour: 08:00 AM - 09:00 AM **Weather:**

Start Time	N Approach HWY 50						E Approach KING ST						S Approach HWY 50						W Approach KING ST						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	4	108	15	0	0	127	14	40	64	0	1	118	20	56	8	0	0	84	15	41	8	0	0	64	393
08:15:00	9	132	13	0	0	154	9	42	56	0	0	107	31	59	10	0	0	100	28	52	6	0	0	86	447
08:30:00	5	140	15	0	0	160	18	52	67	0	0	137	24	53	9	0	0	86	20	60	2	0	0	82	465
08:45:00	4	113	11	0	0	128	10	57	66	0	2	133	35	74	22	0	0	131	8	43	6	0	2	57	449
Grand Total	22	493	54	0	0	569	51	191	253	0	3	495	110	242	49	0	0	401	71	196	22	0	2	289	**1754**
Approach%	3.9%	86.6%	9.5%	0%		-	10.3%	38.6%	51.1%	0%		-	27.4%	60.3%	12.2%	0%		-	24.6%	67.8%	7.6%	0%		-	**-**
Totals %	1.3%	28.1%	3.1%	0%		32.4%	2.9%	10.9%	14.4%	0%		28.2%	6.3%	13.8%	2.8%	0%		22.9%	4%	11.2%	1.3%	0%		16.5%	**-**
PHF	0.61	0.88	0.9	0		0.89	0.71	0.84	0.94	0		0.9	0.79	0.82	0.56	0		0.77	0.63	0.82	0.69	0		0.84	**-**
Heavy	0	4	0	0		4	0	4	1	0		5	1	8	2	0		11	0	2	0	0		2	**-**
Heavy %	0%	0.8%	0%	0%		0.7%	0%	2.1%	0.4%	0%		1%	0.9%	3.3%	4.1%	0%		2.7%	0%	1%	0%	0%		0.7%	**-**
Lights	22	489	54	0		565	51	187	252	0		490	109	234	47	0		390	71	194	22	0		287	**-**
Lights %	100%	99.2%	100%	0%		99.3%	100%	97.9%	99.6%	0%		99%	99.1%	96.7%	95.9%	0%		97.3%	100%	99%	100%	0%		99.3%	**-**
Single-Unit Trucks	0	3	0	0		3	0	4	1	0		5	1	6	1	0		8	0	1	0	0		1	**-**
Single-Unit Trucks %	0%	0.6%	0%	0%		0.5%	0%	2.1%	0.4%	0%		1%	0.9%	2.5%	2%	0%		2%	0%	0.5%	0%	0%		0.3%	**-**
Buses	0	1	0	0		1	0	0	0	0		0	0	0	1	0		1	0	1	0	0		1	**-**
Buses %	0%	0.2%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0%	2%	0%		0.2%	0%	0.5%	0%	0%		0.3%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.8%	0%	0%		0.5%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	2	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	60%		-	-	-	-	0%		-	-	-	-	40%		**-**

Spectrum

Turning Movement Count
Location Name: HWY 50 & KING ST E
Date: Thu, Apr 04, 2024 Deployment Lead: David Chu

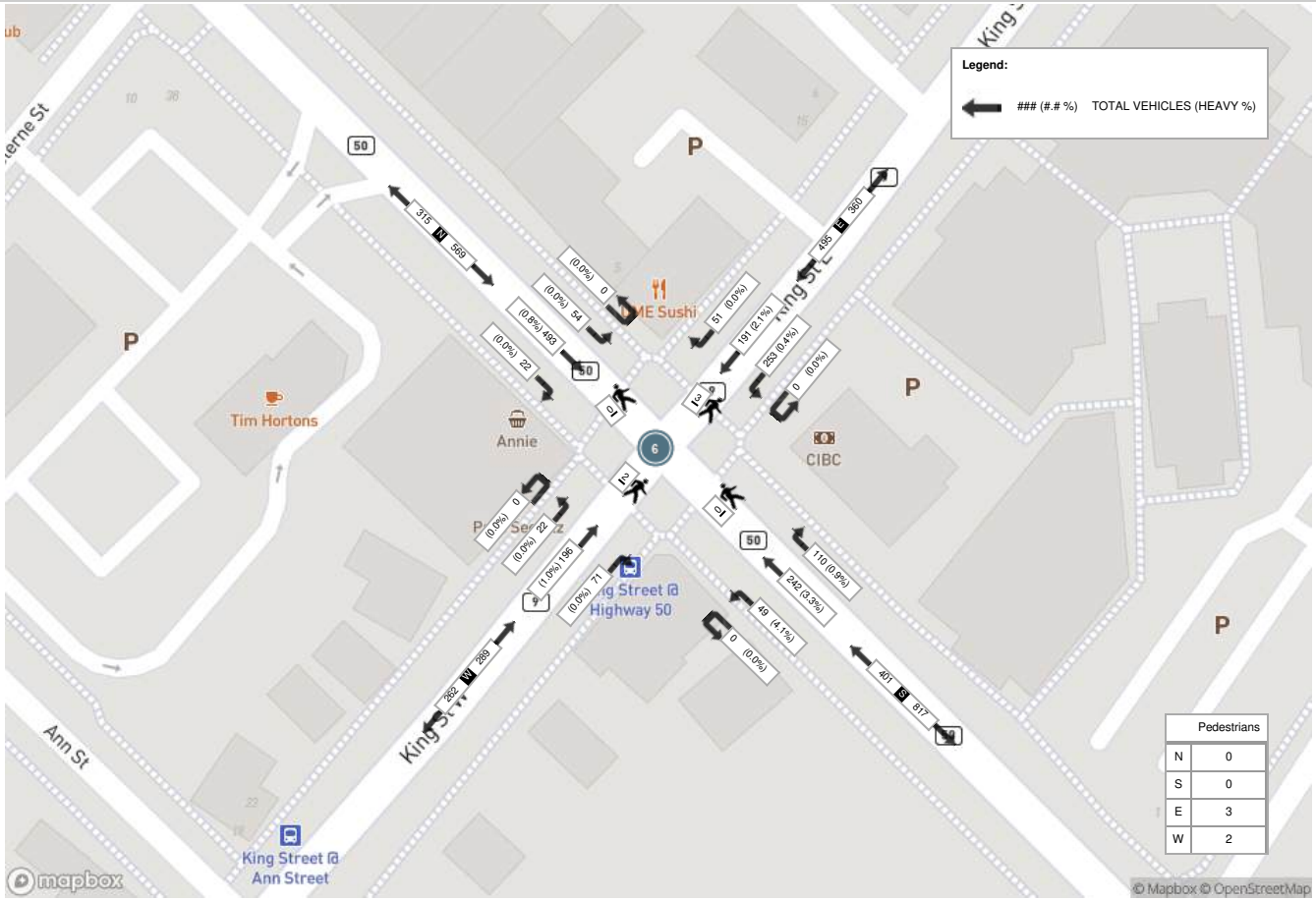
Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (2.15 °C)

Start Time	N Approach HWY 50						E Approach KING ST						S Approach HWY 50						W Approach KING ST						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	7	78	8	0	0	93	10	73	41	0	2	124	116	173	14	0	0	303	29	54	8	0	2	91	611
17:00:00	4	68	11	0	3	83	9	57	53	0	1	119	101	164	26	0	2	291	23	54	16	0	4	93	586
17:15:00	3	103	7	0	6	113	8	58	50	0	3	116	103	158	12	0	1	273	18	65	11	0	2	94	596
17:30:00	8	75	6	0	2	89	12	62	52	0	2	126	95	167	26	0	3	288	17	51	16	0	2	84	587
Grand Total	22	324	32	0	11	378	39	250	196	0	8	485	415	662	78	0	6	1155	87	224	51	0	10	362	**2380**
Approach%	5.8%	85.7%	8.5%	0%		-	8%	51.5%	40.4%	0%		-	35.9%	57.3%	6.8%	0%		-	24%	61.9%	14.1%	0%		-	**-**
Totals %	0.9%	13.6%	1.3%	0%		15.9%	1.6%	10.5%	8.2%	0%		20.4%	17.4%	27.8%	3.3%	0%		48.5%	3.7%	9.4%	2.1%	0%		15.2%	**-**
PHF	0.69	0.79	0.73	0		0.84	0.81	0.86	0.92	0		0.96	0.89	0.96	0.75	0		0.95	0.75	0.86	0.8	0		0.96	**-**
Heavy	1	3	0	0		4	0	1	1	0		2	0	4	1	0		5	1	2	1	0		4	**-**
Heavy %	4.5%	0.9%	0%	0%		1.1%	0%	0.4%	0.5%	0%		0.4%	0%	0.6%	1.3%	0%		0.4%	1.1%	0.9%	2%	0%		1.1%	**-**
Lights	21	321	32	0		374	39	249	195	0		483	415	658	77	0		1150	86	222	50	0		358	**-**
Lights %	95.5%	99.1%	100%	0%		98.9%	100%	99.6%	99.5%	0%		99.6%	100%	99.4%	98.7%	0%		99.6%	98.9%	99.1%	98%	0%		98.9%	**-**
Single-Unit Trucks	1	1	0	0		2	0	1	0	0		1	0	2	1	0		3	1	1	0	0		2	**-**
Single-Unit Trucks %	4.5%	0.3%	0%	0%		0.5%	0%	0.4%	0%	0%		0.2%	0%	0.3%	1.3%	0%		0.3%	1.1%	0.4%	0%	0%		0.6%	**-**
Buses	0	2	0	0		2	0	0	0	0		0	0	2	0	0		2	0	1	1	0		2	**-**
Buses %	0%	0.6%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.2%	0%	0.4%	2%	0%		0.6%	**-**
Articulated Trucks	0	0	0	0		0	0	0	1	0		1	0	0	0	0		0	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0.5%	0%		0.2%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	11	-	-	-	-	-	8	-	-	-	-	-	6	-	-	-	-	-	10	-	**-**
Pedestrians%	-	-	-	-	31.4%		-	-	-	-	22.9%		-	-	-	-	17.1%		-	-	-	-	28.6%		**-**

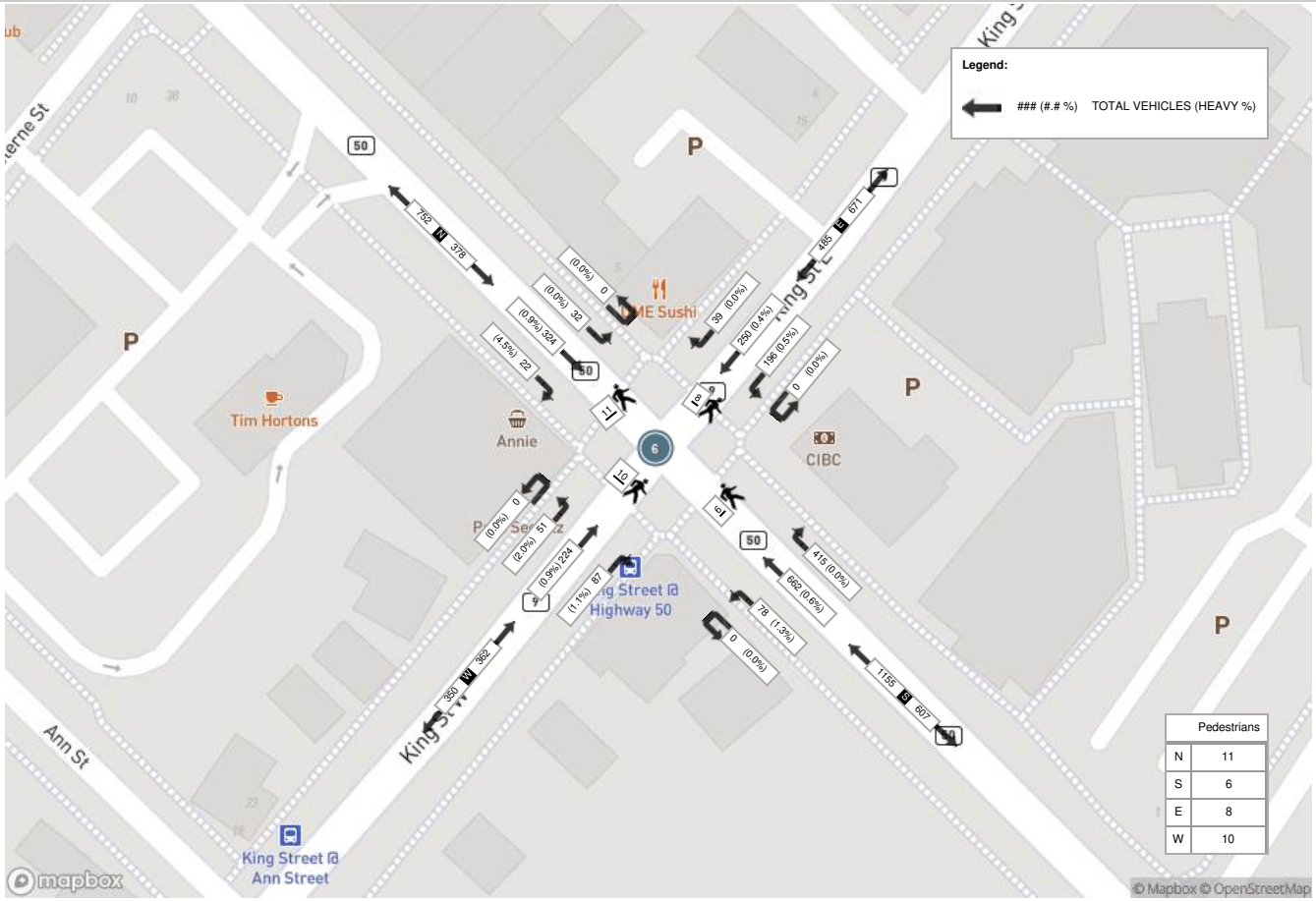
Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Peak Hour: 08:00 AM - 09:00 AM **Weather:**



Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Peak Hour: 04:45 PM - 05:45 PM **Weather: Overcast Clouds (2.15 °C)**



Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Turning Movement Count (7 . COLUMBIA WAY & KINGSVIEW DR) CustID: 99900026

Start Time	E Approach COLUMBIA WAY					S Approach KINGSVIEW DR					W Approach COLUMBIA WAY					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	UTurn W:W	Peds W:	Approach Total		
06:00:00	20	2	0	0	22	3	3	0	0	6	1	4	0	0	5	33	
06:15:00	16	1	0	0	17	9	4	0	0	13	3	3	0	1	6	36	
06:30:00	15	1	0	0	16	4	5	0	0	9	4	7	0	0	11	36	
06:45:00	28	3	0	0	31	1	5	0	0	6	1	8	0	0	9	46	151
07:00:00	22	3	1	0	26	7	2	0	0	9	3	8	0	0	11	46	164
07:15:00	31	3	0	0	34	9	8	0	0	17	0	4	0	0	4	55	183
07:30:00	37	4	0	0	41	5	13	0	0	18	1	14	0	0	15	74	221
07:45:00	45	10	0	2	55	4	10	1	2	15	2	26	0	0	28	98	273
08:00:00	29	34	0	3	63	13	8	0	1	21	4	22	0	0	26	110	337
08:15:00	25	30	0	0	55	20	9	0	0	29	11	29	0	0	40	124	406
08:30:00	18	16	0	0	34	14	8	0	0	22	6	16	0	0	22	78	410
08:45:00	22	7	0	0	29	4	7	0	0	11	3	17	0	0	20	60	372
09:00:00	14	7	0	0	21	7	8	0	0	15	9	9	0	0	18	54	316
09:15:00	16	5	0	0	21	6	5	0	0	11	3	13	0	0	16	48	240
09:30:00	16	5	0	0	21	7	6	0	0	13	5	9	0	0	14	48	210
09:45:00	20	1	0	0	21	4	7	0	1	11	5	13	0	0	18	50	200
BREAK																	
15:00:00	19	6	0	0	25	30	12	0	1	42	18	30	0	0	48	115	
15:15:00	12	3	0	0	15	6	12	0	0	18	12	22	0	0	34	67	
15:30:00	16	7	0	0	23	6	8	0	0	14	15	28	0	0	43	80	
15:45:00	25	7	0	0	32	8	8	0	0	16	21	30	0	0	51	99	361
16:00:00	10	5	0	0	15	9	18	0	0	27	16	34	0	0	50	92	338
16:15:00	17	8	0	0	25	5	7	0	0	12	15	36	0	0	51	88	359
16:30:00	11	5	0	0	16	7	3	0	0	10	18	38	0	0	56	82	361
16:45:00	24	6	0	0	30	2	4	0	0	6	21	36	0	0	57	93	355
17:00:00	18	12	0	0	30	6	4	0	0	10	14	46	0	0	60	100	363
17:15:00	26	12	0	0	38	9	7	0	1	16	18	38	0	0	56	110	385
17:30:00	21	7	0	0	28	11	4	0	0	15	13	39	0	0	52	95	398
17:45:00	16	19	0	0	35	9	7	0	2	16	8	35	0	0	43	94	399
18:00:00	23	11	0	0	34	8	7	0	0	15	11	33	0	0	44	93	392
18:15:00	19	11	0	0	30	8	2	0	0	10	19	33	0	0	52	92	374
18:30:00	22	3	0	0	25	12	5	0	2	17	9	20	0	0	29	71	350
18:45:00	19	6	0	0	25	5	4	0	0	9	12	21	0	0	33	67	323

Grand Total	672	260	1	5	933	258	220	1	10	479	301	721	0	1	1022	**2434**	-
Approach%	72%	27.9%	0.1%		-	53.9%	45.9%	0.2%		-	29.5%	70.5%	0%		-	**-**	-
Totals %	27.6%	10.7%	0%		38.3%	10.6%	9%	0%		19.7%	12.4%	29.6%	0%		42%	**-**	-
Heavy	9	3	0		-	4	4	0		-	2	10	0		-	**-**	-
Heavy %	1.3%	1.2%	0%		-	1.6%	1.8%	0%		-	0.7%	1.4%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

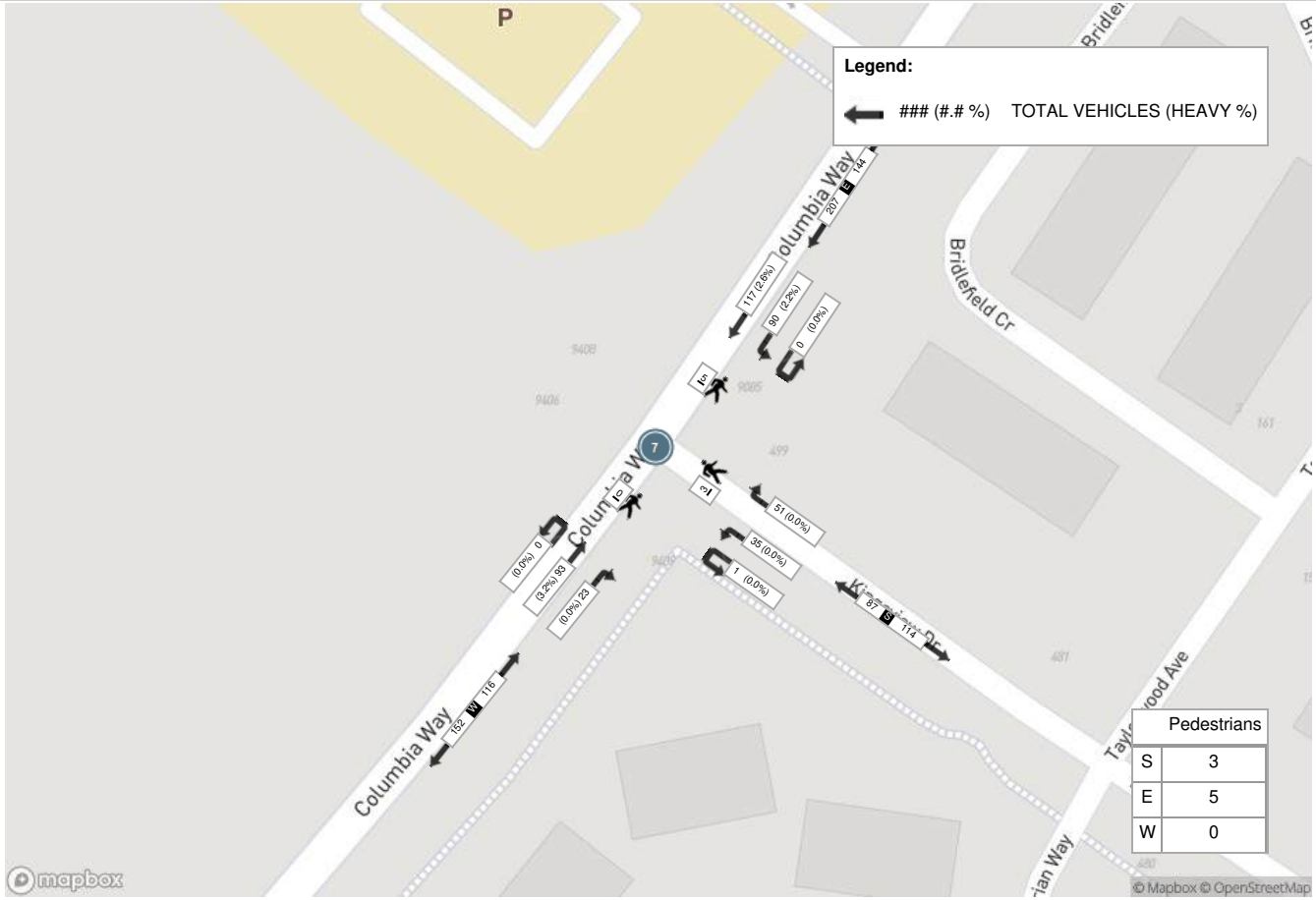
Peak Hour: 07:45 AM - 08:45 AM Weather:

Start Time	E Approach COLUMBIA WAY					S Approach KINGSVIEW DR					W Approach COLUMBIA WAY					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
07:45:00	45	10	0	2	55	4	10	1	2	15	2	26	0	0	28	98
08:00:00	29	34	0	3	63	13	8	0	1	21	4	22	0	0	26	110
08:15:00	25	30	0	0	55	20	9	0	0	29	11	29	0	0	40	124
08:30:00	18	16	0	0	34	14	8	0	0	22	6	16	0	0	22	78
Grand Total	117	90	0	5	207	51	35	1	3	87	23	93	0	0	116	**410**
Approach%	56.5%	43.5%	0%		-	58.6%	40.2%	1.1%		-	19.8%	80.2%	0%		-	**-**
Totals %	28.5%	22%	0%		50.5%	12.4%	8.5%	0.2%		21.2%	5.6%	22.7%	0%		28.3%	**-**
PHF	0.65	0.66	0		0.82	0.64	0.88	0.25		0.75	0.52	0.8	0		0.73	**-**
Heavy	3	2	0		5	0	0	0		0	0	3	0		3	**-**
Heavy %	2.6%	2.2%	0%		2.4%	0%	0%	0%		0%	0%	3.2%	0%		2.6%	**-**
Lights	114	88	0		202	51	35	1		87	23	90	0		113	**-**
Lights %	97.4%	97.8%	0%		97.6%	100%	100%	100%		100%	100%	96.8%	0%		97.4%	**-**
Single-Unit Trucks	2	1	0		3	0	0	0		0	0	1	0		1	**-**
Single-Unit Trucks %	1.7%	1.1%	0%		1.4%	0%	0%	0%		0%	0%	1.1%	0%		0.9%	**-**
Buses	1	1	0		2	0	0	0		0	0	2	0		2	**-**
Buses %	0.9%	1.1%	0%		1%	0%	0%	0%		0%	0%	2.2%	0%		1.7%	**-**
Pedestrians	-	-	-	5	-	-	-	-	3	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	62.5%		-	-	-	37.5%		-	-	-	0%		**-**

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (2.15 °C)

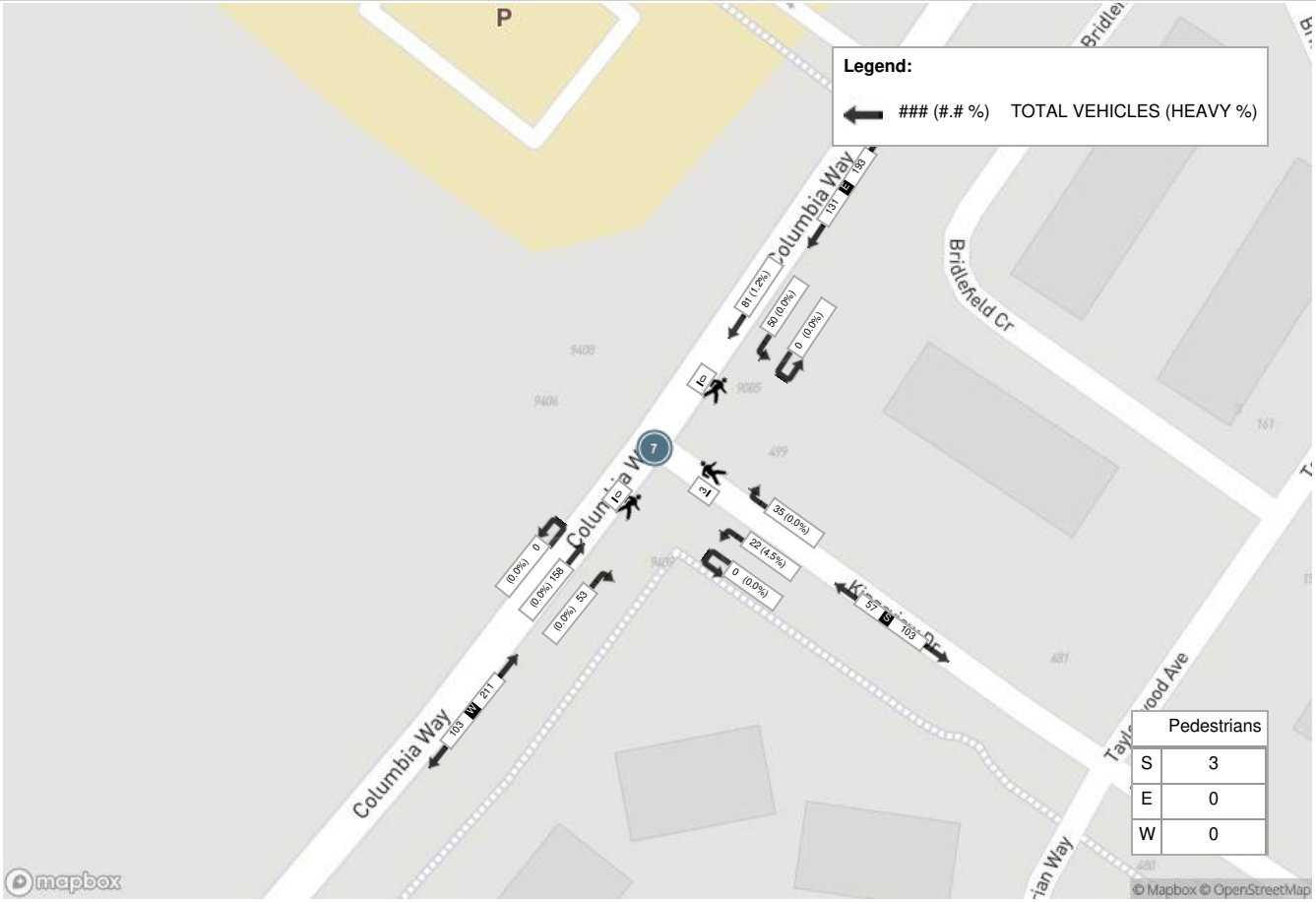
Start Time	E Approach COLUMBIA WAY					S Approach KINGSVIEW DR					W Approach COLUMBIA WAY					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
17:00:00	18	12	0	0	30	6	4	0	0	10	14	46	0	0	60	100
17:15:00	26	12	0	0	38	9	7	0	1	16	18	38	0	0	56	110
17:30:00	21	7	0	0	28	11	4	0	0	15	13	39	0	0	52	95
17:45:00	16	19	0	0	35	9	7	0	2	16	8	35	0	0	43	94
Grand Total	81	50	0	0	131	35	22	0	3	57	53	158	0	0	211	**399**
Approach%	61.8%	38.2%	0%		-	61.4%	38.6%	0%		-	25.1%	74.9%	0%		-	**-**
Totals %	20.3%	12.5%	0%		32.8%	8.8%	5.5%	0%		14.3%	13.3%	39.6%	0%		52.9%	**-**
PHF	0.78	0.66	0		0.86	0.8	0.79	0		0.89	0.74	0.86	0		0.88	**-**
Heavy	1	0	0		1	0	1	0		1	0	0	0		0	**-**
Heavy %	1.2%	0%	0%		0.8%	0%	4.5%	0%		1.8%	0%	0%	0%		0%	**-**
Lights	80	50	0		130	35	21	0		56	53	158	0		211	**-**
Lights %	98.8%	100%	0%		99.2%	100%	95.5%	0%		98.2%	100%	100%	0%		100%	**-**
Single-Unit Trucks	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Single-Unit Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Buses	1	0	0		1	0	1	0		1	0	0	0		0	**-**
Buses %	1.2%	0%	0%		0.8%	0%	4.5%	0%		1.8%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	3	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		**-**

Peak Hour: 07:45 AM - 08:45 AM Weather:



Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (2.15 °C)



Turning Movement Count (8 . COLUMBIA WAY & WESTCHESTER BLVD)

Start Time	E Approach COLUMBIA WAY					S Approach WESTCHESTER BLVD					W Approach COLUMBIA WAY					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	UTurn W:W	Peds W:	Approach Total		
06:00:00	10	1	0	0	11	3	11	0	0	14	3	5	0	0	8	33	
06:15:00	10	1	0	0	11	3	6	0	0	9	2	7	0	0	9	29	
06:30:00	8	0	0	0	8	7	9	0	0	16	3	7	0	0	10	34	
06:45:00	19	3	0	0	22	6	13	0	0	19	2	6	0	0	8	49	145
07:00:00	13	3	0	0	16	12	14	0	0	26	3	11	0	0	14	56	168
07:15:00	19	3	0	0	22	12	14	0	0	26	1	8	0	0	9	57	196
07:30:00	26	0	0	0	26	11	17	0	0	28	4	9	0	0	13	67	229
07:45:00	32	8	0	0	40	9	19	0	0	28	7	8	0	0	15	83	263
08:00:00	44	9	0	0	53	13	13	0	0	26	5	11	0	0	16	95	302
08:15:00	37	4	0	0	41	12	19	0	0	31	15	27	0	0	42	114	359
08:30:00	21	3	1	0	25	6	11	0	0	17	9	20	0	0	29	71	363
08:45:00	17	2	0	0	19	4	9	0	0	13	9	12	0	0	21	53	333
09:00:00	12	4	0	0	16	3	11	0	0	14	5	10	0	0	15	45	283
09:15:00	12	1	0	0	13	7	8	0	0	15	4	12	0	0	16	44	213
09:30:00	13	3	0	0	16	2	6	0	0	8	6	12	0	0	18	42	184
09:45:00	12	2	0	0	14	5	9	0	2	14	5	12	0	0	17	45	176
BREAK																	
15:00:00	9	9	0	0	18	4	12	0	0	16	20	40	0	0	60	94	
15:15:00	7	8	0	0	15	8	8	0	0	16	12	15	0	0	27	58	
15:30:00	14	13	0	0	27	6	12	0	0	18	12	19	0	0	31	76	
15:45:00	19	6	0	0	25	8	5	0	0	13	8	34	0	0	42	80	308
16:00:00	11	8	0	0	19	6	5	0	0	11	12	27	0	0	39	69	283
16:15:00	23	10	0	0	33	3	3	0	0	6	16	28	0	0	44	83	308
16:30:00	10	7	0	0	17	8	7	0	1	15	13	31	0	0	44	76	308
16:45:00	15	11	0	0	26	9	13	0	0	22	14	24	0	0	38	86	314
17:00:00	22	12	0	0	34	3	11	0	0	14	24	31	0	0	55	103	348
17:15:00	24	8	0	0	32	4	11	0	0	15	16	30	0	0	46	93	358
17:30:00	22	5	0	0	27	7	7	0	0	14	19	31	0	0	50	91	373
17:45:00	24	9	0	0	33	8	8	0	0	16	15	30	0	0	45	94	381
18:00:00	18	8	0	0	26	1	10	0	0	11	11	23	0	0	34	71	349
18:15:00	21	8	0	0	29	4	11	0	0	15	10	32	0	0	42	86	342
18:30:00	18	9	0	0	27	1	5	0	0	6	11	19	0	0	30	63	314
18:45:00	17	9	0	0	26	2	9	0	2	11	8	20	0	0	28	65	285

Grand Total	579	187	1	0	767	197	326	0	5	523	304	611	0	0	915	**2205**	-
Approach%	75.5%	24.4%	0.1%		-	37.7%	62.3%	0%		-	33.2%	66.8%	0%		-	**-**	-
Totals %	26.3%	8.5%	0%		34.8%	8.9%	14.8%	0%		23.7%	13.8%	27.7%	0%		41.5%	**-**	-
Heavy	8	2	0		-	5	3	0		-	5	6	0		-	**-**	-
Heavy %	1.4%	1.1%	0%		-	2.5%	0.9%	0%		-	1.6%	1%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

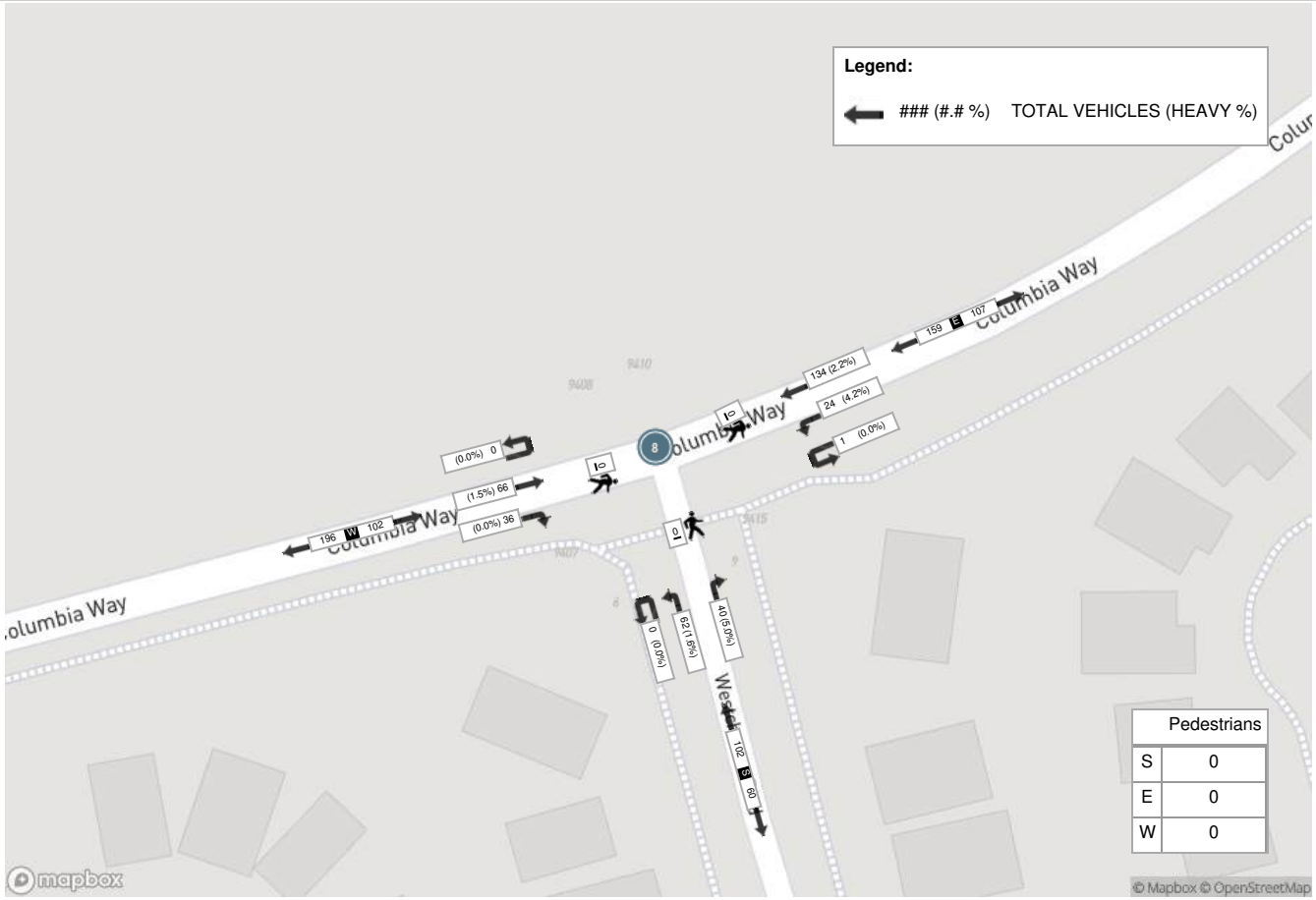
Peak Hour: 07:45 AM - 08:45 AM Weather:

Start Time	E Approach COLUMBIA WAY					S Approach WESTCHESTER BLVD					W Approach COLUMBIA WAY					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
07:45:00	32	8	0	0	40	9	19	0	0	28	7	8	0	0	15	83
08:00:00	44	9	0	0	53	13	13	0	0	26	5	11	0	0	16	95
08:15:00	37	4	0	0	41	12	19	0	0	31	15	27	0	0	42	114
08:30:00	21	3	1	0	25	6	11	0	0	17	9	20	0	0	29	71
Grand Total	134	24	1	0	159	40	62	0	0	102	36	66	0	0	102	**363**
Approach%	84.3%	15.1%	0.6%		-	39.2%	60.8%	0%		-	35.3%	64.7%	0%		-	**-**
Totals %	36.9%	6.6%	0.3%		43.8%	11%	17.1%	0%		28.1%	9.9%	18.2%	0%		28.1%	**-**
PHF	0.76	0.67	0.25		0.75	0.77	0.82	0		0.82	0.6	0.61	0		0.61	**-**
Heavy	3	1	0		4	2	1	0		3	0	1	0		1	**-**
Heavy %	2.2%	4.2%	0%		2.5%	5%	1.6%	0%		2.9%	0%	1.5%	0%		1%	**-**
Lights	131	23	1		155	38	61	0		99	36	65	0		101	**-**
Lights %	97.8%	95.8%	100%		97.5%	95%	98.4%	0%		97.1%	100%	98.5%	0%		99%	**-**
Single-Unit Trucks	2	1	0		3	2	0	0		2	0	0	0		0	**-**
Single-Unit Trucks %	1.5%	4.2%	0%		1.9%	5%	0%	0%		2%	0%	0%	0%		0%	**-**
Buses	1	0	0		1	0	1	0		1	0	1	0		1	**-**
Buses %	0.7%	0%	0%		0.6%	0%	1.6%	0%		1%	0%	1.5%	0%		1%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

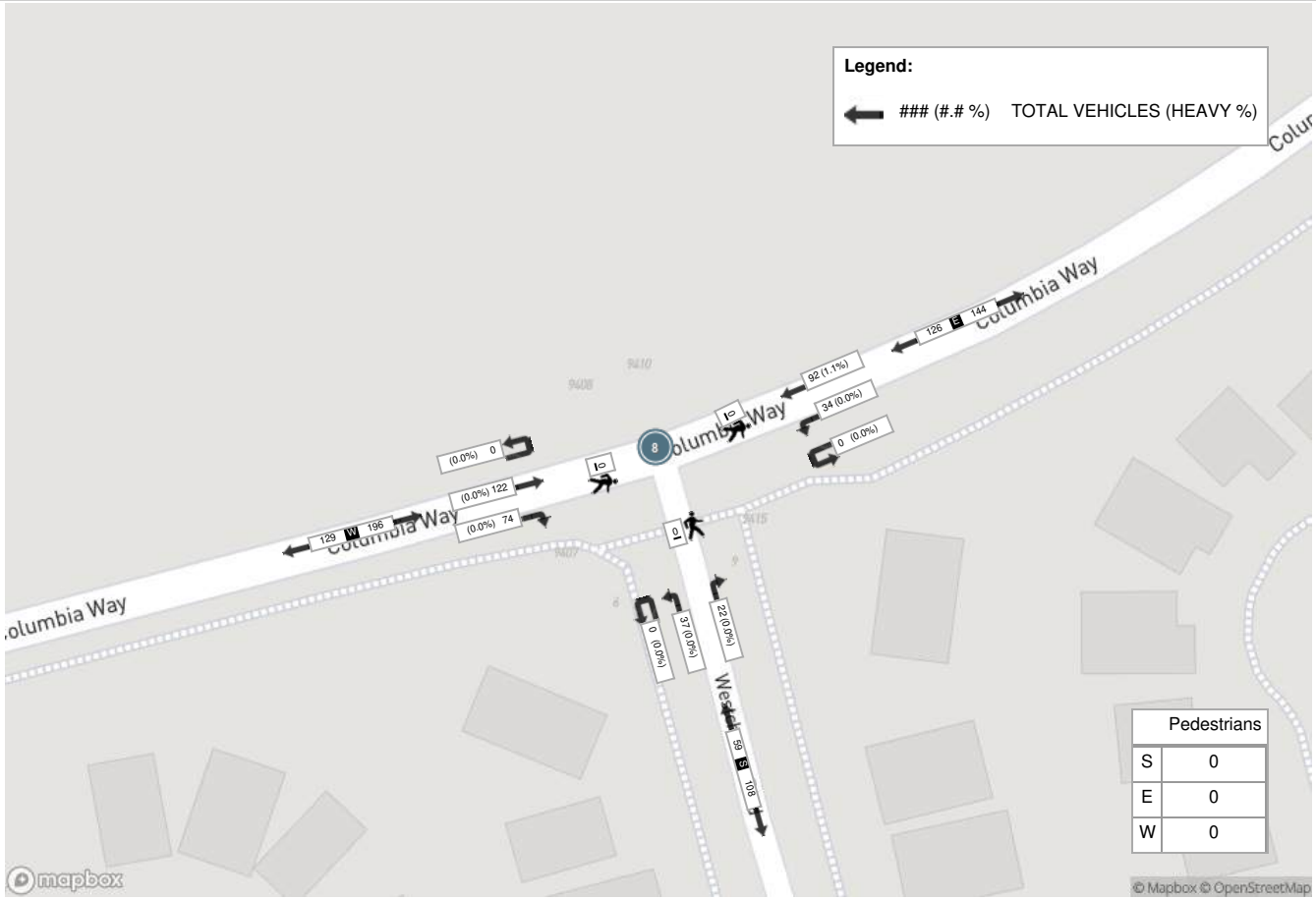
Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (2.15 °C)

Start Time	E Approach COLUMBIA WAY					S Approach WESTCHESTER BLVD					W Approach COLUMBIA WAY					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
17:00:00	22	12	0	0	34	3	11	0	0	14	24	31	0	0	55	103
17:15:00	24	8	0	0	32	4	11	0	0	15	16	30	0	0	46	93
17:30:00	22	5	0	0	27	7	7	0	0	14	19	31	0	0	50	91
17:45:00	24	9	0	0	33	8	8	0	0	16	15	30	0	0	45	94
Grand Total	92	34	0	0	126	22	37	0	0	59	74	122	0	0	196	**381**
Approach%	73%	27%	0%		-	37.3%	62.7%	0%		-	37.8%	62.2%	0%		-	**-**
Totals %	24.1%	8.9%	0%		33.1%	5.8%	9.7%	0%		15.5%	19.4%	32%	0%		51.4%	**-**
PHF	0.96	0.71	0		0.93	0.69	0.84	0		0.92	0.77	0.98	0		0.89	**-**
Heavy	1	0	0		1	0	0	0		0	0	0	0		0	**-**
Heavy %	1.1%	0%	0%		0.8%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Lights	91	34	0		125	22	37	0		59	74	122	0		196	**-**
Lights %	98.9%	100%	0%		99.2%	100%	100%	0%		100%	100%	100%	0%		100%	**-**
Single-Unit Trucks	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Single-Unit Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Buses	1	0	0		1	0	0	0		0	0	0	0		0	**-**
Buses %	1.1%	0%	0%		0.8%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

Peak Hour: 07:45 AM - 08:45 AM Weather:



Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (2.15 °C)



Turning Movement Count (9 . COLUMBIA WAY & MOUNT HOPE RD)

Start Time	N Approach MT HOPE RD						E Approach COLUMBIA WAY						S Approach MT HOPE RD						W Approach COLUMBIA WAY						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	0	1	1	0	2	0	6	0	0	0	6	2	0	3	0	0	5	0	6	1	0	0	7	20	
06:15:00	1	1	2	0	0	4	1	8	0	0	0	9	3	0	2	0	0	5	0	8	2	0	0	10	28	
06:30:00	0	0	1	0	0	1	0	7	1	0	0	8	4	2	1	0	0	7	1	12	0	0	0	13	29	
06:45:00	7	0	2	0	0	9	5	12	0	0	0	17	2	0	3	0	0	5	1	7	5	0	0	13	44	121
07:00:00	3	0	1	0	0	4	1	9	0	0	0	10	3	1	4	0	0	8	2	17	3	0	0	22	44	145
07:15:00	7	0	4	0	0	11	2	13	0	0	0	15	8	1	2	0	0	11	0	16	5	0	0	21	58	175
07:30:00	4	1	2	0	0	7	0	18	0	0	0	18	3	4	4	0	0	11	1	15	4	0	0	20	56	202
07:45:00	10	0	5	0	1	15	1	25	0	0	2	26	4	0	4	0	0	8	0	15	1	0	1	16	65	223
08:00:00	16	0	4	0	0	20	0	29	1	0	0	30	1	1	8	0	0	10	0	19	5	1	0	25	85	264
08:15:00	9	1	5	0	0	15	2	22	0	0	0	24	6	1	10	0	0	17	5	22	9	1	0	37	93	299
08:30:00	8	2	3	0	0	13	4	12	1	0	0	17	0	2	3	0	0	5	5	17	5	0	0	27	62	305
08:45:00	4	1	1	0	0	6	0	14	1	0	0	15	4	1	1	0	3	6	1	14	1	0	0	16	43	283
09:00:00	4	1	2	0	0	7	2	8	0	0	0	10	1	2	4	0	0	7	1	11	1	0	0	13	37	235
09:15:00	4	0	1	0	0	5	2	8	0	0	0	10	1	0	1	0	1	2	0	12	7	0	0	19	36	178
09:30:00	4	0	3	0	0	7	0	9	2	0	0	11	1	0	3	0	1	4	4	7	3	0	0	14	36	152
09:45:00	4	0	3	0	0	7	0	10	0	0	0	10	7	2	1	0	1	10	1	12	4	0	0	17	44	153
BREAK																										
15:00:00	2	0	3	0	0	5	1	15	0	1	0	17	2	0	1	0	1	3	6	28	11	0	0	45	70	
15:15:00	2	1	4	0	0	7	2	13	3	0	0	18	1	0	0	0	2	1	1	16	6	0	2	23	49	
15:30:00	2	1	4	0	0	7	4	24	4	0	0	32	2	0	2	0	0	4	3	16	6	0	0	25	68	
15:45:00	4	5	2	0	0	11	3	17	5	0	0	25	3	0	4	0	0	7	8	29	5	0	0	42	85	272
16:00:00	2	3	2	0	0	7	2	14	3	0	0	19	5	1	2	0	1	8	5	23	6	0	0	34	68	270
16:15:00	3	1	1	0	0	5	1	28	1	0	0	30	1	1	3	0	2	5	6	18	5	0	0	29	69	290
16:30:00	4	0	0	0	0	4	1	12	4	0	0	17	1	0	1	0	1	2	5	31	5	0	0	41	64	286
16:45:00	8	1	1	0	0	10	1	16	5	0	0	22	6	0	3	0	0	9	5	25	3	0	0	33	74	275
17:00:00	8	4	3	0	0	15	1	17	2	0	0	20	3	1	1	0	0	5	6	26	3	0	0	35	75	282
17:15:00	8	1	4	0	0	13	1	19	6	0	0	26	1	1	5	0	0	7	6	24	4	0	0	34	80	293
17:30:00	3	0	2	0	0	5	2	19	5	0	0	26	2	1	6	0	0	9	5	29	3	0	0	37	77	306
17:45:00	5	1	4	0	0	10	1	26	3	0	0	30	1	1	2	0	0	4	10	21	8	0	0	39	83	315
18:00:00	1	0	1	0	0	2	1	21	6	0	0	28	1	2	2	0	1	5	3	19	3	0	0	25	60	300
18:15:00	8	1	0	0	0	9	4	17	3	0	0	24	2	1	4	0	0	7	7	25	4	0	0	36	76	296
18:30:00	5	1	1	0	0	7	2	17	2	0	0	21	1	0	5	0	1	6	2	15	3	0	0	20	54	273
18:45:00	6	0	1	0	0	7	5	17	3	0	0	25	3	1	3	0	2	7	2	17	3	0	0	22	61	251
Grand Total	156	27	73	1	1	257	52	502	61	1	2	616	85	27	98	0	17	210	102	572	134	2	3	810	**1893**	-
Approach%	60.7%	10.5%	28.4%	0.4%		-	8.4%	81.5%	9.9%	0.2%		-	40.5%	12.9%	46.7%	0%		-	12.6%	70.6%	16.5%	0.2%		-	-	-
Totals %	8.2%	1.4%	3.9%	0.1%		13.6%	2.7%	26.5%	3.2%	0.1%		32.5%	4.5%	1.4%	5.2%	0%		11.1%	5.4%	30.2%	7.1%	0.1%		42.8%	-	-
Heavy	2	1	1	1		-	2	7	0	0		-	1	0	0	0		-	0	8	3	0		-	-	-
Heavy %	1.3%	3.7%	1.4%	100%		-	3.8%	1.4%	0%	0%		-	1.2%	0%	0%	0%		-	0%	1.4%	2.2%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

Spectrum

Turning Movement Count
Location Name: COLUMBIA WAY & MOUNT HOPE RD
Date: Thu, Apr 04, 2024 Deployment Lead: David Chu

Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Peak Hour: 07:45 AM - 08:45 AM Weather:

Start Time	N Approach MT HOPE RD						E Approach COLUMBIA WAY						S Approach MT HOPE RD						W Approach COLUMBIA WAY						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:45:00	10	0	5	0	1	15	1	25	0	0	2	26	4	0	4	0	0	8	0	15	1	0	1	16	65
08:00:00	16	0	4	0	0	20	0	29	1	0	0	30	1	1	8	0	0	10	0	19	5	1	0	25	85
08:15:00	9	1	5	0	0	15	2	22	0	0	0	24	6	1	10	0	0	17	5	22	9	1	0	37	93
08:30:00	8	2	3	0	0	13	4	12	1	0	0	17	0	2	3	0	0	5	5	17	5	0	0	27	62
Grand Total	43	3	17	0	1	63	7	88	2	0	2	97	11	4	25	0	0	40	10	73	20	2	1	105	**305**
Approach%	68.3%	4.8%	27%	0%		-	7.2%	90.7%	2.1%	0%		-	27.5%	10%	62.5%	0%		-	9.5%	69.5%	19%	1.9%		-	**-**
Totals %	14.1%	1%	5.6%	0%		20.7%	2.3%	28.9%	0.7%	0%		31.8%	3.6%	1.3%	8.2%	0%		13.1%	3.3%	23.9%	6.6%	0.7%		34.4%	**-**
PHF	0.67	0.38	0.85	0		0.79	0.44	0.76	0.5	0		0.81	0.46	0.5	0.63	0		0.59	0.5	0.83	0.56	0.5		0.71	**-**
Heavy	1	0	0	0		1	1	2	0	0		3	1	0	0	0		1	0	3	0	0		3	**-**
Heavy %	2.3%	0%	0%	0%		1.6%	14.3%	2.3%	0%	0%		3.1%	9.1%	0%	0%	0%		2.5%	0%	4.1%	0%	0%		2.9%	**-**
Lights	42	3	17	0		62	6	86	2	0		94	10	4	25	0		39	10	70	20	2		102	**-**
Lights %	97.7%	100%	100%	0%		98.4%	85.7%	97.7%	100%	0%		96.9%	90.9%	100%	100%	0%		97.5%	100%	95.9%	100%	100%		97.1%	**-**
Single-Unit Trucks	0	0	0	0		0	1	2	0	0		3	1	0	0	0		1	0	2	0	0		2	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	14.3%	2.3%	0%	0%		3.1%	9.1%	0%	0%	0%		2.5%	0%	2.7%	0%	0%		1.9%	**-**
Buses	1	0	0	0		1	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	**-**
Buses %	2.3%	0%	0%	0%		1.6%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	1.4%	0%	0%		1%	**-**
Pedestrians	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	-	25%		-	-	-	-	50%		-	-	-	-	0%		-	-	-	-	25%		**-**

Spectrum

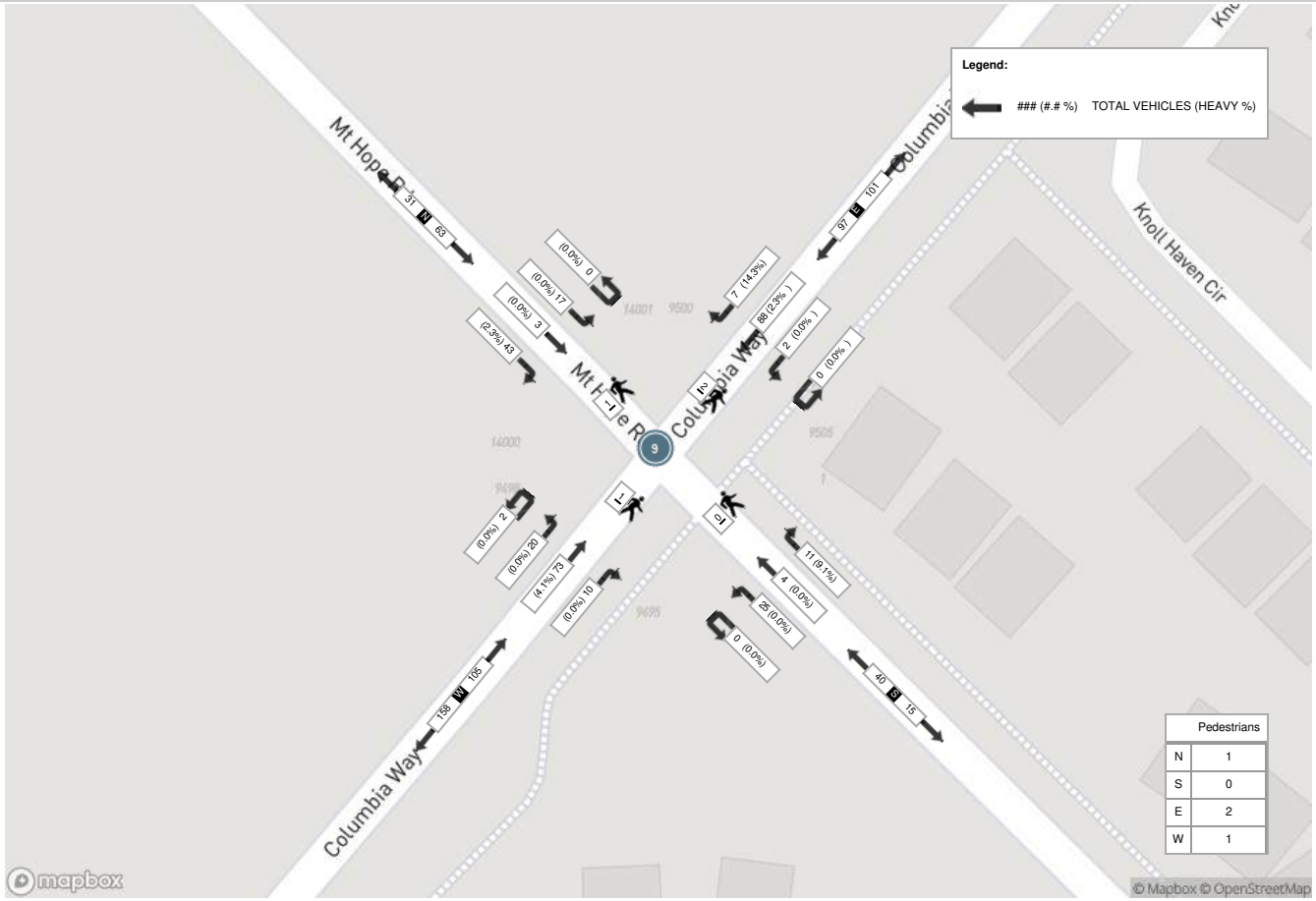
Turning Movement Count
Location Name: COLUMBIA WAY & MOUNT HOPE RD
Date: Thu, Apr 04, 2024 Deployment Lead: David Chu

Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

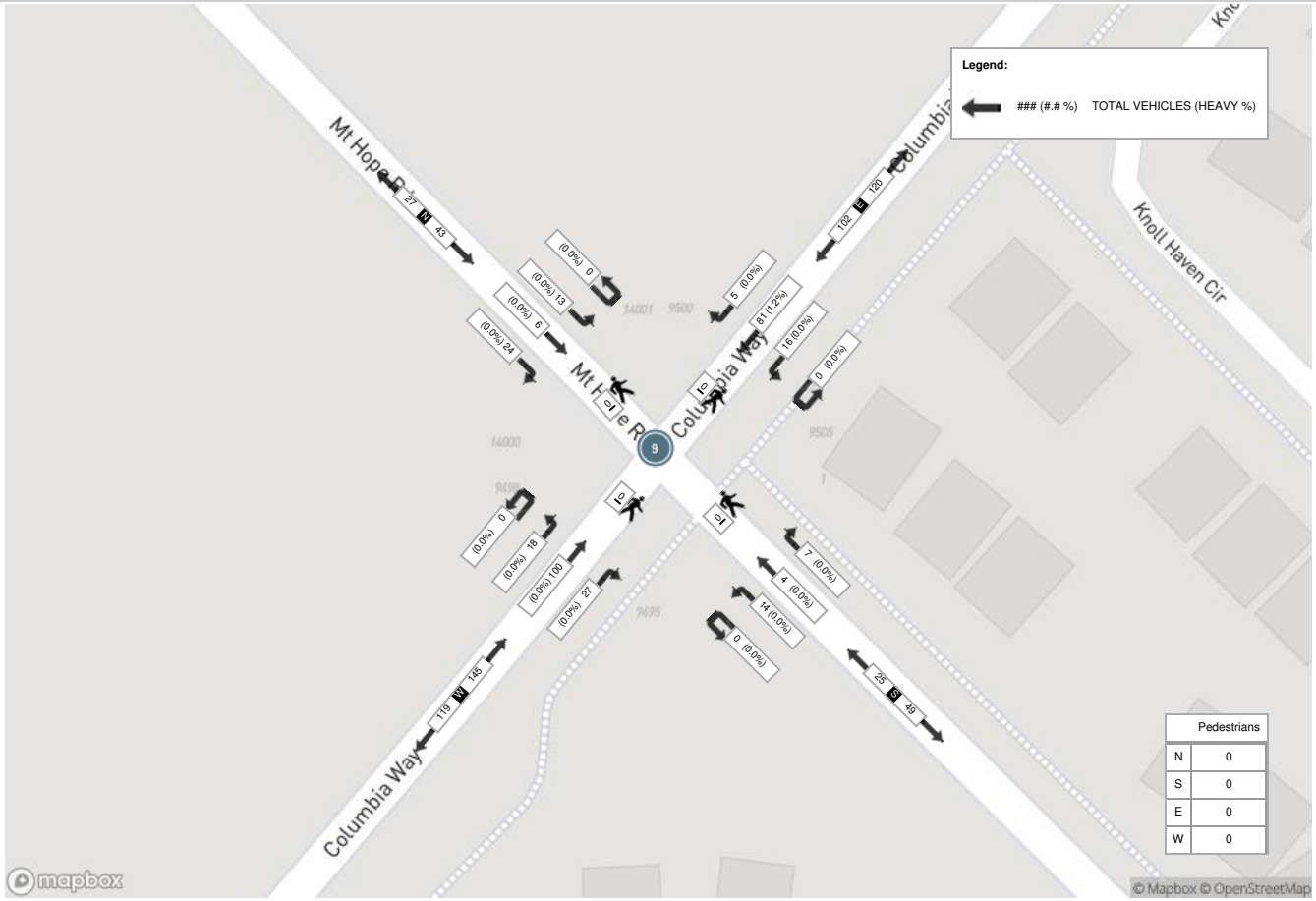
Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (2.15 °C)

Start Time	N Approach MT HOPE RD						E Approach COLUMBIA WAY						S Approach MT HOPE RD						W Approach COLUMBIA WAY						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
17:00:00	8	4	3	0	0	15	1	17	2	0	0	20	3	1	1	0	0	5	6	26	3	0	0	35	75
17:15:00	8	1	4	0	0	13	1	19	6	0	0	26	1	1	5	0	0	7	6	24	4	0	0	34	80
17:30:00	3	0	2	0	0	5	2	19	5	0	0	26	2	1	6	0	0	9	5	29	3	0	0	37	77
17:45:00	5	1	4	0	0	10	1	26	3	0	0	30	1	1	2	0	0	4	10	21	8	0	0	39	83
Grand Total	24	6	13	0	0	43	5	81	16	0	0	102	7	4	14	0	0	25	27	100	18	0	0	145	**315**
Approach%	55.8%	14%	30.2%	0%		-	4.9%	79.4%	15.7%	0%		-	28%	16%	56%	0%		-	18.6%	69%	12.4%	0%		-	**-**
Totals %	7.6%	1.9%	4.1%	0%		13.7%	1.6%	25.7%	5.1%	0%		32.4%	2.2%	1.3%	4.4%	0%		7.9%	8.6%	31.7%	5.7%	0%		46%	**-**
PHF	0.75	0.38	0.81	0		0.72	0.63	0.78	0.67	0		0.85	0.58	1	0.58	0		0.69	0.68	0.86	0.56	0		0.93	**-**
Heavy	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	**-**
Heavy %	0%	0%	0%	0%		0%	0%	1.2%	0%	0%		1%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Lights	24	6	13	0		43	5	80	16	0		101	7	4	14	0		25	27	100	18	0		145	**-**
Lights %	100%	100%	100%	0%		100%	100%	98.8%	100%	0%		99%	100%	100%	100%	0%		100%	100%	100%	100%	0%		100%	**-**
Single-Unit Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Buses	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	**-**
Buses %	0%	0%	0%	0%		0%	0%	1.2%	0%	0%		1%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 07:45 AM - 08:45 AM **Weather:**



Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (2.15 °C)



Spectrum

Turning Movement Count
Location Name: COLUMBIA WAY & CALEDON KING TOWNLINE
Date: Thu, Apr 04, 2024 Deployment Lead: David Chu

Crozier & Associates
ACCOUNTS PAYABLE
TORONTO - SELECT PROVINCE -, M1W1Y6
- SELECT COUNTRY -

Turning Movement Count (10 . COLUMBIA WAY & CALEDON KING TOWNLINE)

Start Time	N Approach CALEDON KING TOWNLINE						E Approach DUSTY ROAD						S Approach CALEDON KING TOWNLINE						W Approach COLUMBIA WAY						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	2	66	0	0	0	68	0	0	0	0	0	0	0	18	3	0	0	21	19	0	3	0	0	22	111	
06:15:00	0	67	0	1	0	68	0	0	0	0	0	0	0	13	3	0	0	16	22	0	3	0	0	25	109	
06:30:00	0	81	0	0	0	81	0	0	0	0	0	0	0	19	2	0	0	21	30	0	3	0	0	33	135	
06:45:00	2	120	0	0	0	122	0	0	0	0	0	0	0	23	2	0	0	25	23	0	3	0	0	26	173	528
07:00:00	3	84	0	0	0	87	0	0	0	0	0	0	0	24	1	0	0	25	39	0	6	0	0	45	157	574
07:15:00	0	109	0	0	0	109	0	0	0	0	0	0	0	21	3	0	0	24	55	0	2	0	0	57	190	655
07:30:00	1	127	0	0	0	128	0	0	0	0	0	0	0	32	4	0	0	36	38	0	4	0	0	42	206	726
07:45:00	4	110	0	0	0	114	0	0	0	0	0	0	0	16	4	0	0	20	48	0	2	0	0	50	184	737
08:00:00	2	117	0	0	0	119	0	0	0	0	0	0	0	23	12	0	0	35	38	0	1	0	0	39	193	773
08:15:00	4	111	0	0	0	115	0	0	0	0	0	0	0	31	11	0	0	42	34	0	3	0	0	37	194	777
08:30:00	1	97	0	0	0	98	0	0	0	0	0	0	0	28	5	0	0	33	27	0	6	0	0	33	164	735
08:45:00	1	77	0	0	0	78	0	0	0	0	0	0	0	27	9	0	0	36	26	0	2	0	0	28	142	693
09:00:00	0	65	0	0	0	65	0	0	1	0	0	1	0	31	9	0	0	40	17	0	2	0	0	19	125	625
09:15:00	2	56	0	0	0	58	0	0	0	0	0	0	0	19	11	0	0	30	15	0	0	0	0	15	103	534
09:30:00	2	55	0	0	0	57	0	0	0	0	0	0	0	24	4	0	0	28	10	0	1	0	0	11	96	466
09:45:00	1	62	0	0	0	63	0	0	0	0	0	0	0	23	4	0	0	27	22	0	5	0	0	27	117	441
BREAK																										
15:00:00	1	40	0	0	0	41	0	0	0	0	0	0	0	84	19	0	0	103	16	0	4	0	0	20	164	
15:15:00	5	45	0	0	0	50	0	0	0	0	0	0	0	87	24	0	0	111	13	0	3	0	0	16	177	
15:30:00	4	40	0	0	0	44	0	0	0	0	0	0	0	85	35	0	0	120	15	0	2	0	0	17	181	
15:45:00	2	52	0	0	0	54	0	0	0	0	0	0	0	108	23	0	0	131	21	0	6	0	0	27	212	734
16:00:00	10	35	0	0	0	45	0	0	0	0	0	0	0	84	26	0	0	110	18	0	5	0	0	23	178	748
16:15:00	6	41	0	0	0	47	0	0	0	0	0	0	0	113	31	0	0	144	11	0	5	0	0	16	207	778
16:30:00	6	43	0	0	0	49	0	0	0	0	0	0	0	110	26	0	0	136	15	0	2	0	0	17	202	799
16:45:00	3	57	0	0	0	60	0	0	0	0	0	0	0	99	29	0	0	128	20	0	1	0	0	21	209	796
17:00:00	6	45	0	0	0	51	0	0	0	0	0	0	0	109	31	0	0	140	20	0	4	0	0	24	215	833
17:15:00	4	28	0	0	0	32	0	0	0	0	0	0	0	109	36	0	0	145	23	0	1	0	0	24	201	827
17:30:00	5	41	0	0	0	46	0	0	0	0	0	0	0	114	29	1	0	144	15	0	0	0	0	15	205	830
17:45:00	4	40	0	0	0	44	0	0	0	0	0	0	0	104	30	0	0	134	18	0	3	0	0	21	199	820
18:00:00	4	24	0	0	0	28	0	0	0	0	0	0	0	73	27	0	0	100	8	0	5	0	0	13	141	746
18:15:00	1	26	0	0	0	27	0	0	0	0	0	0	0	73	23	0	0	96	12	0	2	0	0	14	137	682
18:30:00	5	31	0	0	0	36	0	0	0	0	0	0	1	71	17	0	0	89	9	0	1	0	0	10	135	612
18:45:00	1	21	0	0	0	22	0	0	0	0	0	0	0	69	25	0	0	94	16	0	3	0	0	19	135	548
Grand Total	92	2013	0	1	0	2106	0	0	1	0	0	1	1	1864	518	1	0	2384	713	0	93	0	0	806	**5297**	-
Approach%	4.4%	95.6%	0%	0%		-	0%	0%	100%	0%		-	0%	78.2%	21.7%	0%		-	88.5%	0%	11.5%	0%		-	**-**	-
Totals %	1.7%	38%	0%	0%		39.8%	0%	0%	0%	0%		0%	0%	35.2%	9.8%	0%		45%	13.5%	0%	1.8%	0%		15.2%	**-**	-
Heavy	1	19	0	1		-	0	0	0	0		-	0	33	7	0		-	4	0	2	0		-	**-**	-
Heavy %	1.1%	0.9%	0%	100%		-	0%	0%	0%	0%		-	0%	1.8%	1.4%	0%		-	0.6%	0%	2.2%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

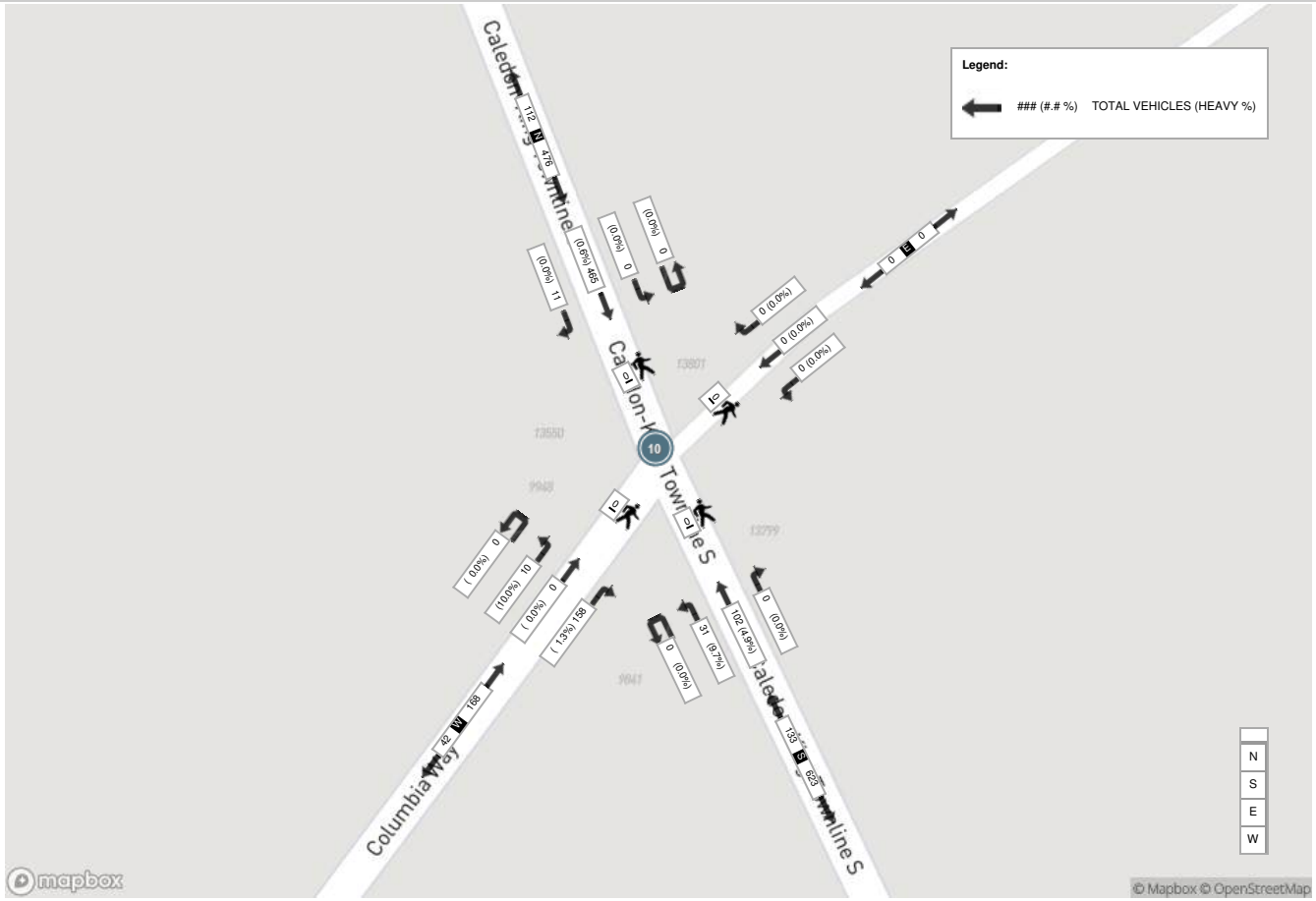
Peak Hour: 07:30 AM - 08:30 AM Weather:

Start Time	N Approach CALEDON KING TOWNLINE						E Approach DUSTY ROAD						S Approach CALEDON KING TOWNLINE						W Approach COLUMBIA WAY						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:30:00	1	127	0	0	0	128	0	0	0	0	0	0	0	32	4	0	0	36	38	0	4	0	0	42	206
07:45:00	4	110	0	0	0	114	0	0	0	0	0	0	0	16	4	0	0	20	48	0	2	0	0	50	184
08:00:00	2	117	0	0	0	119	0	0	0	0	0	0	0	23	12	0	0	35	38	0	1	0	0	39	193
08:15:00	4	111	0	0	0	115	0	0	0	0	0	0	0	31	11	0	0	42	34	0	3	0	0	37	194
Grand Total	11	465	0	0	0	476	0	0	0	0	0	0	0	102	31	0	0	133	158	0	10	0	0	168	**777**
Approach%	2.3%	97.7%	0%	0%		-	0%	0%	0%	0%		-	0%	76.7%	23.3%	0%		-	94%	0%	6%	0%		-	**-**
Totals %	1.4%	59.8%	0%	0%		61.3%	0%	0%	0%	0%		0%	0%	13.1%	4%	0%		17.1%	20.3%	0%	1.3%	0%		21.6%	**-**
PHF	0.69	0.92	0	0		0.93	0	0	0	0		0	0	0.8	0.65	0		0.79	0.82	0	0.63	0		0.84	**-**
Heavy	0	3	0	0		3	0	0	0	0		0	0	5	3	0		8	2	0	1	0		3	**-**
Heavy %	0%	0.6%	0%	0%		0.6%	0%	0%	0%	0%		0%	0%	4.9%	9.7%	0%		6%	1.3%	0%	10%	0%		1.8%	**-**
Lights	11	462	0	0		473	0	0	0	0		0	0	97	28	0		125	156	0	9	0		165	**-**
Lights %	100%	99.4%	0%	0%		99.4%	0%	0%	0%	0%		0%	0%	95.1%	90.3%	0%		94%	98.7%	0%	90%	0%		98.2%	**-**
Single-Unit Trucks	0	3	0	0		3	0	0	0	0		0	0	2	3	0		5	1	0	1	0		2	**-**
Single-Unit Trucks %	0%	0.6%	0%	0%		0.6%	0%	0%	0%	0%		0%	0%	2%	9.7%	0%		3.8%	0.6%	0%	10%	0%		1.2%	**-**
Buses	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	1	0	0	0		1	**-**
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	1%	0%	0%		0.8%	0.6%	0%	0%	0%		0.6%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	2%	0%	0%		1.5%	0%	0%	0%	0%		0%	**-**

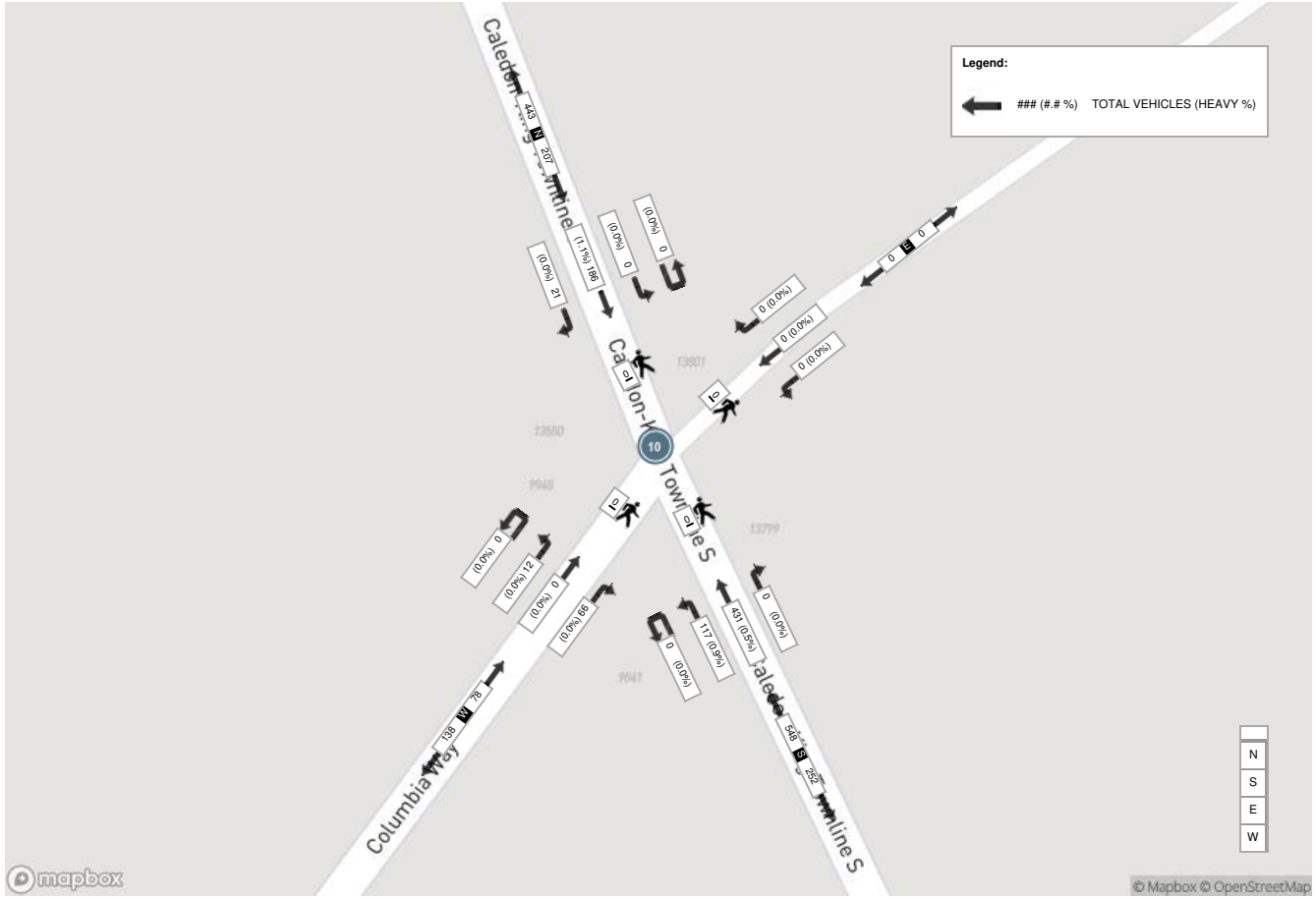
Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (2.15 °C)

Start Time	N Approach CALEDON KING TOWNLINE						E Approach DUSTY ROAD						S Approach CALEDON KING TOWNLINE						W Approach COLUMBIA WAY						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:15:00	6	41	0	0	0	47	0	0	0	0	0	0	0	113	31	0	0	144	11	0	5	0	0	16	207
16:30:00	6	43	0	0	0	49	0	0	0	0	0	0	0	110	26	0	0	136	15	0	2	0	0	17	202
16:45:00	3	57	0	0	0	60	0	0	0	0	0	0	0	99	29	0	0	128	20	0	1	0	0	21	209
17:00:00	6	45	0	0	0	51	0	0	0	0	0	0	0	109	31	0	0	140	20	0	4	0	0	24	215
Grand Total	21	186	0	0	0	207	0	0	0	0	0	0	0	431	117	0	0	548	66	0	12	0	0	78	**833**
Approach%	10.1%	89.9%	0%	0%		-	0%	0%	0%	0%		-	0%	78.6%	21.4%	0%		-	84.6%	0%	15.4%	0%		-	**-**
Totals %	2.5%	22.3%	0%	0%		24.8%	0%	0%	0%	0%		0%	0%	51.7%	14%	0%		65.8%	7.9%	0%	1.4%	0%		9.4%	**-**
PHF	0.88	0.82	0	0		0.86	0	0	0	0		0	0	0.95	0.94	0		0.95	0.83	0	0.6	0		0.81	**-**
Heavy	0	2	0	0		2	0	0	0	0		0	0	2	1	0		3	0	0	0	0		0	**-**
Heavy %	0%	1.1%	0%	0%		1%	0%	0%	0%	0%		0%	0%	0.5%	0.9%	0%		0.5%	0%	0%	0%	0%		0%	**-**
Lights	21	184	0	0		205	0	0	0	0		0	0	429	116	0		545	66	0	12	0		78	**-**
Lights %	100%	98.9%	0%	0%		99%	0%	0%	0%	0%		0%	0%	99.5%	99.1%	0%		99.5%	100%	0%	100%	0%		100%	**-**
Single-Unit Trucks	0	2	0	0		2	0	0	0	0		0	0	2	1	0		3	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	1.1%	0%	0%		1%	0%	0%	0%	0%		0%	0%	0.5%	0.9%	0%		0.5%	0%	0%	0%	0%		0%	**-**
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**

Peak Hour: 07:30 AM - 08:30 AM Weather:



Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (2.15 °C)



REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	August 1, 2017		Prepared Date:	September 11, 2017
Database Rev	8		Completed By:	RC
Timing Card / Field rev	-		Checked By:	RS

Location: Highway 50 at Columbia Way

Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.)		Amber (sec.)	All Red (sec.)	TIME PERIOD (sec.) (Green+Amber+All Red)		
			WALK	FDWALK			AM MAX	OFF MAX	PM MAX
1	Not in Use								
2	Highway 50 - NB/SB	20.0	8.0	16.0	4.0	2.7	65.0	39.0	64.0
3	Not in Use								
4	Columbia Way/Private Entrance - EB/WB	8.0	8.0	11.0	4.0	2.0	45.0	36.0	36.0

System Control	Yes
Local Control	No
Semi-Actuated Mode	Yes

TIME (M-F)	PEAK	CYCLE LENGTH (sec.)	OFFSET (sec.)
06:00-09:00	AM	110	0
9:00 - 15:00	OFF	75	0
15:00 - 19:00	PM	100	15

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	**May 28, 2024**		**Prepared Date**	**May 29, 2024**
Database Rev	**iNet**		**Completed By**	**N.R.L**
Timing Card / Field rev	**4**		**Checked By**	**S.A**

Location — **Columbia Way and Kingsview Drive**

Phase #	Street Name - Direction	Vehicle Minimum (s)	Pedestrian Minimum (s)		Amber (s)	All Red (s)	TIME PERIOD (s) (Green+Amber+All Red)		
			WALK	FDWALK			AM SPLITS	OFF MAX	PM MAX
1	Not In Used	-	-	-	-	-	-	-	-
2	Columbia Way - Eastbound	8	8	7	4	2	70	43	43
3	Not In Used	-	-	-	-	-	-	-	-
4	Kingsview Drive - Northbound	8	8	7	4	2.9	30	31.9	31.9
5	Not In Used	-	-	-	-	-	-	-	-
6	Columbia Way - Westbound	8	8	7	4	2	70	43	43
7	Not In Used	-	-	-	-	-	-	-	-
8	Kingsview Drive - Ped Only (S/B Computer Phase)	8	8	7	4	2.9	30	31.9	31.9

System Control
Yes

Semi-Actuated Mode
Yes

TIME (M-F)	PEAK	CYCLE LENGTH (s)	OFFSET (s)
06:00 - 09:00	AM	100	0
09:00 - 15:00	OFF	FREE	0
15:00 - 00:00	PM	FREE	0

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	**June 3, 2024**		**Prepared Date**	**June 3, 2024**
Database Rev	**iNET**		**Completed By**	**N.R.L**
Timing Card / Field rev	**8**		**Checked By**	**S.A**

Location	**Highway 50 and Bolton Heights Road / Cross Country Boulevard**

Phase #	**Street Name - Direction**	**Vehicle Minimum (s)**	**Pedestrian Minimum (s)**		**Amber (s)**	**All Red (s)**	**TIME PERIOD (s) (Green+Amber+All Red)**		
			WALK	**FDWALK**			**AM SPLITS**	**OFF SPLITS**	**PM SPLITS**
1	Not In Use	-	-	-	-	-	-	-	-
2	Highway 50 - Northbound / Southbound	10	10	18	4	2.7	45	45	60
3	Bolton Heights Road - WBLT Prot. Perm.	5	-	0	3	0	15	15	0
4	Bolton Heights Road/Cross Country Boulevard-EB/WB	10	10	29	4	4.1	60	50	50
5	Not In Use	-	-	-	-	-	-	-	-
6	Not In Use	-	-	-	-	-	-	-	-
7	Not In Use	-	-	-	-	-	-	-	-
8	Not In Use	-	-	-	-	-	-	-	-

System Control
Yes

Semi-Actuated Mode
Yes

TIME (M-F)	**PEAK**	**CYCLE LENGTH (s)**	**OFFSET (s)**
06:00 - 09:00	AM	120	39
09:00 - 14:00	OFF	110	96
14:00 - 16:00	PM	110	96

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	**June 3, 2024**		**Prepared Date**	**June 3, 2024**
Database Rev	**iNET**		**Completed By**	**N.R.L**
Timing Card / Field rev	**43**		**Checked By**	**S.A**

Location — **King Street and Highway 50**

Phase #	Street Name - Direction	Vehicle Minimum (s)	Pedestrian Minimum (s)		Amber (s)	All Red (s)	TIME PERIOD (s) (Green+Amber+All Red)		
			WALK	FDWALK			AM SPLITS	OFF SPLITS	PM SPLITS
1	Highway 50 - NBLT Prot. Perm.	5	0	0	3	0	8	12	22
2	Highway 50 -Southbound	10	10	15	4	3	62	46	55
3	King Street - EBLT Prot. Perm.	5	0	0	3	0	11	10	15
4	King Street - Westbound	10	10	15	4	2.9	39	42	48
5	Highway 50 - SBLT Prot. Perm.	5	0	0	3	0	11	10	10
6	Highway 50 - Northbound	10	10	15	4	3	59	48	67
7	King Street - WBLT Prot. Perm.	5	0	0	3	0	18	20	30
8	King Street - Eastbound	10	10	15	4	2.9	32	32	33

System Control
Yes

Semi-Actuated Mode
No

TIME (M-F)	PEAK	CYCLE LENGTH (s)	OFFSET (s)
06:00 - 09:00	AM	120	115
09:00 - 14:00	OFF	110	24
14:00 - 20:00	PM	140	62

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

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

Arcady Junctions 8 User Guide – Level of Service Definition

(Highway Capacity Manual (HMC 2000))

The transportation LOS system uses the letters A through F, with the definitions below being typical:

A = Free Flow

B = Reasonably Free Flow

C = Stable Flow

D = Approaching Unstable Flow

E = Unstable Flow

F = Forced or Breakdown Flow

The thresholds A-F are based on the queuing delay on each arm, and these thresholds differ for unsignalized and signalized junctions. Note that the LOS in **Junction 8** is based purely on the queueing delay, taking into account delay experienced in previous time segments (i.e. The Average Delay Per Arriving Vehicle).

APPENDIX F

Detailed Capacity Analysis Worksheets

EXISTING 2024

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: King Street & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2024_Analysis\Arcady
Report generation date: 2024-06-13 2:12:08 PM

Summary of intersection performance

	AM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2024 Existing Traffic						
Emil Kolb Pkwy (North)	0.10	0.41	0.68	N/A	A	0.73	A
Emil Kolb Pkwy (South)	0.06	~1	0.71	N/A	A		
King Street	0.10	0.40	0.78	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM " model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 8:00 AM - 9:00 AM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D5 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D8 - 2041 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D9 - 2031 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 8:00 AM - 9:00 AM

Run using Junctions 8.0.6.541 at 2024-06-13 2:12:08 PM

File summary

Title	Bolton North Hill
Location	King Street & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	682984923	3625

(Default Analysis Set) - 2024 Existing Traffic, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2024 Existing Traffic, AM	2024 Existing Traffic	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	0.73	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy (North)	2	Emil Kolb Pkwy (North)	
Emil Kolb Pkwy (South)	1	Emil Kolb Pkwy (South)	
King Street	3	King Street	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	0.00	99999.00
Emil Kolb Pkwy (South)	0.00	99999.00
King Street	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy (North)	7.00	8.00	30.00	25.00	55.00	25.00	
Emil Kolb Pkwy (South)	7.00	8.00	30.00	25.00	55.00	25.00	
King Street	7.00	8.00	30.00	25.00	55.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy (North)	0.00	0.00
Emil Kolb Pkwy (South)	0.00	0.00
King Street	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy (North)	Percentage	Opening day within 10 years		85.00
Emil Kolb Pkwy (South)	Percentage	Opening day within 10 years		85.00
King Street	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)		(calculated)	(calculated)	1.562	2831.014
Emil Kolb Pkwy (South)		(calculated)	(calculated)	1.562	2831.014
King Street		(calculated)	(calculated)	1.562	2831.014

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy (North)	Evenly split	10.00
Emil Kolb Pkwy (South)	Evenly split	10.00
King Street	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	1	1		Infinity	0.00	99999.00
Emil Kolb Pkwy (North)	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	3		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	4		Infinity	0.00	99999.00
King Street	1	2		Infinity	0.00	99999.00
King Street	1	3		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	4		✓	✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	1	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	2	✓		

Highway 50 & Emil Kolb Pkwy	King Street	1	3	✓	✓	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy (North)	PHF	✓	432.00	100.000
Emil Kolb Pkwy (South)	PHF	✓	231.00	100.000
King Street	PHF	✓	392.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy (North)	432.00	0.95	SecondQuarter
Emil Kolb Pkwy (South)	231.00	0.95	SecondQuarter
King Street	392.00	0.95	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.000	71.000	160.000
	Emil Kolb Pkwy (North)	253.000	0.000	179.000
	King Street	279.000	113.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.00	0.31	0.69
	Emil Kolb Pkwy (North)	0.59	0.00	0.41
	King Street	0.71	0.29	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	1.000	1.310	1.075
	Emil Kolb Pkwy (North)	1.032	1.000	1.022
	King Street	1.061	1.097	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.0	31.0	7.5
	Emil Kolb Pkwy (North)	3.2	0.0	2.2
	King Street	6.1	9.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy (North)	0.68	0.10	0.41	A	432.09	432.09	4.95	0.69	0.08
Emil Kolb Pkwy (South)	0.71	0.06	~1	A	231.10	231.10	3.02	0.78	0.05
King Street	0.78	0.10	0.40	A	391.20	391.20	5.45	0.84	0.09

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: King Street & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2024_Analysis\Arcady
Report generation date: 2024-06-13 2:10:12 PM

Summary of intersection performance

	PM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2024 Existing Traffic						
Emil Kolb Pkwy (North)	0.08	0.18	1.11	N/A	A	1.19	A
Emil Kolb Pkwy (South)	0.37	1.96	1.58	N/A	A		
King Street	0.08	0.22	0.59	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM " model duration: 8:00 AM - 9:00 AM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D5 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D8 - 2041 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D9 - 2031 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 8:00 AM - 9:00 AM

Run using Junctions 8.0.6.541 at 2024-06-13 2:10:12 PM

File summary

Title	Bolton North Hill
Location	King Street & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1314866519	2495

(Default Analysis Set) - 2024 Existing Traffic, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2024 Existing Traffic, PM	2024 Existing Traffic	PM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	1.19	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy (North)	2	Emil Kolb Pkwy (North)	
Emil Kolb Pkwy (South)	1	Emil Kolb Pkwy (South)	
King Street	3	King Street	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	0.00	99999.00
Emil Kolb Pkwy (South)	0.00	99999.00
King Street	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only

Emil Kolb Pkwy (North)	7.00	8.00	30.00	25.00	55.00	25.00	
Emil Kolb Pkwy (South)	7.00	8.00	30.00	25.00	55.00	25.00	
King Street	7.00	8.00	30.00	25.00	55.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy (North)	0.00	0.00
Emil Kolb Pkwy (South)	0.00	0.00
King Street	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy (North)	Percentage	Opening day within 10 years		85.00
Emil Kolb Pkwy (South)	Percentage	Opening day within 10 years		85.00
King Street	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)		(calculated)	(calculated)	1.562	2831.014
Emil Kolb Pkwy (South)		(calculated)	(calculated)	1.562	2831.014
King Street		(calculated)	(calculated)	1.562	2831.014

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy (North)	Evenly split	10.00
Emil Kolb Pkwy (South)	Evenly split	10.00
King Street	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	1	1		Infinity	0.00	99999.00
Emil Kolb Pkwy (North)	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	3		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	4		Infinity	0.00	99999.00
King Street	1	2		Infinity	0.00	99999.00
King Street	1	3		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	4		✓	✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	1	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	2	✓		

Highway 50 & Emil Kolb Pkwy	King Street	1	3	✓	✓	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy (North)	PHF	✓	195.00	100.000
Emil Kolb Pkwy (South)	PHF	✓	738.00	100.000
King Street	PHF	✓	453.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy (North)	195.00	1.00	SecondQuarter
Emil Kolb Pkwy (South)	738.00	1.00	SecondQuarter
King Street	453.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.000	289.000	449.000
	Emil Kolb Pkwy (North)	78.000	0.000	117.000
	King Street	254.000	199.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.00	0.39	0.61
	Emil Kolb Pkwy (North)	0.40	0.00	0.60
	King Street	0.56	0.44	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	1.000	1.021	1.067
	Emil Kolb Pkwy (North)	1.103	1.000	1.077
	King Street	1.047	1.015	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.0	2.1	6.7
	Emil Kolb Pkwy (North)	10.3	0.0	7.7
	King Street	4.7	1.5	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy (North)	1.11	0.08	0.18	A	195.99	195.99	3.98	1.22	0.07
Emil Kolb Pkwy (South)	1.58	0.37	1.96	A	738.54	738.54	20.44	1.66	0.34
King Street	0.59	0.08	0.22	A	453.25	453.25	4.68	0.62	0.08

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: Highway 50 & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2024_Analysis\Arcady
Report generation date: 2024-06-13 2:26:06 PM

Summary of intersection performance

	AM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2024 Existing Traffic						
Emil Kolb Pkwy	0.06	~1	1.01	N/A	A	0.92	A
Highway 50 (North)	0.23	1.26	1.09	N/A	A		
Highway 50 (South)	0.04	~1	0.41	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM " model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 3:00 PM - 4:00 PM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D5 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Backgroun, PM" model duration: 3:00 PM - 4:00 PM
"D8 - 2041 Future Backgroun, PM" model duration: 3:00 PM - 4:00 PM
"D9 - 2031 Future Total, PM" model duration: 3:00 PM - 4:00 PM

Run using Junctions 8.0.6.541 at 2024-06-13 2:26:05 PM

File summary

Title	Bolton North Hill
Location	Highway 50 & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria	Random	Results Refresh Speed	Individual Vehicle Animation Number Of	Time Step Size	Last Run Random	Last Run Number Of

(%)	Seed	(s)	Trials	(s)	Seed	Trials
1.00	-1	3	1	10	1846875073	4421

(Default Analysis Set) - 2024 Existing Traffic, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2024 Existing Traffic, AM	2024 Existing Traffic	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	0.92	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy	3	Emil Kolb Pkwy	
Highway 50 (North)	2	Highway 50 (North)	
Highway 50 (South)	1	Highway 50 (South)	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	0.00	99999.00
Highway 50 (North)	0.00	99999.00
Highway 50 (South)	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy	7.00	8.00	30.00	25.00	55.00	25.00	
Highway 50 (North)	7.00	8.00	30.00	35.00	60.00	25.00	
Highway 50 (South)	7.00	8.00	30.00	35.00	60.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy	0.00	0.00
Highway 50 (North)	0.00	0.00
Highway 50 (South)	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy	Percentage	Opening day within 10 years		85.00
Highway 50 (North)	Percentage	Opening day within 10 years		85.00
Highway 50 (South)	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy		(calculated)	(calculated)	1.562	2831.014
Highway 50 (North)		(calculated)	(calculated)	1.505	2853.857
Highway 50 (South)		(calculated)	(calculated)	1.505	2853.857

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy	Evenly split	10.00
Highway 50 (North)	Evenly split	10.00
Highway 50 (South)	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy	1	3		Infinity	0.00	99999.00
Highway 50 (North)	1	1		Infinity	0.00	99999.00
Highway 50 (North)	1	2		Infinity	0.00	99999.00
Highway 50 (South)	1	3		Infinity	0.00	99999.00
Highway 50 (South)	1	4		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy	(calculated)	(calculated)	0.781	1415.507
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	4		✓	✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	1			✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	2	✓	✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	3		✓	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy	PHF	✓	147.00	100.000
Highway 50 (North)	PHF	✓	717.00	100.000
Highway 50 (South)	PHF	✓	262.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy	147.00	0.96	SecondQuarter
Highway 50 (North)	717.00	0.96	SecondQuarter
Highway 50 (South)	262.00	0.96	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.000	187.000	75.000
	Highway 50 (North)	399.000	0.000	318.000
	Emil Kolb Pkwy	35.000	112.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.00	0.71	0.29
	Highway 50 (North)	0.56	0.00	0.44
	Emil Kolb Pkwy	0.24	0.76	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	1.000	1.037	1.027
	Highway 50 (North)	1.008	1.000	1.053
	Emil Kolb Pkwy	1.057	1.277	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy

	Highway 50 (South)	0.0	3.7	2.7
From	Highway 50 (North)	0.8	0.0	5.3
	Emil Kolb Pkwy	5.7	27.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy	1.01	0.06	~1	A	148.91	148.91	2.94	1.18	0.05
Highway 50 (North)	1.09	0.23	1.26	A	715.97	715.97	12.74	1.07	0.21
Highway 50 (South)	0.41	0.04	~1	A	262.30	262.30	1.89	0.43	0.03

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: Highway 50 & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2024_Analysis\Arcady
Report generation date: 2024-06-13 2:30:31 PM

Summary of intersection performance

	PM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2024 Existing Traffic						
Emil Kolb Pkwy	0.09	0.33	0.71	N/A	A	0.79	A
Highway 50 (North)	0.07	0.05	0.64	N/A	A		
Highway 50 (South)	0.17	0.80	0.95	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM " model duration: 3:00 PM - 4:00 PM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D5 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Backgroun, PM" model duration: 3:00 PM - 4:00 PM
"D8 - 2041 Future Backgroun, PM" model duration: 3:00 PM - 4:00 PM
"D9 - 2031 Future Total, PM" model duration: 3:00 PM - 4:00 PM

Run using Junctions 8.0.6.541 at 2024-06-13 2:30:30 PM

File summary

Title	Bolton North Hill
Location	Highway 50 & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria	Random	Results Refresh Speed	Individual Vehicle Animation Number Of	Time Step Size	Last Run Random	Last Run Number Of

(%)	Seed	(s)	Trials	(s)	Seed	Trials
1.00	-1	3	1	10	1723497484	5231

(Default Analysis Set) - 2024 Existing Traffic, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2024 Existing Traffic, PM	2024 Existing Traffic	PM		PHF	15:00	16:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	0.79	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy	3	Emil Kolb Pkwy	
Highway 50 (North)	2	Highway 50 (North)	
Highway 50 (South)	1	Highway 50 (South)	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	0.00	99999.00
Highway 50 (North)	0.00	99999.00
Highway 50 (South)	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy	7.00	8.00	30.00	25.00	55.00	25.00	

Highway 50 (North)	7.00	8.00	30.00	35.00	60.00	25.00	
Highway 50 (South)	7.00	8.00	30.00	35.00	60.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy	0.00	0.00
Highway 50 (North)	0.00	0.00
Highway 50 (South)	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy	Percentage	Opening day within 10 years		85.00
Highway 50 (North)	Percentage	Opening day within 10 years		85.00
Highway 50 (South)	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy		(calculated)	(calculated)	1.562	2831.014
Highway 50 (North)		(calculated)	(calculated)	1.505	2853.857
Highway 50 (South)		(calculated)	(calculated)	1.505	2853.857

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy	Evenly split	10.00
Highway 50 (North)	Evenly split	10.00
Highway 50 (South)	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy	1	3		Infinity	0.00	99999.00
Highway 50 (North)	1	1		Infinity	0.00	99999.00
Highway 50 (North)	1	2		Infinity	0.00	99999.00
Highway 50 (South)	1	3		Infinity	0.00	99999.00
Highway 50 (South)	1	4		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy	(calculated)	(calculated)	0.781	1415.507
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	4		✓	✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	1			✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	2	✓	✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	3		✓	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy	PHF	✓	430.00	100.000
Highway 50 (North)	PHF	✓	366.00	100.000
Highway 50 (South)	PHF	✓	511.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy	430.00	0.91	SecondQuarter
Highway 50 (North)	366.00	0.91	SecondQuarter
Highway 50 (South)	511.00	0.91	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.000	471.000	40.000
	Highway 50 (North)	232.000	0.000	134.000
	Emil Kolb Pkwy	78.000	352.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.00	0.92	0.08
	Highway 50 (North)	0.63	0.00	0.37
	Emil Kolb Pkwy	0.18	0.82	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	1.000	1.013	1.000
	Highway 50 (North)	1.013	1.000	1.134
	Emil Kolb Pkwy	1.013	1.023	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

	To		
	Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy

From	Highway 50 (South)	0.0	1.3	0.0
	Highway 50 (North)	1.3	0.0	13.4
	Emil Kolb Pkwy	1.3	2.3	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy	0.71	0.09	0.33	A	430.29	430.29	4.76	0.66	0.08
Highway 50 (North)	0.64	0.07	0.05	A	365.58	365.58	3.92	0.64	0.07
Highway 50 (South)	0.95	0.17	0.80	A	512.96	512.96	7.23	0.85	0.12

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	7	81	1	73	1	197	68	47	383	1
Future Volume (vph)	2	0	7	81	1	73	1	197	68	47	383	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	70.0		0.0	140.0		0.0	100.0		30.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Frt		0.892			0.852				0.850			0.850
Flt Protected		0.990		0.950			0.950			0.950		
Satd. Flow (prot)	0	955	0	1750	1586	0	892	1830	1595	1700	1883	1591
Flt Permitted		0.945		0.751			0.513			0.624		
Satd. Flow (perm)	0	912	0	1383	1586	0	482	1830	1595	1117	1883	1591
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37			79				74			30
Link Speed (k/h)		50			40			50			60	
Link Distance (m)		127.3			237.9			633.3			1152.0	
Travel Time (s)		9.2			21.4			45.6			69.1	
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 (%)	100%	0%	72%	2%	100%	2%	100%	5%	2%	5%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	2	0	8	88	1	79	1	214	74	51	416	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	0	88	80	0	1	214	74	51	416	1
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	25.0	25.0		25.0	25.0		30.7	30.7	30.7	30.7	30.7	30.7
Total Split (s)	45.0	45.0		45.0	45.0		65.0	65.0	65.0	65.0	65.0	65.0
Total Split (%)	40.9%	40.9%		40.9%	40.9%		59.1%	59.1%	59.1%	59.1%	59.1%	59.1%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0		6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		12.8		12.8	12.8		84.5	84.5	84.5	84.5	84.5	84.5
Actuated g/C Ratio		0.12		0.12	0.12		0.77	0.77	0.77	0.77	0.77	0.77
v/c Ratio		0.07		0.55	0.32		0.00	0.15	0.06	0.06	0.29	0.00
Control Delay		1.0		57.9	13.0		4.0	4.0	1.1	4.0	4.8	0.0
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		1.0		57.9	13.0		4.0	4.0	1.1	4.0	4.8	0.0
LOS		A		E	B		A	A	A	A	A	A
Approach Delay		1.0			36.5			3.3			4.7	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			D			A			A	
Queue Length 50th (m)		0.0		19.1	0.2		0.1	10.4	0.0	2.3	22.9	0.0
Queue Length 95th (m)		0.0		34.1	13.8		0.5	21.2	3.8	6.5	42.6	0.0
Internal Link Dist (m)		103.3			213.9			609.3			1128.0	
Turn Bay Length (m)				70.0			140.0			100.0		30.0
Base Capacity (vph)		347		490	613		370	1406	1242	858	1447	1229
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		0.03		0.18	0.13		0.00	0.15	0.06	0.06	0.29	0.00

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 9.9		Intersection LOS: A	
Intersection Capacity Utilization 60.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Highway 50 & Columbia Way

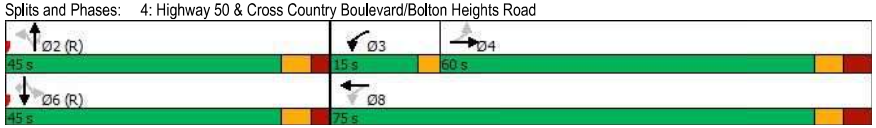


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	27	26	128	14	56	11	224	55	49	435	6
Future Volume (vph)	15	27	26	128	14	56	11	224	55	49	435	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	85.0		0.0	85.0		75.0	65.0		50.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.98		1.00					0.96
Frt		0.949			0.880				0.850			0.850
Flt Protected		0.989		0.950			0.950			0.950		
Satd. Flow (prot)	0	1748	0	1785	1628	0	1623	3476	1591	1785	1883	1591
Flt Permitted		0.900		0.663			0.398			0.585		
Satd. Flow (perm)	0	1586	0	1246	1628	0	677	3476	1591	1099	1883	1532
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			67				74			74
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		112.1			201.9			771.8			633.3	
Travel Time (s)		10.1			18.2			55.6			45.6	
Confl. Peds. (#/hr)	17					17	8					8
Confl. Bikes (#/hr)					2							
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	4%	4%	0%	0%	2%	10%	5%	0%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	18	33	31	154	17	67	13	270	66	59	524	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	82	0	154	84	0	13	270	66	59	524	7
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		3	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.1	47.1		8.0	47.1		34.7	34.7	34.7	34.7	34.7	34.7
Total Split (s)	60.0	60.0		15.0	75.0		45.0	45.0	45.0	45.0	45.0	45.0
Total Split (%)	50.0%	50.0%		12.5%	62.5%		37.5%	37.5%	37.5%	37.5%	37.5%	37.5%
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	4.1	4.1		0.0	4.1		2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		8.1		3.0	8.1		6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		16.1		33.2	28.1		77.1	77.1	77.1	77.1	77.1	77.1
Actuated g/C Ratio		0.13		0.28	0.23		0.64	0.64	0.64	0.64	0.64	0.64
v/c Ratio		0.34		0.38	0.19		0.03	0.12	0.06	0.08	0.43	0.01
Control Delay		31.5		34.4	10.1		28.5	22.2	15.7	13.0	15.3	0.0
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		31.5		34.4	10.1		28.5	22.2	15.7	13.0	15.3	0.0
LOS		C		C	B		C	C	B	B	B	A
Approach Delay		31.5			25.8			21.2			14.9	
Approach LOS		C			C			C			B	
Queue Length 50th (m)		12.2		31.4	3.4		2.0	22.1	2.4	4.7	54.6	0.0
Queue Length 95th (m)		18.8		30.8	10.0		m7.6	39.6	14.9	16.4	124.8	0.0
Internal Link Dist (m)		88.1			177.9			747.8			609.3	
Turn Bay Length (m)				85.0			85.0		75.0	65.0		50.0
Base Capacity (vph)		703		401	937		435	2234	1048	706	1210	1011
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		0.12		0.38	0.09		0.03	0.12	0.06	0.08	0.43	0.01

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 39 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.43	
Intersection Signal Delay: 19.8	Intersection LOS: B
Intersection Capacity Utilization 71.4%	ICU Level of Service C
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: Highway 50 & Cross Country Boulevard/Bolton Heights Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	196	71	253	191	51	49	242	110	54	493	22
Future Volume (vph)	22	196	71	253	191	51	49	242	110	54	493	22
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	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	30.0		35.0	30.0		0.0	55.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Ped Bike Factor							1.00		0.97	1.00	1.00	
Frt			0.850		0.968				0.850		0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1606	1695	1437	1591	1635	0	1564	1662	1417	1643	1694	0
Flt Permitted	0.600			0.386			0.311			0.560		
Satd. Flow (perm)	1015	1695	1437	646	1635	0	512	1662	1379	964	1694	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			118		11				117		2	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		535.7			353.4			517.9			32.8	
Travel Time (s)		48.2			31.8			37.3			2.4	
Confl. Peds. (#/hr)							2		3	3		2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	0%	1%	3%	0%	5%	4%	1%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	1	0
Adj. Flow (vph)	23	209	76	269	203	54	52	257	117	57	524	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	209	76	269	257	0	52	257	117	57	547	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Detector Phase	3	8	8	7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	8.0	31.9	31.9	8.0	31.9		8.0	32.0	32.0	8.0	32.0	
Total Split (s)	11.0	32.0	32.0	18.0	39.0		8.0	59.0	59.0	11.0	62.0	
Total Split (%)	9.2%	26.7%	26.7%	15.0%	32.5%		6.7%	49.2%	49.2%	9.2%	51.7%	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.9	2.9	0.0	2.9		0.0	3.0	3.0	0.0	3.0	
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	6.9	6.9	3.0	6.9		3.0	7.0	7.0	3.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	30.1	19.6	19.6	41.5	31.4		69.4	60.2	60.2	70.9	61.0	
Actuated g/C Ratio	0.25	0.16	0.16	0.35	0.26		0.58	0.50	0.50	0.59	0.51	
v/c Ratio	0.08	0.76	0.23	0.79	0.59		0.15	0.31	0.16	0.09	0.64	
Control Delay	25.2	64.8	3.5	48.3	43.5		12.1	20.8	4.1	11.5	27.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	25.2	64.8	3.5	48.3	43.5		12.1	20.8	4.1	11.5	27.4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	E	A	D	D		B	C	A	B	C	
Approach Delay		46.7			45.9			15.1			25.9	
Approach LOS		D			D			B			C	
Queue Length 50th (m)	3.8	49.8	0.0	51.9	55.4		5.0	37.9	0.0	7.1	116.9	
Queue Length 95th (m)	9.1	73.5	4.4	#74.3	81.6		11.8	63.6	11.1	7.1	118.6	
Internal Link Dist (m)		511.7			329.4			493.9			8.8	
Turn Bay Length (m)	30.0		35.0	30.0			55.0			20.0		
Base Capacity (vph)	305	354	393	341	453		350	833	749	618	861	
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	0.08	0.59	0.19	0.79	0.57		0.15	0.31	0.16	0.09	0.64	

Intersection Summary

Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 115 (96%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 32.5 Intersection LOS: C
Intersection Capacity Utilization 79.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 50 & King Street West/King Street East



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø8
Lane Configurations							
Traffic Volume (vph)	93	23	90	117	36	51	
Future Volume (vph)	93	23	90	117	36	51	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor	0.99			1.00	0.98		
Frt	0.973				0.921		
Flt Protected				0.979	0.980		
Satd. Flow (prot)	1858	0	0	1826	1697	0	
Flt Permitted				0.816	0.980		
Satd. Flow (perm)	1858	0	0	1517	1697	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	25				61		
Link Speed (k/h)	40			40	40		
Link Distance (m)	237.9			417.0	131.8		
Travel Time (s)	21.4			37.5	11.9		
Confl. Peds. (#/hr)		3	3			5	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	
Heavy Vehicles (%)	0%	0%	3%	3%	0%	0%	
Adj. Flow (vph)	112	28	108	141	43	61	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	140	0	0	249	104	0	
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6			8
Permitted Phases			6		4		
Detector Phase	2		6	6	4		
Switch Phase							
Minimum Initial (s)	8.0		8.0	8.0	8.0		8.0
Minimum Split (s)	21.0		21.0	21.0	21.9		21.9
Total Split (s)	70.0		70.0	70.0	30.0		30.0
Total Split (%)	70.0%		70.0%	70.0%	30.0%		30%
Yellow Time (s)	4.0		4.0	4.0	4.0		4.0
All-Red Time (s)	2.0		2.0	2.0	2.9		2.9
Lost Time Adjust (s)	0.0			0.0	0.0		
Total Lost Time (s)	6.0			6.0	6.9		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	Max		Max	Max	None		Ped
Act Effct Green (s)	64.0			64.0	15.0		
Actuated g/C Ratio	0.70			0.70	0.16		
v/c Ratio	0.11			0.24	0.32		
Control Delay	4.0			5.7	19.2		
Queue Delay	0.0			0.0	0.0		
Total Delay	4.0			5.7	19.2		
LOS	A			A	B		
Approach Delay	4.0			5.7	19.2		
Approach LOS	A			A	B		
Queue Length 50th (m)	6.0			14.5	7.0		
Queue Length 95th (m)	10.4			21.4	18.9		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø8
Internal Link Dist (m)	213.9			393.0	107.8		
Turn Bay Length (m)							
Base Capacity (vph)	1301			1056	472		
Starvation Cap Reductn	0			0	0		
Spillback Cap Reductn	0			0	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.11			0.24	0.22		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 91.9			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.32			
Intersection Signal Delay: 8.1		Intersection LOS: A	
Intersection Capacity Utilization 36.1%		ICU Level of Service A	
Analysis Period (min) 15			

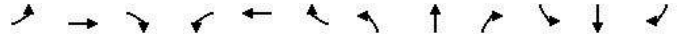
Splits and Phases: 6: Kingsview Drive & Columbia Way



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	66	36	25	134	62	40
Future Volume (Veh/h)	66	36	25	134	62	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	82	45	31	168	78	50
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			127		334	104
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			127		334	104
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		88	95
cM capacity (veh/h)			1447		647	942

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	127	199	128
Volume Left	0	31	78
Volume Right	45	0	50
cSH	1700	1447	737
Volume to Capacity	0.07	0.02	0.17
Queue Length 95th (m)	0.0	0.5	5.0
Control Delay (s)	0.0	1.3	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	1.3	10.9
Approach LOS			B

Intersection Summary			
Average Delay		3.7	
Intersection Capacity Utilization		27.7%	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)	22	73	10	2	88	7	25	4	11	17	3	43
Future Volume (Veh/h)	22	73	10	2	88	7	25	4	11	17	3	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	27	89	12	2	107	9	30	5	13	21	4	52
Pedestrians		1			2						1	
Lane Width (m)		3.7			3.7						3.7	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	117			101			320	270	97	283	272	114
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	117			101			320	270	97	283	272	114
tC, single (s)	4.1			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	98			100			95	99	99	97	99	94
cM capacity (veh/h)	1483			1504			589	627	936	648	626	935

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	128	118	48	77
Volume Left	27	2	30	21
Volume Right	12	9	13	52
cSH	1483	1504	659	816
Volume to Capacity	0.02	0.00	0.07	0.09
Queue Length 95th (m)	0.4	0.0	1.9	2.5
Control Delay (s)	1.7	0.1	10.9	9.9
Lane LOS	A	A	B	A
Approach Delay (s)	1.7	0.1	10.9	9.9
Approach LOS			B	A

Intersection Summary				
Average Delay	4.1			
Intersection Capacity Utilization	24.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	158	31	102	465	11
Future Volume (Veh/h)	10	158	31	102	465	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	11	168	33	109	495	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	676	501	507			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	676	501	507			
tC, single (s)	6.5	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.3			
p0 queue free %	97	71	97			
cM capacity (veh/h)	394	570	1018			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	179	142	507
Volume Left	11	33	0
Volume Right	168	0	12
cSH	555	1018	1700
Volume to Capacity	0.32	0.03	0.30
Queue Length 95th (m)	11.1	0.8	0.0
Control Delay (s)	14.5	2.2	0.0
Lane LOS	B	A	
Approach Delay (s)	14.5	2.2	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.5		
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)	3	34	16	145	391	3
Future Volume (Veh/h)	3	34	16	145	391	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	38	18	161	434	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	631	434	437			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	631	434	437			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	99	94	98			
cM capacity (veh/h)	440	620	1038			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	41	18	161	434	3
Volume Left	3	18	0	0	0
Volume Right	38	0	0	0	3
cSH	602	1038	1700	1700	1700
Volume to Capacity	0.07	0.02	0.09	0.26	0.00
Queue Length 95th (m)	1.7	0.4	0.0	0.0	0.0
Control Delay (s)	11.4	8.5	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	11.4	0.9		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	30.6%	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)	0	0	1	63	0	47	0	445	156	70	248	1
Future Volume (vph)	0	0	1	63	0	47	0	445	156	70	248	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	70.0		0.0	140.0		0.0	100.0		30.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Frt		0.865			0.850				0.850			0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1662	0	1750	1555	0	1879	1883	1626	1785	1883	795
Flt Permitted				0.757						0.491		
Satd. Flow (perm)	0	1662	0	1394	1555	0	1879	1883	1626	923	1883	795
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		613			383				163			33
Link Speed (k/h)		40			40			50			60	
Link Distance (m)		127.3			237.9			633.3			1152.0	
Travel Time (s)		11.5			21.4			45.6			69.1	
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 (%)	100%	0%	0%	2%	0%	5%	0%	2%	0%	0%	2%	100%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	0	0	1	66	0	49	0	464	163	73	258	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1	0	66	49	0	0	464	163	73	258	1
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	25.0	25.0		14.0	14.0		30.7	30.7	30.7	30.7	30.7	30.7
Total Split (s)	36.0	36.0		36.0	36.0		64.0	64.0	64.0	64.0	64.0	64.0
Total Split (%)	36.0%	36.0%		36.0%	36.0%		64.0%	64.0%	64.0%	64.0%	64.0%	64.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0		6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		10.7		10.7	10.7			80.7	80.7	80.7	80.7	80.7
Actuated g/C Ratio		0.11		0.11	0.11			0.81	0.81	0.81	0.81	0.81
v/c Ratio		0.00		0.44	0.10			0.31	0.12	0.10	0.17	0.00
Control Delay		0.0		50.6	0.4			4.2	0.8	3.8	3.5	0.0
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Delay		0.0		50.6	0.4			4.2	0.8	3.8	3.5	0.0
LOS		A		D	A			A	A	A	A	A
Approach Delay					29.2			3.3			3.6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS					C			A			A	
Queue Length 50th (m)		0.0		12.9	0.0			23.4	0.0	3.0	11.3	0.0
Queue Length 95th (m)		0.0		25.5	0.0			42.9	4.9	7.9	22.3	0.0
Internal Link Dist (m)		103.3			213.9			609.3			1128.0	
Turn Bay Length (m)				70.0						100.0		30.0
Base Capacity (vph)		927		418	734			1520	1344	745	1520	648
Starvation Cap Reductn		0		0	0			0	0	0	0	0
Spillback Cap Reductn		0		0	0			0	0	0	0	0
Storage Cap Reductn		0		0	0			0	0	0	0	0
Reduced v/c Ratio		0.00		0.16	0.07			0.31	0.12	0.10	0.17	0.00

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 15 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.44			
Intersection Signal Delay: 6.2		Intersection LOS: A	
Intersection Capacity Utilization 66.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Highway 50 & Columbia Way

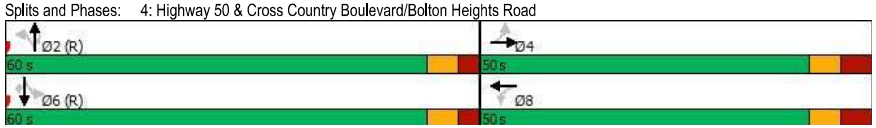


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	7	12	40	9	18	75	626	88	25	284	19
Future Volume (vph)	8	7	12	40	9	18	75	626	88	25	284	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	85.0		0.0	85.0		75.0	65.0		50.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		1.00	0.99		1.00					0.98
Frt		0.940			0.898				0.850			0.850
Flt Protected		0.985		0.950			0.950			0.950		
Satd. Flow (prot)	0	1760	0	1785	1709	0	1785	3614	1559	1785	1883	1591
Flt Permitted		0.903		0.740			0.581			0.407		
Satd. Flow (perm)	0	1612	0	1385	1709	0	1089	3614	1559	765	1883	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			19				91			51
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		112.1			201.9			771.8			633.3	
Travel Time (s)		10.1			18.2			55.6			45.6	
Confl. Peds. (#/hr)	2		3	3		2	2					2
Confl. Bikes (#/hr)					2							
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 (%)	0%	0%	0%	0%	0%	0%	0%	1%	2%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	8	7	12	41	9	19	77	645	91	26	293	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	0	41	28	0	77	645	91	26	293	20
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.1	47.1		47.1	47.1		34.7	34.7	34.7	34.7	34.7	34.7
Total Split (s)	50.0	50.0		50.0	50.0		60.0	60.0	60.0	60.0	60.0	60.0
Total Split (%)	45.5%	45.5%		45.5%	45.5%		54.5%	54.5%	54.5%	54.5%	54.5%	54.5%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	4.1	4.1		4.1	4.1		2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		8.1		8.1	8.1		6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		15.9		15.9	15.9		84.3	84.3	84.3	84.3	84.3	84.3
Actuated g/C Ratio		0.14		0.14	0.14		0.77	0.77	0.77	0.77	0.77	0.77
v/c Ratio		0.11		0.21	0.11		0.09	0.23	0.07	0.04	0.20	0.02
Control Delay		24.0		39.9	18.6		7.6	6.7	2.4	8.2	7.2	0.3
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		24.0		39.9	18.6		7.6	6.7	2.4	8.2	7.2	0.3
LOS		C		D	B		A	A	A	A	A	A
Approach Delay		24.0			31.2			6.3			6.8	
Approach LOS		C			C			A			A	
Queue Length 50th (m)		3.2		8.8	1.9		3.5	17.2	0.0	1.1	14.5	0.0
Queue Length 95th (m)		8.4		14.1	7.6		17.6	57.0	8.0	7.8	55.6	0.5
Internal Link Dist (m)		88.1			177.9			747.8			609.3	
Turn Bay Length (m)				85.0			85.0		75.0	65.0		50.0
Base Capacity (vph)		621		527	662		834	2769	1216	586	1442	1201
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		0.04		0.08	0.04		0.09	0.23	0.07	0.04	0.20	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 96 (87%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.23			
Intersection Signal Delay: 8.2		Intersection LOS: A	
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 4: Highway 50 & Cross Country Boulevard/Bolton Heights Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	224	87	196	250	39	78	662	415	32	324	22
Future Volume (vph)	51	224	87	196	250	39	78	662	415	32	324	22
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	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	30.0		35.0	30.0		0.0	55.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Ped Bike Factor	0.98		0.96	0.99	0.99		0.99		0.96		1.00	
Frt			0.850		0.980				0.850		0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1575	1712	1409	1591	1669	0	1610	1712	1432	1643	1679	0
Flt Permitted	0.537			0.316			0.441			0.228		
Satd. Flow (perm)	872	1712	1358	524	1669	0	740	1712	1372	394	1679	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125		6				311		3	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		535.7			353.4			517.9			32.8	
Travel Time (s)		48.2			31.8			37.3			2.4	
Confl. Peds. (#/hr)	11		6	6		11	10		8	8		10
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%	1%	2%	1%	1%	0%	2%	1%	0%	0%	1%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	1	0
Adj. Flow (vph)	53	231	90	202	258	40	80	682	428	33	334	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	231	90	202	298	0	80	682	428	33	357	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Detector Phase	3	8	8	7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	8.0	31.9	31.9	8.0	31.9		8.0	32.0	32.0	8.0	32.0	
Total Split (s)	15.0	33.0	33.0	30.0	48.0		22.0	67.0	67.0	10.0	55.0	
Total Split (%)	10.7%	23.6%	23.6%	21.4%	34.3%		15.7%	47.9%	47.9%	7.1%	39.3%	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.9	2.9	0.0	2.9		0.0	3.0	3.0	0.0	3.0	
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	6.9	6.9	3.0	6.9		3.0	7.0	7.0	3.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	35.9	23.5	23.5	49.7	36.1		83.9	74.3	74.3	79.2	68.7	
Actuated g/C Ratio	0.26	0.17	0.17	0.36	0.26		0.60	0.53	0.53	0.57	0.49	
v/c Ratio	0.20	0.81	0.27	0.61	0.69		0.16	0.75	0.49	0.12	0.43	
Control Delay	30.0	76.8	4.7	40.0	54.3		14.5	35.1	8.9	15.0	27.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	30.0	76.8	4.7	40.0	54.3		14.5	35.1	8.9	15.0	27.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	E	A	D	D		B	D	A	B	C	
Approach Delay		52.8			48.5			24.3			26.2	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	10.2	65.2	0.0	42.9	78.2		9.4	161.6	18.3	3.8	65.8	
Queue Length 95th (m)	18.1	93.0	6.5	58.1	104.9		20.4	#268.0	55.6	10.2	111.2	
Internal Link Dist (m)		511.7			329.4			493.9			8.8	
Turn Bay Length (m)	30.0		35.0	30.0			55.0			20.0		
Base Capacity (vph)	305	328	361	391	497		563	908	873	287	825	
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	0.17	0.70	0.25	0.52	0.60		0.14	0.75	0.49	0.11	0.43	

Intersection Summary

Area Type: CBD
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 62 (44%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 33.9 Intersection LOS: C
Intersection Capacity Utilization 87.7% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 50 & King Street West/King Street East



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø8
Lane Configurations							
Traffic Volume (vph)	158	53	50	81	22	35	
Future Volume (vph)	158	53	50	81	22	35	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor	0.99			1.00			
Frt	0.966				0.917		
Flt Protected				0.981	0.981		
Satd. Flow (prot)	1842	0	0	1862	1695	0	
Flt Permitted				0.832	0.981		
Satd. Flow (perm)	1842	0	0	1574	1695	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	33				38		
Link Speed (k/h)	40			40	40		
Link Distance (m)	237.9			417.0	131.8		
Travel Time (s)	21.4			37.5	11.9		
Confl. Peds. (#/hr)		3	3				
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	
Heavy Vehicles (%)	0%	0%	0%	2%	5%	0%	
Adj. Flow (vph)	174	58	55	89	24	38	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	232	0	0	144	62	0	
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6			8
Permitted Phases			6		4		
Detector Phase	2		6	6	4		
Switch Phase							
Minimum Initial (s)	8.0		8.0	8.0	8.0		8.0
Minimum Split (s)	21.0		21.0	21.0	21.9		21.9
Total Split (s)	70.0		70.0	70.0	30.0		30.0
Total Split (%)	70.0%		70.0%	70.0%	30.0%		30%
Yellow Time (s)	4.0		4.0	4.0	4.0		4.0
All-Red Time (s)	2.0		2.0	2.0	2.9		2.9
Lost Time Adjust (s)	0.0			0.0	0.0		
Total Lost Time (s)	6.0			6.0	6.9		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	Max		Max	Max	None		Ped
Act Effct Green (s)	64.0			64.0	15.0		
Actuated g/C Ratio	0.70			0.70	0.16		
v/c Ratio	0.18			0.13	0.20		
Control Delay	4.5			5.0	18.8		
Queue Delay	0.0			0.0	0.0		
Total Delay	4.5			5.0	18.8		
LOS	A			A	B		
Approach Delay	4.5			5.0	18.8		
Approach LOS	A			A	B		
Queue Length 50th (m)	10.9			7.7	3.9		
Queue Length 95th (m)	18.6			13.9	15.2		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø8
Internal Link Dist (m)	213.9			393.0	107.8		
Turn Bay Length (m)							
Base Capacity (vph)	1292			1096	454		
Starvation Cap Reductn	0			0	0		
Spillback Cap Reductn	0			0	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.18			0.13	0.14		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 91.9			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.20			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 41.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Kingsview Drive & Columbia Way



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	122	74	34	92	37	22
Future Volume (Veh/h)	122	74	34	92	37	22
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	133	80	37	100	40	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			213		347	173
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			213		347	173
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		94	97
cM capacity (veh/h)			1369		636	876

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	213	137	64
Volume Left	0	37	40
Volume Right	80	0	24
cSH	1700	1369	709
Volume to Capacity	0.13	0.03	0.09
Queue Length 95th (m)	0.0	0.7	2.4
Control Delay (s)	0.0	2.2	10.6
Lane LOS		A	B
Approach Delay (s)	0.0	2.2	10.6
Approach LOS			B

Intersection Summary			
Average Delay		2.4	
Intersection Capacity Utilization		31.1%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	100	27	16	81	5	14	4	7	13	6	24
Future Volume (Veh/h)	18	100	27	16	81	5	14	4	7	13	6	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	19	105	28	17	85	5	15	4	7	14	6	25
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	90			133			306	281	119	288	292	88
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	90			133			306	281	119	288	292	88
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			98	99	99	98	99	97
cM capacity (veh/h)	1518			1464			617	616	938	648	607	976

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	152	107	26	45
Volume Left	19	17	15	14
Volume Right	28	5	7	25
cSH	1518	1464	679	788
Volume to Capacity	0.01	0.01	0.04	0.06
Queue Length 95th (m)	0.3	0.3	1.0	1.5
Control Delay (s)	1.0	1.3	10.5	9.8
Lane LOS	A	A	B	A
Approach Delay (s)	1.0	1.3	10.5	9.8
Approach LOS			B	A

Intersection Summary					
Average Delay	3.0				
Intersection Capacity Utilization	19.9%	ICU Level of Service		A	
Analysis Period (min)	15				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	66	117	431	186	21
Future Volume (Veh/h)	12	66	117	431	186	21
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	12	68	121	444	192	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	889	203	214			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	889	203	214			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	92	91			
cM capacity (veh/h)	288	843	1362			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	80	565	214
Volume Left	12	121	0
Volume Right	68	0	22
cSH	654	1362	1700
Volume to Capacity	0.12	0.09	0.13
Queue Length 95th (m)	3.3	2.3	0.0
Control Delay (s)	11.3	2.4	0.0
Lane LOS	B	A	
Approach Delay (s)	11.3	2.4	0.0
Approach LOS	B		

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	55.0%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	15	59	426	166	4
Future Volume (Veh/h)	3	15	59	426	166	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	4	18	70	507	198	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	845	198	203			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	845	198	203			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	95			
cM capacity (veh/h)	319	848	1381			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	22	70	507	198	5
Volume Left	4	70	0	0	0
Volume Right	18	0	0	0	5
cSH	651	1381	1700	1700	1700
Volume to Capacity	0.03	0.05	0.30	0.12	0.00
Queue Length 95th (m)	0.8	1.3	0.0	0.0	0.0
Control Delay (s)	10.7	7.7	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	10.7	0.9		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		32.4%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	326	201	205	112	124	402
Future Volume (vph)	326	201	205	112	124	402
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.88
Frt	0.948					0.850
Flt Protected				0.969	0.950	
Satd. Flow (prot)	1758	0	0	3046	0	2686
Flt Permitted				0.969	0.950	
Satd. Flow (perm)	1758	0	0	3046	0	2686
Link Speed (k/h)	70			70	60	
Link Distance (m)	2029.6			352.5	742.2	
Travel Time (s)	104.4			18.1	44.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	3%	8%	31%	10%	7%
Adj. Flow (vph)	343	212	216	118	131	423
Shared Lane Traffic (%)						
Lane Group Flow (vph)	555	0	0	334	131	423
Sign Control	Yield			Yield	Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization Err%		ICU Level of Service H	
Analysis Period (min) 15			

FUTURE BACKGROUND 2031

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: Highway 50 & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 12:14:01 PM

Summary of intersection performance

	AM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2031 Future Background						
Emil Kolb Pkwy	0.09	0.08	1.16	N/A	A	1.08	A
Highway 50 (North)	0.31	1.69	1.28	N/A	A		
Highway 50 (South)	0.05	~1	0.52	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 3:00 PM - 4:00 PM
"D3 - 2031 Future Background, AM " model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 3:00 PM - 4:00 PM
"D8 - 2041 Future Background, PM" model duration: 3:00 PM - 4:00 PM
"D10 - 2051 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D11 - 2051 Future Background, PM" model duration: 3:00 PM - 4:00 PM

Run using Junctions 8.0.6.541 at 2026-02-21 12:14:00 PM

File summary

Title	Bolton North Hill
Location	Highway 50 & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	294148546	2761

(Default Analysis Set) - 2031 Future Background, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2031 Future Background, AM	2031 Future Background	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	1.08	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy	3	Emil Kolb Pkwy	
Highway 50 (North)	2	Highway 50 (North)	
Highway 50 (South)	1	Highway 50 (South)	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	0.00	99999.00
Highway 50 (North)	0.00	99999.00
Highway 50 (South)	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy	7.00	8.00	30.00	25.00	55.00	25.00	
Highway 50 (North)	7.00	8.00	30.00	35.00	60.00	25.00	
Highway 50 (South)	7.00	8.00	30.00	35.00	60.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy	0.00	0.00
Highway 50 (North)	0.00	0.00
Highway 50 (South)	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy	Percentage	Opening day within 10 years		85.00
Highway 50 (North)	Percentage	Opening day within 10 years		85.00
Highway 50 (South)	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy		(calculated)	(calculated)	1.562	2831.014
Highway 50 (North)		(calculated)	(calculated)	1.505	2853.857
Highway 50 (South)		(calculated)	(calculated)	1.505	2853.857

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy	Evenly split	10.00
Highway 50 (North)	Evenly split	10.00
Highway 50 (South)	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy	1	3		Infinity	0.00	99999.00
Highway 50 (North)	1	1		Infinity	0.00	99999.00
Highway 50 (North)	1	2		Infinity	0.00	99999.00
Highway 50 (South)	1	3		Infinity	0.00	99999.00
Highway 50 (South)	1	4		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy	(calculated)	(calculated)	0.781	1415.507
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	4		✓	✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	1			✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	2	✓	✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	3		✓	

Traffic Flows

Demand Set Data Options

Default Vehicle	Vehicle Mix Varies Over	Vehicle Mix Varies Over	Vehicle Mix Varies Over	Vehicle Mix Source	PCE Factor for a Truck	Default Turning	Estimate from entry/exit	Turning Proportions Vary	Turning Proportions Vary	Turning Proportions Vary

Mix	Time	Turn	Entry		(PCE)	Proportions	counts	Over Time	Over Turn	Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy	PHF	✓	209.00	100.000
Highway 50 (North)	PHF	✓	788.00	100.000
Highway 50 (South)	PHF	✓	325.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy	209.00	0.96	SecondQuarter
Highway 50 (North)	788.00	0.96	SecondQuarter
Highway 50 (South)	325.00	0.96	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.000	226.000	99.000
	Highway 50 (North)	434.000	0.000	354.000
	Emil Kolb Pkwy	43.000	166.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.00	0.70	0.30
	Highway 50 (North)	0.55	0.00	0.45
	Emil Kolb Pkwy	0.21	0.79	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	1.000	1.037	1.027
	Highway 50 (North)	1.008	1.000	1.053
	Emil Kolb Pkwy	1.057	1.277	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.0	3.7	2.7
	Highway 50 (North)	0.8	0.0	5.3
	Emil Kolb Pkwy	5.7	27.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy	1.16	0.09	0.08	A	207.43	207.43	4.70	1.36	0.08
Highway 50 (North)	1.28	0.31	1.69	A	790.53	790.53	16.26	1.23	0.27
Highway 50 (South)	0.52	0.05	~1	A	324.06	324.06	2.91	0.54	0.05

Junctions 8

ARCADY 8 - Roundabout Module

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Filename: Highway 50 & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 12:21:28 PM

Summary of intersection performance

	PM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2031 Future Background						
Emil Kolb Pkwy	0.15	0.72	0.86	N/A	A	0.97	A
Highway 50 (North)	0.11	0.57	0.75	N/A	A		
Highway 50 (South)	0.21	0.99	1.24	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 3:00 PM - 4:00 PM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM " model duration: 3:00 PM - 4:00 PM
"D8 - 2041 Future Background, PM" model duration: 3:00 PM - 4:00 PM
"D10 - 2051 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D11 - 2051 Future Background, PM" model duration: 3:00 PM - 4:00 PM

Run using Junctions 8.0.6.541 at 2026-02-21 12:21:28 PM

File summary

Title	Bolton North Hill
Location	Highway 50 & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	483620606	2048

(Default Analysis Set) - 2031 Future Background, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2031 Future Background, PM	2031 Future Background	PM		PHF	15:00	16:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	0.97	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy	3	Emil Kolb Pkwy	
Highway 50 (North)	2	Highway 50 (North)	
Highway 50 (South)	1	Highway 50 (South)	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	0.00	99999.00
Highway 50 (North)	0.00	99999.00
Highway 50 (South)	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy	7.00	8.00	30.00	25.00	55.00	25.00	
Highway 50 (North)	7.00	8.00	30.00	35.00	60.00	25.00	
Highway 50 (South)	7.00	8.00	30.00	35.00	60.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy	0.00	0.00
Highway 50 (North)	0.00	0.00
Highway 50 (South)	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy	Percentage	Opening day within 10 years		85.00
Highway 50 (North)	Percentage	Opening day within 10 years		85.00
Highway 50 (South)	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy		(calculated)	(calculated)	1.562	2831.014
Highway 50 (North)		(calculated)	(calculated)	1.505	2853.857
Highway 50 (South)		(calculated)	(calculated)	1.505	2853.857

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy	Evenly split	10.00
Highway 50 (North)	Evenly split	10.00
Highway 50 (South)	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy	1	3		Infinity	0.00	99999.00
Highway 50 (North)	1	1		Infinity	0.00	99999.00
Highway 50 (North)	1	2		Infinity	0.00	99999.00
Highway 50 (South)	1	3		Infinity	0.00	99999.00
Highway 50 (South)	1	4		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy	(calculated)	(calculated)	0.781	1415.507
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	4		✓	✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	1			✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	2	✓	✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	3		✓	

Traffic Flows

Demand Set Data Options

Default Vehicle	Vehicle Mix Varies Over	Vehicle Mix Varies Over	Vehicle Mix Varies Over	Vehicle Mix Source	PCE Factor for a Truck	Default Turning	Estimate from entry/exit	Turning Proportions Vary	Turning Proportions Vary	Turning Proportions Vary

Mix	Time	Turn	Entry		(PCE)	Proportions	counts	Over Time	Over Turn	Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy	PHF	✓	506.00	100.000
Highway 50 (North)	PHF	✓	447.00	100.000
Highway 50 (South)	PHF	✓	574.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy	506.00	0.91	SecondQuarter
Highway 50 (North)	447.00	0.91	SecondQuarter
Highway 50 (South)	574.00	0.91	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.000	520.000	54.000
	Highway 50 (North)	264.000	0.000	183.000
	Emil Kolb Pkwy	95.000	411.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.00	0.91	0.09
	Highway 50 (North)	0.59	0.00	0.41
	Emil Kolb Pkwy	0.19	0.81	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	1.000	1.013	1.000
	Highway 50 (North)	1.013	1.000	1.134
	Emil Kolb Pkwy	1.013	1.023	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.0	1.3	0.0
	Highway 50 (North)	1.3	0.0	13.4
	Emil Kolb Pkwy	1.3	2.3	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy	0.86	0.15	0.72	A	509.85	509.85	6.69	0.79	0.11
Highway 50 (North)	0.75	0.11	0.57	A	449.69	449.69	5.60	0.75	0.09
Highway 50 (South)	1.24	0.21	0.99	A	577.83	577.83	10.25	1.06	0.17

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: King Street & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 11:12:45 AM

Summary of intersection performance

	AM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2031 Future Background						
Emil Kolb Pkwy (North)	0.14	0.71	0.84	N/A	A	0.89	A
Emil Kolb Pkwy (South)	0.09	0.20	0.87	N/A	A		
King Street	0.15	0.76	0.94	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 8:00 AM - 9:00 AM
"D3 - 2031 Future Background, AM " model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D5 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D8 - 2041 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D9 - 2031 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 8:00 AM - 9:00 AM

Run using Junctions 8.0.6.541 at 2026-02-21 11:12:45 AM

File summary

Title	Bolton North Hill
Location	King Street & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials

1.00	-1	3	1	10	317392568	2173

(Default Analysis Set) - 2031 Future Background, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2031 Future Background, AM	2031 Future Background	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	0.89	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy (North)	2	Emil Kolb Pkwy (North)	
Emil Kolb Pkwy (South)	1	Emil Kolb Pkwy (South)	
King Street	3	King Street	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	0.00	99999.00
Emil Kolb Pkwy (South)	0.00	99999.00
King Street	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy (North)	7.00	8.00	30.00	25.00	55.00	25.00	
Emil Kolb Pkwy (South)	7.00	8.00	30.00	25.00	55.00	25.00	
King Street	7.00	8.00	30.00	25.00	55.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy (North)	0.00	0.00
Emil Kolb Pkwy (South)	0.00	0.00
King Street	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy (North)	Percentage	Opening day within 10 years		85.00
Emil Kolb Pkwy (South)	Percentage	Opening day within 10 years		85.00
King Street	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)		(calculated)	(calculated)	1.562	2831.014
Emil Kolb Pkwy (South)		(calculated)	(calculated)	1.562	2831.014
King Street		(calculated)	(calculated)	1.562	2831.014

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy (North)	Evenly split	10.00
Emil Kolb Pkwy (South)	Evenly split	10.00
King Street	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	1	1		Infinity	0.00	99999.00
Emil Kolb Pkwy (North)	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	3		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	4		Infinity	0.00	99999.00
King Street	1	2		Infinity	0.00	99999.00
King Street	1	3		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	4		✓	✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	1	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	3	✓	✓	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy (North)	PHF	✓	460.00	100.000
Emil Kolb Pkwy (South)	PHF	✓	322.00	100.000
King Street	PHF	✓	531.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy (North)	460.00	0.95	SecondQuarter
Emil Kolb Pkwy (South)	322.00	0.95	SecondQuarter
King Street	531.00	0.95	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.000	113.000	209.000
	Emil Kolb Pkwy (North)	254.000	0.000	206.000
	King Street	404.000	127.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.00	0.35	0.65
	Emil Kolb Pkwy (North)	0.55	0.00	0.45
	King Street	0.76	0.24	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	1.000	1.310	1.075
	Emil Kolb Pkwy (North)	1.032	1.000	1.022
	King Street	1.061	1.097	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.0	31.0	7.5
	Emil Kolb Pkwy (North)	3.2	0.0	2.2
	King Street	6.1	9.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy (North)	0.84	0.14	0.71	A	457.72	457.72	6.28	0.82	0.10
Emil Kolb Pkwy (South)	0.87	0.09	0.20	A	322.49	322.49	5.01	0.93	0.08
King Street	0.94	0.15	0.76	A	532.77	532.77	8.62	0.97	0.14

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

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Filename: King Street & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 11:17:00 AM

Summary of intersection performance

	PM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2031 Future Background						
Emil Kolb Pkwy (North)	0.22	1.23	1.74	N/A	A	1.91	A
Emil Kolb Pkwy (South)	0.77	3.43	2.50	N/A	A		
King Street	0.17	0.92	0.98	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 8:00 AM - 9:00 AM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D5 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM " model duration: 8:00 AM - 9:00 AM
"D8 - 2041 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D9 - 2031 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 8:00 AM - 9:00 AM

Run using Junctions 8.0.6.541 at 2026-02-21 11:17:00 AM

File summary

Title	Bolton North Hill
Location	King Street & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials

1.00	-1	3	1	10	570830020	1775

(Default Analysis Set) - 2031 Future Background, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2031 Future Background, PM	2031 Future Background	PM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	1.91	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy (North)	2	Emil Kolb Pkwy (North)	
Emil Kolb Pkwy (South)	1	Emil Kolb Pkwy (South)	
King Street	3	King Street	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	0.00	99999.00
Emil Kolb Pkwy (South)	0.00	99999.00
King Street	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy (North)	7.00	8.00	30.00	25.00	55.00	25.00	
Emil Kolb Pkwy (South)	7.00	8.00	30.00	25.00	55.00	25.00	
King Street	7.00	8.00	30.00	25.00	55.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy (North)	0.00	0.00
Emil Kolb Pkwy (South)	0.00	0.00
King Street	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy (North)	Percentage	Opening day within 10 years		85.00
Emil Kolb Pkwy (South)	Percentage	Opening day within 10 years		85.00
King Street	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)		(calculated)	(calculated)	1.562	2831.014
Emil Kolb Pkwy (South)		(calculated)	(calculated)	1.562	2831.014
King Street		(calculated)	(calculated)	1.562	2831.014

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy (North)	Evenly split	10.00
Emil Kolb Pkwy (South)	Evenly split	10.00
King Street	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	1	1		Infinity	0.00	99999.00
Emil Kolb Pkwy (North)	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	3		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	4		Infinity	0.00	99999.00
King Street	1	2		Infinity	0.00	99999.00
King Street	1	3		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	4		✓	✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	1	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	3	✓	✓	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy (North)	PHF	✓	388.00	100.000
Emil Kolb Pkwy (South)	PHF	✓	1005.00	100.000
King Street	PHF	✓	563.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy (North)	388.00	1.00	SecondQuarter
Emil Kolb Pkwy (South)	1005.00	1.00	SecondQuarter
King Street	563.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.000	417.000	588.000
	Emil Kolb Pkwy (North)	254.000	0.000	134.000
	King Street	340.000	223.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.00	0.41	0.59
	Emil Kolb Pkwy (North)	0.65	0.00	0.35
	King Street	0.60	0.40	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	1.000	1.021	1.067
	Emil Kolb Pkwy (North)	1.103	1.000	1.077
	King Street	1.047	1.015	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.0	2.1	6.7
	Emil Kolb Pkwy (North)	10.3	0.0	7.7
	King Street	4.7	1.5	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy (North)	1.74	0.22	1.23	A	385.16	385.16	12.36	1.93	0.21
Emil Kolb Pkwy (South)	2.50	0.77	3.43	A	1008.52	1008.52	43.36	2.58	0.72
King Street	0.98	0.17	0.92	A	566.19	566.19	9.52	1.01	0.16

Lanes, Volumes, Timings
3: Highway 50 & Columbia Way 02/20/2026

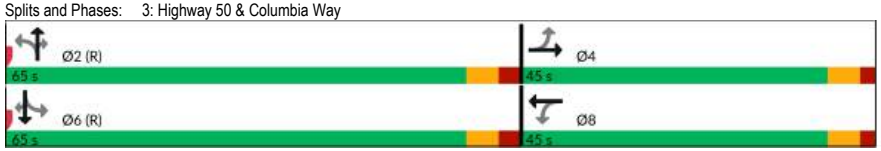
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	9	226	3	110	3	225	143	101	410	3
Future Volume (vph)	4	0	9	226	3	110	3	225	143	101	410	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	70.0		0.0	140.0		0.0	100.0		30.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Frt		0.904			0.854				0.850			0.850
Flt Protected		0.986		0.950			0.950			0.950		
Satd. Flow (prot)	0	951	0	1750	1572	0	892	1830	1595	1700	1883	1591
Flt Permitted		0.938		0.748			0.464			0.607		
Satd. Flow (perm)	0	905	0	1378	1572	0	436	1830	1595	1086	1883	1591
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37			120				155			30
Link Speed (k/h)		50			40			50			60	
Link Distance (m)		127.3			237.9			633.3			972.3	
Travel Time (s)		9.2			21.4			45.6			58.3	
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 (%)	100%	0%	72%	2%	100%	2%	100%	5%	2%	5%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	4	0	10	246	3	120	3	245	155	110	446	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	0	246	123	0	3	245	155	110	446	3
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												
Headway Factor	0.99	0.99	0.99	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02
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	Left						Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	12.0		8.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	-3.0		-2.0	-2.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	-3.0		-2.0	-2.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	15.0		10.0	10.0		2.0	0.6	2.0	2.0	0.6	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
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												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	25.0	25.0		25.0	25.0		30.7	30.7	30.7	30.7	30.7	30.7
Total Split (s)	45.0	45.0		45.0	45.0		65.0	65.0	65.0	65.0	65.0	65.0
Total Split (%)	40.9%	40.9%		40.9%	40.9%		59.1%	59.1%	59.1%	59.1%	59.1%	59.1%
Maximum Green (s)	39.0	39.0		39.0	39.0		58.3	58.3	58.3	58.3	58.3	58.3
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0		6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0
Flash Don't Walk (s)	11.0	11.0		11.0	11.0		16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		25.3		25.3	25.3		72.0	72.0	72.0	72.0	72.0	72.0
Actuated g/C Ratio		0.23		0.23	0.23		0.65	0.65	0.65	0.65	0.65	0.65
v/c Ratio		0.06		0.78	0.27		0.01	0.20	0.14	0.15	0.36	0.00
Control Delay (s/veh)		1.8		55.7	7.2		9.3	9.2	1.9	9.4	10.7	0.0
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		1.8		55.7	7.2		9.3	9.2	1.9	9.4	10.7	0.0
LOS		A		E	A		A	A	A	A	B	A
Approach Delay (s/veh)		1.8			39.5			6.4			10.4	
Approach LOS		A			D			A			B	
Queue Length 50th (m)		0.0		52.3	0.5		0.2	20.2	0.0	8.7	41.7	0.0
Queue Length 95th (m)		1.1		74.1	13.7		1.6	39.9	8.7	20.8	76.6	0.0
Internal Link Dist (m)		103.3			213.9			609.3			948.3	
Turn Bay Length (m)				70.0			140.0			100.0		30.0
Base Capacity (vph)		344		488	634		285	1197	1097	710	1232	1051
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		0.04		0.50	0.19		0.01	0.20	0.14	0.15	0.36	0.00

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay (s/veh): 17.1		Intersection LOS: B	

Intersection Capacity Utilization 73.6% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 3: Highway 50 & Columbia Way



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	29	28	134	15	59	13	283	60	53	561	8
Future Volume (vph)	16	29	28	134	15	59	13	283	60	53	561	8
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	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	85.0		0.0	85.0		75.0	65.0		50.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.98							0.96
Frt		0.948			0.880				0.850			0.850
Flt Protected		0.989		0.950			0.950			0.950		
Satd. Flow (prot)	0	1746	0	1785	1628	0	1623	3476	1591	1785	1883	1591
Flt Permitted		0.900		0.644			0.299			0.547		
Satd. Flow (perm)	0	1584	0	1210	1628	0	511	3476	1591	1028	1883	1532
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			71				74			74
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		112.1			201.9			771.8			633.3	
Travel Time (s)		10.1			18.2			55.6			45.6	
Confl. Peds. (#/hr)	17					17	8					8
Confl. Bikes (#/hr)					2							
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	4%	4%	0%	0%	2%	10%	5%	0%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	19	35	34	161	18	71	16	341	72	64	676	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	88	0	161	89	0	16	341	72	64	676	10
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												
Headway Factor	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02	1.01	0.99	1.02
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							Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	12.0	12.0		12.0	12.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	15.0	15.0		15.0	15.0		2.0	0.6	2.0	2.0	0.6	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
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		3	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.1	47.1		8.0	47.1		34.7	34.7	34.7	34.7	34.7	34.7
Total Split (s)	60.0	60.0		15.0	75.0		45.0	45.0	45.0	45.0	45.0	45.0
Total Split (%)	50.0%	50.0%		12.5%	62.5%		37.5%	37.5%	37.5%	37.5%	37.5%	37.5%
Maximum Green (s)	51.9	51.9		12.0	66.9		38.3	38.3	38.3	38.3	38.3	38.3
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	4.1	4.1		0.0	4.1		2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		8.1		3.0	8.1		6.7	6.7	6.7	6.7	6.7	6.7
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	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	10.0	10.0			10.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Don't Walk (s)	29.0	29.0			29.0		18.0	18.0	18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	4	4			4		2	2	2	2	2	2
Act Effct Green (s)		16.2		33.3	28.2		77.0	77.0	77.0	77.0	77.0	77.0
Actuated g/C Ratio		0.14		0.28	0.24		0.64	0.64	0.64	0.64	0.64	0.64
v/c Ratio		0.36		0.41	0.20		0.05	0.15	0.07	0.10	0.56	0.01
Control Delay (s/veh)		31.8		34.9	10.0		29.2	23.3	16.5	13.2	18.0	0.0
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		31.8		34.9	10.0		29.2	23.3	16.5	13.2	18.0	0.0
LOS		C		C	A		C	C	B	B	B	A
Approach Delay (s/veh)		31.8			26.0			22.4			17.3	
Approach LOS		C			C			C			B	
Queue Length 50th (m)		13.2		33.0	3.6		2.7	32.2	4.9	5.1	79.2	0.0
Queue Length 95th (m)		19.9		31.9	10.2		m8.6	48.9	m16.4	17.7	175.9	0.0
Internal Link Dist (m)		88.1			177.9			747.8			609.3	
Turn Bay Length (m)				85.0			85.0		75.0	65.0		50.0
Base Capacity (vph)		703		396	939		328	2231	1047	660	1208	1010
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		0.13		0.41	0.09		0.05	0.15	0.07	0.10	0.56	0.01

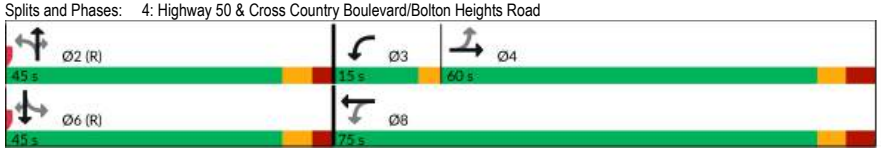
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 39 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay (s/veh): 21.0	Intersection LOS: C
Intersection Capacity Utilization 77.8%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 4: Highway 50 & Cross Country Boulevard/Bolton Heights Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	215	78	278	210	57	53	302	118	59	622	24
Future Volume (vph)	25	215	78	278	210	57	53	302	118	59	622	24
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	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	30.0		35.0	30.0		0.0	55.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Ped Bike Factor									0.97	1.00	1.00	
Frt			0.850		0.968				0.850		0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1606	1695	1437	1591	1635	0	1564	1662	1417	1643	1694	0
Flt Permitted	0.586			0.357			0.192			0.490		
Satd. Flow (perm)	991	1695	1437	598	1635	0	316	1662	1379	844	1694	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			118		11				126		2	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		535.7			353.4			517.9			32.8	
Travel Time (s)		48.2			31.8			37.3			2.4	
Confl. Peds. (#/hr)							2		3	3		2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	0%	1%	3%	0%	5%	4%	1%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	1	0
Adj. Flow (vph)	27	229	83	296	223	61	56	321	126	63	662	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	229	83	296	284	0	56	321	126	63	688	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			3.7			3.7	
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												
Headway Factor	1.16	1.13	1.16	1.16	1.13	1.13	1.13	1.13	1.17	1.13	1.13	1.16
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	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	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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Detector Phase	3	8	8	7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	8.0	31.9	31.9	8.0	31.9		8.0	32.0	32.0	8.0	32.0	
Total Split (s)	11.0	32.0	32.0	18.0	39.0		8.0	59.0	59.0	11.0	62.0	
Total Split (%)	9.2%	26.7%	26.7%	15.0%	32.5%		6.7%	49.2%	49.2%	9.2%	51.7%	
Maximum Green (s)	8.0	25.1	25.1	15.0	32.1		5.0	52.0	52.0	8.0	55.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.9	2.9	0.0	2.9		0.0	3.0	3.0	0.0	3.0	
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	6.9	6.9	3.0	6.9		3.0	7.0	7.0	3.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	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	None	None	None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)		10.0	10.0		10.0			10.0	10.0		10.0	
Flash Don't Walk (s)		15.0	15.0		15.0			15.0	15.0		15.0	
Pedestrian Calls (#/hr)		4	4		4			8	8		8	
Act Effct Green (s)	31.3	20.6	20.6	42.5	32.4		67.9	59.0	59.0	70.2	60.2	
Actuated g/C Ratio	0.26	0.17	0.17	0.35	0.27		0.57	0.49	0.49	0.59	0.50	
v/c Ratio	0.09	0.79	0.24	0.88	0.63		0.23	0.39	0.17	0.12	0.81	
Control Delay (s/veh)	24.9	66.2	4.3	59.0	44.5		13.9	22.8	4.1	10.3	33.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	24.9	66.2	4.3	59.0	44.5		13.9	22.8	4.1	10.3	33.1	
LOS	C	E	A	E	D		B	C	A	B	C	
Approach Delay (s/veh)		47.8			51.9			17.1			31.2	
Approach LOS		D			D			B			C	
Queue Length 50th (m)	4.3	54.5	0.0	57.2	61.8		5.6	51.1	0.0	7.0	161.6	
Queue Length 95th (m)	10.4	80.7	6.3	#96.9	91.0		12.5	81.0	11.4	m6.1	#228.4	
Internal Link Dist (m)		511.7			329.4			493.9			8.8	
Turn Bay Length (m)	30.0		35.0	30.0			55.0			20.0		
Base Capacity (vph)	309	354	393	336	456		241	817	742	550	850	
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	0.09	0.65	0.21	0.88	0.62		0.23	0.39	0.17	0.11	0.81	

Intersection Summary
Area Type: CBD
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 115 (96%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88
Intersection Signal Delay (s/veh): 36.0 Intersection LOS: D
Intersection Capacity Utilization 90.1% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Highway 50 & King Street West/King Street East

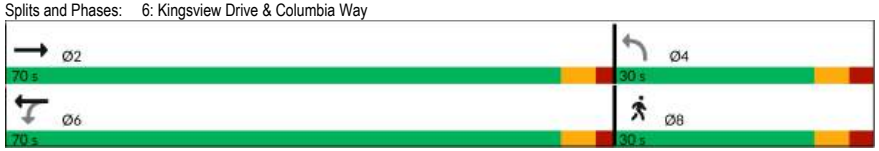


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø8
Lane Configurations							
Traffic Volume (vph)	182	26	99	199	38	54	
Future Volume (vph)	182	26	99	199	38	54	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor	1.00			1.00	0.98		
Frt	0.983				0.921		
Flt Protected				0.984	0.980		
Satd. Flow (prot)	1881	0	0	1835	1697	0	
Flt Permitted				0.810	0.980		
Satd. Flow (perm)	1881	0	0	1507	1697	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	14				65		
Link Speed (k/h)	40			40	40		
Link Distance (m)	237.9			417.0	131.8		
Travel Time (s)	21.4			37.5	11.9		
Confl. Peds. (#/hr)		3	3			5	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	
Heavy Vehicles (%)	0%	0%	3%	3%	0%	0%	
Adj. Flow (vph)	219	31	119	240	46	65	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	250	0	0	359	111	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	3.5			3.5	3.7		
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	0.99	0.99	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
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		2.0	0.6	2.0		
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		Perm	NA	Perm		
Protected Phases	2			6			8
Permitted Phases			6		4		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø8
Detector Phase	2		6	6	4		
Switch Phase							
Minimum Initial (s)	8.0		8.0	8.0	8.0		8.0
Minimum Split (s)	21.0		21.0	21.0	21.9		21.9
Total Split (s)	70.0		70.0	70.0	30.0		30.0
Total Split (%)	70.0%		70.0%	70.0%	30.0%		30%
Maximum Green (s)	64.0		64.0	64.0	23.1		23.1
Yellow Time (s)	4.0		4.0	4.0	4.0		4.0
All-Red Time (s)	2.0		2.0	2.0	2.9		2.9
Lost Time Adjust (s)	0.0			0.0	0.0		
Total Lost Time (s)	6.0			6.0	6.9		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	Max		Max	Max	None		Ped
Walk Time (s)	8.0		8.0	8.0	8.0		8.0
Flash Don't Walk (s)	7.0		7.0	7.0	7.0		7.0
Pedestrian Calls (#/hr)	0		3	3	0		0
Act Effct Green (s)	64.0			64.0	15.0		
Actuated g/C Ratio	0.70			0.70	0.16		
v/c Ratio	0.19			0.34	0.34		
Control Delay (s/veh)	5.0			6.6	19.3		
Queue Delay	0.0			0.0	0.0		
Total Delay (s/veh)	5.0			6.6	19.3		
LOS	A			A	B		
Approach Delay (s/veh)	5.0			6.6	19.3		
Approach LOS	A			A	B		
Queue Length 50th (m)	13.1			23.0	7.4		
Queue Length 95th (m)	19.4			32.3	19.8		
Internal Link Dist (m)	213.9			393.0	107.8		
Turn Bay Length (m)							
Base Capacity (vph)	1314			1049	475		
Starvation Cap Reductn	0			0	0		
Spillback Cap Reductn	0			0	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.19			0.34	0.23		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 91.9			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.34			
Intersection Signal Delay (s/veh): 8.0		Intersection LOS: A	
Intersection Capacity Utilization 51.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Kingsview Drive & Columbia Way



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	160	40	29	176	65	42
Future Volume (vph)	160	40	29	176	65	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.973				0.947	
Flt Protected				0.993	0.971	
Satd. Flow (prot)	1869	0	0	1850	1712	0
Flt Permitted				0.993	0.971	
Satd. Flow (perm)	1869	0	0	1850	1712	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	500.8			180.3	104.8	
Travel Time (s)	30.0			10.8	9.4	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	4%	3%	2%	5%
Adj. Flow (vph)	200	50	36	220	81	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	250	0	0	256	134	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.9%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
7: Westchester Boulevard & Columbia Way 02/20/2026

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	160	40	29	176	65	42
Future Volume (Veh/h)	160	40	29	176	65	42
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	200	50	36	220	81	52
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			250		517	225
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			250		517	225
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		84	94
cM capacity (veh/h)			1304		504	807

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	250	256	133
Volume Left	0	36	81
Volume Right	50	0	52
cSH	1700	1304	591
Volume to Capacity	0.15	0.03	0.23
Queue Length 95th (m)	0.0	0.7	6.9
Control Delay (s/veh)	0.0	1.3	12.9
Lane LOS		A	B
Approach Delay (s/veh)	0.0	1.3	12.9
Approach LOS			B

Intersection Summary			
Average Delay			3.2
Intersection Capacity Utilization			37.9%
Analysis Period (min)			15
		ICU Level of Service	A

Lanes, Volumes, Timings
8: Mount Hope Road & Columbia Way 02/20/2026

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	252	12	4	133	25	29	6	13	154	5	64
Future Volume (vph)	86	252	12	4	133	25	29	6	13	154	5	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Ped Bike Factor												
Frt		0.995			0.979			0.963			0.961	
Flt Protected		0.988			0.999			0.971			0.967	
Satd. Flow (prot)	0	1823	0	0	1794	0	0	1748	0	0	1770	0
Flt Permitted		0.988			0.999			0.971			0.967	
Satd. Flow (perm)	0	1823	0	0	1794	0	0	1748	0	0	1770	0
Link Speed (k/h)		60			60			40			60	
Link Distance (m)		116.8			228.4			249.8			243.0	
Travel Time (s)		7.0			13.7			22.5			14.6	
Confl. Peds. (#/hr)	1					1	1		2	2		1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	5%	0%	0%	3%	15%	0%	0%	10%	0%	0%	3%
Adj. Flow (vph)	105	307	15	5	162	30	35	7	16	188	6	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	427	0	0	197	0	0	58	0	0	272	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.7%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
8: Mount Hope Road & Columbia Way 02/20/2026

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	252	12	4	133	25	29	6	13	154	5	64
Future Volume (Veh/h)	86	252	12	4	133	25	29	6	13	154	5	64
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	105	307	15	5	162	30	35	7	16	188	6	78
Pedestrians		1			2						1	
Lane Width (m)		3.7			3.7						3.7	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	193			322			794	728	317	734	720	179
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	193			322			794	728	317	734	720	179
tC, single (s)	4.1			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	92			100			87	98	98	38	98	91
cM capacity (veh/h)	1391			1249			260	325	705	305	328	860

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	427	197	58	272
Volume Left	105	5	35	188
Volume Right	15	30	16	78
cSH	1391	1249	324	375
Volume to Capacity	0.08	0.00	0.18	0.73
Queue Length 95th (m)	2.0	0.1	5.1	44.4
Control Delay (s/veh)	2.5	0.2	18.5	36.3
Lane LOS	A	A	C	E
Approach Delay (s/veh)	2.5	0.2	18.5	36.3
Approach LOS			C	E

Intersection Summary					
Average Delay	12.6				
Intersection Capacity Utilization	53.7%	ICU Level of Service	A		
Analysis Period (min)	15				

Lanes, Volumes, Timings
9: Caledon King Townline & Columbia Way 02/20/2026

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	38	455	78	113	509	22
Future Volume (vph)	38	455	78	113	509	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.875				0.994	
Flt Protected	0.996			0.980		
Satd. Flow (prot)	1632	0	0	1759	1891	0
Flt Permitted	0.996			0.980		
Satd. Flow (perm)	1632	0	0	1759	1891	0
Link Speed (k/h)	60			80	80	
Link Distance (m)	190.9			1113.3	133.7	
Travel Time (s)	11.5			50.1	6.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	10%	2%	10%	5%	1%	0%
Adj. Flow (vph)	40	484	83	120	541	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	524	0	0	203	564	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			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	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	455	78	113	509	22
Future Volume (Veh/h)	38	455	78	113	509	22
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	40	484	83	120	541	23
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	839	553	564			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	839	553	564			
tC, single (s)	6.5	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.3			
p0 queue free %	87	9	91			
cM capacity (veh/h)	298	533	969			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	524	203	564
Volume Left	40	83	0
Volume Right	484	0	23
cSH	503	969	1700
Volume to Capacity	1.04	0.09	0.33
Queue Length 95th (m)	123.3	2.2	0.0
Control Delay (s/veh)	80.4	4.2	0.0
Lane LOS	F	A	
Approach Delay (s/veh)	80.4	4.2	0.0
Approach LOS	F		

Intersection Summary			
Average Delay		33.3	
Intersection Capacity Utilization		78.6%	ICU Level of Service D
Analysis Period (min)		15	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	38	18	206	460	5
Future Volume (vph)	5	38	18	206	460	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	105.0			115.0
Storage Lanes	1	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.882					0.850
Flt Protected	0.994		0.950			
Satd. Flow (prot)	1641	0	1534	1601	1865	1633
Flt Permitted	0.994		0.950			
Satd. Flow (perm)	1641	0	1534	1601	1865	1633
Link Speed (k/h)	60			70	50	
Link Distance (m)	388.6			2029.6	1306.7	
Travel Time (s)	23.3			104.4	94.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	19%	20%	3%	0%
Adj. Flow (vph)	6	42	20	229	511	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	0	20	229	511	6
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	34.2%		ICU Level of Service A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	38	18	206	460	5
Future Volume (Veh/h)	5	38	18	206	460	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	42	20	229	511	6
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	780	511	517			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	780	511	517			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	98	93	98			
cM capacity (veh/h)	359	561	967			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	48	20	229	511	6
Volume Left	6	20	0	0	0
Volume Right	42	0	0	0	6
cSH	524	967	1700	1700	1700
Volume to Capacity	0.09	0.02	0.13	0.30	0.00
Queue Length 95th (m)	2.4	0.5	0.0	0.0	0.0
Control Delay (s/veh)	12.6	8.8	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s/veh)	12.6	0.7		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		34.2%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	418	3	4	97	64	75
Future Volume (vph)	418	3	4	97	64	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999				0.927	
Flt Protected				0.998	0.977	
Satd. Flow (prot)	1882	0	0	1880	1706	0
Flt Permitted				0.998	0.977	
Satd. Flow (perm)	1882	0	0	1880	1706	0
Link Speed (k/h)	50			60	50	
Link Distance (m)	228.4			304.5	187.8	
Travel Time (s)	16.4			18.3	13.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	418	3	4	97	64	75
Shared Lane Traffic (%)						
Lane Group Flow (vph)	421	0	0	101	139	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	37.0%		ICU Level of Service	A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
18: Forest Gate Avenue & Columbia Way 02/20/2026

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	418	3	4	97	64	75
Future Volume (Veh/h)	418	3	4	97	64	75
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	418	3	4	97	64	75
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			421		525	420
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			421		525	420
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		87	88
cM capacity (veh/h)			1138		511	634

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	421	101	139
Volume Left	0	4	64
Volume Right	3	0	75
cSH	1700	1138	571
Volume to Capacity	0.25	0.00	0.24
Queue Length 95th (m)	0.0	0.1	7.6
Control Delay (s/veh)	0.0	0.4	13.3
Lane LOS		A	B
Approach Delay (s/veh)	0.0	0.4	13.3
Approach LOS			B

Intersection Summary			
Average Delay			2.9
Intersection Capacity Utilization			37.0%
Analysis Period (min)			15

ICU Level of Service A

Lanes, Volumes, Timings
3: Highway 50 & Columbia Way 02/20/2026

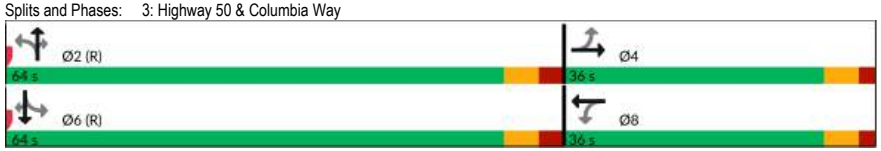
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	3	187	0	76	0	506	247	151	260	3
Future Volume (vph)	0	0	3	187	0	76	0	506	247	151	260	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	70.0		0.0	140.0		0.0	100.0		30.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Frt		0.865			0.850				0.850			0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1662	0	1750	1555	0	1879	1883	1626	1785	1883	795
Flt Permitted				0.756						0.423		
Satd. Flow (perm)	0	1662	0	1393	1555	0	1879	1883	1626	795	1883	795
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		595			331				257			33
Link Speed (k/h)		50			40			50			60	
Link Distance (m)		127.3			237.9			633.3			972.3	
Travel Time (s)		9.2			21.4			45.6			58.3	
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 (%)	100%	0%	0%	2%	0%	5%	0%	2%	0%	0%	2%	100%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	0	0	3	195	0	79	0	527	257	157	271	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	195	79	0	0	527	257	157	271	3
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												
Headway Factor	0.99	0.99	0.99	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02
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	Left						Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	12.0		8.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	-3.0		-2.0	-2.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	-3.0		-2.0	-2.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	15.0		10.0	10.0		2.0	0.6	2.0	2.0	0.6	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
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												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	25.0	25.0		25.0	25.0		30.7	30.7	30.7	30.7	30.7	30.7
Total Split (s)	36.0	36.0		36.0	36.0		64.0	64.0	64.0	64.0	64.0	64.0
Total Split (%)	36.0%	36.0%		36.0%	36.0%		64.0%	64.0%	64.0%	64.0%	64.0%	64.0%
Maximum Green (s)	30.0	30.0		30.0	30.0		57.3	57.3	57.3	57.3	57.3	57.3
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0		6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0
Flash Don't Walk (s)	11.0	11.0		11.0	11.0		16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		19.4		19.4	19.4			67.9	67.9	67.9	67.9	67.9
Actuated g/C Ratio		0.19		0.19	0.19			0.68	0.68	0.68	0.68	0.68
v/c Ratio		0.00		0.72	0.14			0.41	0.22	0.29	0.21	0.01
Control Delay (s/veh)		0.0		52.2	0.5			9.3	1.5	9.4	7.4	0.0
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		0.0		52.2	0.5			9.3	1.5	9.4	7.4	0.0
LOS		A		D	A			A	A	A	A	A
Approach Delay (s/veh)					37.3			6.7			8.1	
Approach LOS					D			A			A	
Queue Length 50th (m)		0.0		37.6	0.0			42.7	0.0	11.4	18.5	0.0
Queue Length 95th (m)		0.0		57.0	0.0			79.4	9.4	27.7	36.8	0.0
Internal Link Dist (m)		103.3			213.9			609.3			948.3	
Turn Bay Length (m)				70.0						100.0		30.0
Base Capacity (vph)		915		417	698			1277	1185	539	1277	550
Starvation Cap Reductn		0		0	0			0	0	0	0	0
Spillback Cap Reductn		0		0	0			0	0	0	0	0
Storage Cap Reductn		0		0	0			0	0	0	0	0
Reduced v/c Ratio		0.00		0.47	0.11			0.41	0.22	0.29	0.21	0.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 15 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay (s/veh): 12.7		Intersection LOS: B	

Intersection Capacity Utilization 76.5% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 3: Highway 50 & Columbia Way



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	8	13	42	10	19	81	761	95	28	361	21
Future Volume (vph)	9	8	13	42	10	19	81	761	95	28	361	21
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	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	85.0		0.0	85.0		75.0	65.0		50.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		1.00	0.99		1.00					0.98
Frt		0.941			0.900				0.850			0.850
Flt Protected		0.985		0.950			0.950			0.950		
Satd. Flow (prot)	0	1762	0	1785	1713	0	1785	3614	1559	1785	1883	1591
Flt Permitted		0.899		0.738			0.535			0.346		
Satd. Flow (perm)	0	1607	0	1381	1713	0	1003	3614	1559	650	1883	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			20				98			51
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		112.1			201.9			771.8			633.3	
Travel Time (s)		10.1			18.2			55.6			45.6	
Confl. Peds. (#/hr)	2		3	3		2	2					2
Confl. Bikes (#/hr)					2							
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 (%)	0%	0%	0%	0%	0%	0%	0%	1%	2%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	9	8	13	43	10	20	84	785	98	29	372	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	30	0	43	30	0	84	785	98	29	372	22
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												
Headway Factor	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02	1.01	0.99	1.02
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							Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	12.0	12.0		12.0	12.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	15.0	15.0		15.0	15.0		2.0	0.6	2.0	2.0	0.6	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
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	

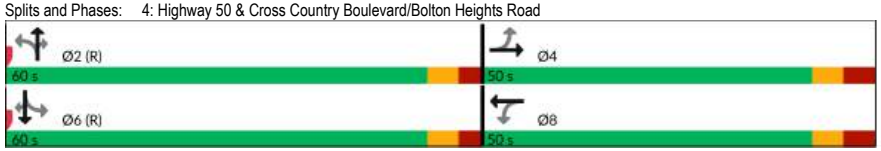
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.1	47.1		47.1	47.1		34.7	34.7	34.7	34.7	34.7	34.7
Total Split (s)	50.0	50.0		50.0	50.0		60.0	60.0	60.0	60.0	60.0	60.0
Total Split (%)	45.5%	45.5%		45.5%	45.5%		54.5%	54.5%	54.5%	54.5%	54.5%	54.5%
Maximum Green (s)	41.9	41.9		41.9	41.9		53.3	53.3	53.3	53.3	53.3	53.3
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	4.1	4.1		4.1	4.1		2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		8.1		8.1	8.1		6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Don't Walk (s)	29.0	29.0		29.0	29.0		18.0	18.0	18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	4	4		4	4		2	2	2	2	2	2
Act Effct Green (s)		15.9		15.9	15.9		84.2	84.2	84.2	84.2	84.2	84.2
Actuated g/C Ratio		0.14		0.14	0.14		0.77	0.77	0.77	0.77	0.77	0.77
v/c Ratio		0.12		0.22	0.11		0.11	0.28	0.08	0.06	0.26	0.02
Control Delay (s/veh)		24.1		40.1	18.5		7.7	7.0	2.4	8.4	7.6	0.6
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		24.1		40.1	18.5		7.7	7.0	2.4	8.4	7.6	0.6
LOS		C		D	B		A	A	A	A	A	A
Approach Delay (s/veh)		24.1			31.2			6.6			7.2	
Approach LOS		C			C			A			A	
Queue Length 50th (m)		3.6		9.3	2.1		3.8	22.1	0.0	1.3	19.4	0.0
Queue Length 95th (m)		9.2		14.8	8.1		19.2	71.5	8.2	8.6	72.1	0.9
Internal Link Dist (m)		88.1			177.9			747.8			609.3	
Turn Bay Length (m)				85.0			85.0		75.0	65.0		50.0
Base Capacity (vph)		620		526	664		768	2767	1216	497	1442	1201
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		0.05		0.08	0.05		0.11	0.28	0.08	0.06	0.26	0.02

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 96 (87%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 85

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.28	
Intersection Signal Delay (s/veh): 8.3	Intersection LOS: A
Intersection Capacity Utilization 60.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 4: Highway 50 & Cross Country Boulevard/Bolton Heights Road



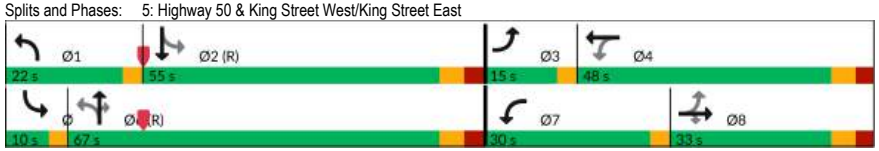
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	246	96	215	275	44	85	799	443	35	404	24
Future Volume (vph)	57	246	96	215	275	44	85	799	443	35	404	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	30.0		35.0	30.0		0.0	55.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Ped Bike Factor	0.98		0.96	0.99	0.99				0.96		1.00	
Frt			0.850		0.979				0.850		0.991	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1575	1712	1409	1591	1667	0	1610	1712	1432	1643	1681	0
Flt Permitted	0.500			0.291			0.354			0.082		
Satd. Flow (perm)	813	1712	1358	483	1667	0	600	1712	1372	142	1681	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125		6				275		2	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		535.7			353.4			517.9			32.8	
Travel Time (s)		48.2			31.8			37.3			2.4	
Confl. Peds. (#/hr)	11		6	6		11	10		8	8		10
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%	1%	2%	1%	1%	0%	2%	1%	0%	0%	1%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	1	0
Adj. Flow (vph)	59	254	99	222	284	45	88	824	457	36	416	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	254	99	222	329	0	88	824	457	36	441	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			3.7			3.7	
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												
Headway Factor	1.16	1.13	1.16	1.16	1.13	1.13	1.13	1.13	1.17	1.13	1.13	1.16
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	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	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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Detector Phase	3	8	8	7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	8.0	31.9	31.9	8.0	31.9		8.0	32.0	32.0	8.0	32.0	
Total Split (s)	15.0	33.0	33.0	30.0	48.0		22.0	67.0	67.0	10.0	55.0	
Total Split (%)	10.7%	23.6%	23.6%	21.4%	34.3%		15.7%	47.9%	47.9%	7.1%	39.3%	
Maximum Green (s)	12.0	26.1	26.1	27.0	41.1		19.0	60.0	60.0	7.0	48.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.9	2.9	0.0	2.9		0.0	3.0	3.0	0.0	3.0	
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	6.9	6.9	3.0	6.9		3.0	7.0	7.0	3.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	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	None	None	None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)		10.0	10.0		10.0			10.0	10.0		10.0	
Flash Don't Walk (s)		15.0	15.0		15.0			15.0	15.0		15.0	
Pedestrian Calls (#/hr)		4	4		4			8	8		8	
Act Effct Green (s)	37.8	25.1	25.1	52.5	38.7		81.0	69.6	69.6	75.9	65.4	
Actuated g/C Ratio	0.27	0.18	0.18	0.38	0.28		0.58	0.50	0.50	0.54	0.47	
v/c Ratio	0.22	0.83	0.29	0.65	0.71		0.21	0.97	0.56	0.24	0.56	
Control Delay (s/veh)	29.1	77.0	5.7	39.9	53.7		16.0	59.7	13.4	19.2	32.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	29.1	77.0	5.7	39.9	53.7		16.0	59.7	13.4	19.2	32.5	
LOS	C	E	A	D	D		B	E	B	B	C	
Approach Delay (s/veh)		53.0			48.1			41.4			31.5	
Approach LOS		D			D			D			C	
Queue Length 50th (m)	10.9	71.2	0.0	45.8	85.5		11.2	~253.9	35.7	4.4	92.6	
Queue Length 95th (m)	19.7	#108.4	9.5	63.6	117.9		21.9	#356.8	77.5	10.8	145.0	
Internal Link Dist (m)		511.7			329.4			493.9			8.8	
Turn Bay Length (m)	30.0		35.0	30.0			55.0			20.0		
Base Capacity (vph)	303	333	364	394	499		486	851	820	153	786	
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	0.19	0.76	0.27	0.56	0.66		0.18	0.97	0.56	0.24	0.56	

Intersection Summary
Area Type: CBD
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 62 (44%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97
Intersection Signal Delay (s/veh): 42.8 Intersection LOS: D
Intersection Capacity Utilization 97.9% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 50 & King Street West/King Street East

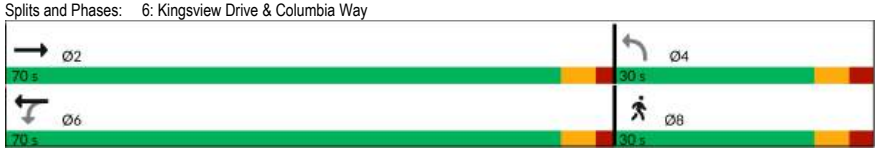


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø8
Lane Configurations							
Traffic Volume (vph)	233	59	56	166	23	37	
Future Volume (vph)	233	59	56	166	23	37	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor	0.99			1.00			
Frt	0.973				0.916		
Flt Protected				0.987	0.981		
Satd. Flow (prot)	1858	0	0	1868	1694	0	
Flt Permitted				0.853	0.981		
Satd. Flow (perm)	1858	0	0	1612	1694	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	25				41		
Link Speed (k/h)	40			40	40		
Link Distance (m)	237.9			417.0	131.8		
Travel Time (s)	21.4			37.5	11.9		
Confl. Peds. (#/hr)		3	3				
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	
Heavy Vehicles (%)	0%	0%	0%	2%	5%	0%	
Adj. Flow (vph)	256	65	62	182	25	41	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	321	0	0	244	66	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	3.5			3.5	3.7		
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	0.99	0.99	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
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		2.0	0.6	2.0		
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		Perm	NA	Perm		
Protected Phases	2			6			8
Permitted Phases			6		4		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø8
Detector Phase	2		6	6	4		
Switch Phase							
Minimum Initial (s)	8.0		8.0	8.0	8.0		8.0
Minimum Split (s)	21.0		21.0	21.0	21.9		21.9
Total Split (s)	70.0		70.0	70.0	30.0		30.0
Total Split (%)	70.0%		70.0%	70.0%	30.0%		30%
Maximum Green (s)	64.0		64.0	64.0	23.1		23.1
Yellow Time (s)	4.0		4.0	4.0	4.0		4.0
All-Red Time (s)	2.0		2.0	2.0	2.9		2.9
Lost Time Adjust (s)	0.0			0.0	0.0		
Total Lost Time (s)	6.0			6.0	6.9		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	Max		Max	Max	None		Ped
Walk Time (s)	8.0		8.0	8.0	8.0		8.0
Flash Don't Walk (s)	7.0		7.0	7.0	7.0		7.0
Pedestrian Calls (#/hr)	0		3	3	0		0
Act Effct Green (s)	64.0			64.0	15.0		
Actuated g/C Ratio	0.70			0.70	0.16		
v/c Ratio	0.25			0.22	0.21		
Control Delay (s/veh)	5.2			5.6	18.5		
Queue Delay	0.0			0.0	0.0		
Total Delay (s/veh)	5.2			5.6	18.5		
LOS	A			A	B		
Approach Delay (s/veh)	5.2			5.6	18.5		
Approach LOS	A			A	B		
Queue Length 50th (m)	17.2			14.0	4.0		
Queue Length 95th (m)	27.3			23.0	15.7		
Internal Link Dist (m)	213.9			393.0	107.8		
Turn Bay Length (m)							
Base Capacity (vph)	1301			1122	456		
Starvation Cap Reductn	0			0	0		
Spillback Cap Reductn	0			0	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.25			0.22	0.14		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 91.9			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.25			
Intersection Signal Delay (s/veh): 6.7		Intersection LOS: A	
Intersection Capacity Utilization 50.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Kingsview Drive & Columbia Way



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	122	81	38	117	39	23
Future Volume (vph)	122	81	38	117	39	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.946				0.950	
Flt Protected				0.988	0.970	
Satd. Flow (prot)	1817	0	0	1870	1770	0
Flt Permitted				0.988	0.970	
Satd. Flow (perm)	1817	0	0	1870	1770	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	500.8			180.3	104.8	
Travel Time (s)	30.0			10.8	9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	133	88	41	127	42	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	221	0	0	168	67	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	122	81	38	117	39	23
Future Volume (Veh/h)	122	81	38	117	39	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	133	88	41	127	42	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			221		386	177
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			221		386	177
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		93	97
cM capacity (veh/h)			1360		602	871

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	221	168	67
Volume Left	0	41	42
Volume Right	88	0	25
cSH	1700	1360	681
Volume to Capacity	0.13	0.03	0.10
Queue Length 95th (m)	0.0	0.7	2.6
Control Delay (s/veh)	0.0	2.1	10.9
Lane LOS		A	B
Approach Delay (s/veh)	0.0	2.1	10.9
Approach LOS			B

Intersection Summary			
Average Delay		2.4	
Intersection Capacity Utilization		33.2%	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)	43	162	31	18	304	148	16	6	9	43	8	37
Future Volume (vph)	43	162	31	18	304	148	16	6	9	43	8	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.982			0.957			0.962			0.943	
Flt Protected		0.991			0.998			0.974			0.976	
Satd. Flow (prot)	0	1870	0	0	1811	0	0	1800	0	0	1768	0
Flt Permitted		0.991			0.998			0.974			0.976	
Satd. Flow (perm)	0	1870	0	0	1811	0	0	1800	0	0	1768	0
Link Speed (k/h)		60			60			40			60	
Link Distance (m)		116.8			228.4			249.8			243.0	
Travel Time (s)		7.0			13.7			22.5			14.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	45	171	33	19	320	156	17	6	9	45	8	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	249	0	0	495	0	0	32	0	0	92	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.4%	ICU Level of Service A	
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
8: Mount Hope Road & Columbia Way 02/20/2026

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	162	31	18	304	148	16	6	9	43	8	37
Future Volume (Veh/h)	43	162	31	18	304	148	16	6	9	43	8	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	45	171	33	19	320	156	17	6	9	45	8	39
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	476			204			757	792	188	726	730	398
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	476			204			757	792	188	726	730	398
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			99			94	98	99	86	98	94
cM capacity (veh/h)	1097			1380			289	307	860	320	333	656

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	249	495	32	92
Volume Left	45	19	17	45
Volume Right	33	156	9	39
cSH	1097	1380	360	411
Volume to Capacity	0.04	0.01	0.09	0.22
Queue Length 95th (m)	1.0	0.3	2.3	6.8
Control Delay (s/veh)	1.8	0.4	16.0	16.3
Lane LOS	A	A	C	C
Approach Delay (s/veh)	1.8	0.4	16.0	16.3
Approach LOS			C	C

Intersection Summary					
Average Delay	3.1				
Intersection Capacity Utilization	42.4%	ICU Level of Service	A		
Analysis Period (min)	15				

Lanes, Volumes, Timings
9: Caledon King Townline & Columbia Way 02/20/2026

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	85	81	149	472	204	360
Future Volume (vph)	85	81	149	472	204	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.934				0.914	
Flt Protected	0.975			0.988		
Satd. Flow (prot)	1749	0	0	1879	1743	0
Flt Permitted	0.975			0.988		
Satd. Flow (perm)	1749	0	0	1879	1743	0
Link Speed (k/h)	60			80	80	
Link Distance (m)	190.9			1113.3	133.7	
Travel Time (s)	11.5			50.1	6.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	1%	1%	2%	0%
Adj. Flow (vph)	88	84	154	487	210	371
Shared Lane Traffic (%)						
Lane Group Flow (vph)	172	0	0	641	581	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			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	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	85.6%		ICU Level of Service E	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	85	81	149	472	204	360
Future Volume (Veh/h)	85	81	149	472	204	360
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	88	84	154	487	210	371
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1191	396	581			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1191	396	581			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	50	87	85			
cM capacity (veh/h)	177	658	998			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	172	641	581
Volume Left	88	154	0
Volume Right	84	0	371
cSH	275	998	1700
Volume to Capacity	0.63	0.15	0.34
Queue Length 95th (m)	30.8	4.4	0.0
Control Delay (s/veh)	37.6	3.7	0.0
Lane LOS	E	A	
Approach Delay (s/veh)	37.6	3.7	0.0
Approach LOS	E		

Intersection Summary			
Average Delay		6.4	
Intersection Capacity Utilization		85.6%	ICU Level of Service E
Analysis Period (min)		15	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	17	66	500	231	6
Future Volume (vph)	5	17	66	500	231	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	105.0			115.0
Storage Lanes	1	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.896					0.850
Flt Protected	0.989		0.950			
Satd. Flow (prot)	1702	0	1825	1865	1731	1633
Flt Permitted	0.989		0.950			
Satd. Flow (perm)	1702	0	1825	1865	1731	1633
Link Speed (k/h)	60			70	50	
Link Distance (m)	388.6			2029.6	1306.7	
Travel Time (s)	23.3			104.4	94.1	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	0%	3%	11%	0%
Adj. Flow (vph)	6	20	79	595	275	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	79	595	275	7
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.3%			ICU Level of Service A
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	17	66	500	231	6
Future Volume (Veh/h)	5	17	66	500	231	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	6	20	79	595	275	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1028	275	282			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1028	275	282			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	97	94			
cM capacity (veh/h)	246	769	1292			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	26	79	595	275	7
Volume Left	6	79	0	0	0
Volume Right	20	0	0	0	7
cSH	515	1292	1700	1700	1700
Volume to Capacity	0.05	0.06	0.35	0.16	0.00
Queue Length 95th (m)	1.3	1.6	0.0	0.0	0.0
Control Delay (s/veh)	12.4	8.0	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s/veh)	12.4	0.9		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		36.3%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	156	56	43	466	4	10
Future Volume (vph)	156	56	43	466	4	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.964				0.904	
Flt Protected				0.996	0.986	
Satd. Flow (prot)	1816	0	0	1876	1679	0
Flt Permitted				0.996	0.986	
Satd. Flow (perm)	1816	0	0	1876	1679	0
Link Speed (k/h)	50			60	50	
Link Distance (m)	228.4			304.5	187.8	
Travel Time (s)	16.4			18.3	13.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	156	56	43	466	4	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	212	0	0	509	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	51.9%		ICU Level of Service A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	156	56	43	466	4	10
Future Volume (Veh/h)	156	56	43	466	4	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	156	56	43	466	4	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			212		736	184
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			212		736	184
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		99	99
cM capacity (veh/h)			1358		374	858

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	212	509	14
Volume Left	0	43	4
Volume Right	56	0	10
cSH	1700	1358	627
Volume to Capacity	0.12	0.03	0.02
Queue Length 95th (m)	0.0	0.8	0.5
Control Delay (s/veh)	0.0	1.0	10.9
Lane LOS		A	B
Approach Delay (s/veh)	0.0	1.0	10.9
Approach LOS			B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

FUTURE BACKGROUND 2041

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: Highway 50 & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 12:26:28 PM

Summary of intersection performance

	AM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2041 Future Background						
Emil Kolb Pkwy	0.09	0.27	1.24	N/A	A	1.15	A
Highway 50 (North)	0.32	1.67	1.38	N/A	A		
Highway 50 (South)	0.06	~1	0.56	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 3:00 PM - 4:00 PM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM " model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 3:00 PM - 4:00 PM
"D8 - 2041 Future Background, PM" model duration: 3:00 PM - 4:00 PM
"D10 - 2051 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D11 - 2051 Future Background, PM" model duration: 3:00 PM - 4:00 PM

Run using Junctions 8.0.6.541 at 2026-02-21 12:26:27 PM

File summary

Title	Bolton North Hill
Location	Highway 50 & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1988893385	3514

(Default Analysis Set) - 2041 Future Background, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2041 Future Background, AM	2041 Future Background	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	1.15	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy	3	Emil Kolb Pkwy	
Highway 50 (North)	2	Highway 50 (North)	
Highway 50 (South)	1	Highway 50 (South)	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	0.00	99999.00
Highway 50 (North)	0.00	99999.00
Highway 50 (South)	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy	7.00	8.00	30.00	25.00	55.00	25.00	
Highway 50 (North)	7.00	8.00	30.00	35.00	60.00	25.00	
Highway 50 (South)	7.00	8.00	30.00	35.00	60.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy	0.00	0.00
Highway 50 (North)	0.00	0.00
Highway 50 (South)	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy	Percentage	Opening day within 10 years		85.00
Highway 50 (North)	Percentage	Opening day within 10 years		85.00
Highway 50 (South)	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy		(calculated)	(calculated)	1.562	2831.014
Highway 50 (North)		(calculated)	(calculated)	1.505	2853.857
Highway 50 (South)		(calculated)	(calculated)	1.505	2853.857

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy	Evenly split	10.00
Highway 50 (North)	Evenly split	10.00
Highway 50 (South)	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy	1	3		Infinity	0.00	99999.00
Highway 50 (North)	1	1		Infinity	0.00	99999.00
Highway 50 (North)	1	2		Infinity	0.00	99999.00
Highway 50 (South)	1	3		Infinity	0.00	99999.00
Highway 50 (South)	1	4		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy	(calculated)	(calculated)	0.781	1415.507
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	4		✓	✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	1			✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	2	✓	✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	3		✓	

Traffic Flows

Demand Set Data Options

Default Vehicle	Vehicle Mix Varies Over	Vehicle Mix Varies Over	Vehicle Mix Varies Over	Vehicle Mix Source	PCE Factor for a Truck	Default Turning	Estimate from entry/exit	Turning Proportions Vary	Turning Proportions Vary	Turning Proportions Vary

Mix	Time	Turn	Entry		(PCE)	Proportions	counts	Over Time	Over Turn	Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy	PHF	✓	226.00	100.000
Highway 50 (North)	PHF	✓	827.00	100.000
Highway 50 (South)	PHF	✓	341.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy	226.00	0.96	SecondQuarter
Highway 50 (North)	827.00	0.96	SecondQuarter
Highway 50 (South)	341.00	0.96	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.000	237.000	104.000
	Highway 50 (North)	456.000	0.000	371.000
	Emil Kolb Pkwy	47.000	179.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.00	0.70	0.30
	Highway 50 (North)	0.55	0.00	0.45
	Emil Kolb Pkwy	0.21	0.79	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	1.000	1.037	1.027
	Highway 50 (North)	1.008	1.000	1.053
	Emil Kolb Pkwy	1.057	1.277	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.0	3.7	2.7
	Highway 50 (North)	0.8	0.0	5.3
	Emil Kolb Pkwy	5.7	27.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy	1.24	0.09	0.27	A	225.20	225.20	5.42	1.45	0.09
Highway 50 (North)	1.38	0.32	1.67	A	826.84	826.84	18.35	1.33	0.31
Highway 50 (South)	0.56	0.06	~1	A	341.25	341.25	3.19	0.56	0.05

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: Highway 50 & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 12:42:26 PM

Summary of intersection performance

	AM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2041 Future Background						
Emil Kolb Pkwy	0.27	1.60	1.24	N/A	A	1.14	A
Highway 50 (North)	0.10	0.43	0.71	N/A	A		
Highway 50 (South)	0.26	1.35	1.38	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 3:00 PM - 4:00 PM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM " model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 3:00 PM - 4:00 PM
"D8 - 2041 Future Background, PM" model duration: 3:00 PM - 4:00 PM
"D10 - 2051 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D11 - 2051 Future Background, PM" model duration: 3:00 PM - 4:00 PM

Run using Junctions 8.0.6.541 at 2026-02-21 12:42:25 PM

File summary

Title	Bolton North Hill
Location	Highway 50 & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1281438142	1760

(Default Analysis Set) - 2041 Future Background, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2041 Future Background, AM	2041 Future Background	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	1.14	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy	3	Emil Kolb Pkwy	
Highway 50 (North)	2	Highway 50 (North)	
Highway 50 (South)	1	Highway 50 (South)	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	0.00	99999.00
Highway 50 (North)	0.00	99999.00
Highway 50 (South)	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy	7.00	8.00	30.00	25.00	55.00	25.00	
Highway 50 (North)	7.00	8.00	30.00	35.00	60.00	25.00	
Highway 50 (South)	7.00	8.00	30.00	35.00	60.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy	0.00	0.00
Highway 50 (North)	0.00	0.00
Highway 50 (South)	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy	Percentage	Opening day within 10 years		85.00
Highway 50 (North)	Percentage	Opening day within 10 years		85.00
Highway 50 (South)	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy		(calculated)	(calculated)	1.562	2831.014
Highway 50 (North)		(calculated)	(calculated)	1.505	2853.857
Highway 50 (South)		(calculated)	(calculated)	1.505	2853.857

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy	Evenly split	10.00
Highway 50 (North)	Evenly split	10.00
Highway 50 (South)	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy	1	3		Infinity	0.00	99999.00
Highway 50 (North)	1	1		Infinity	0.00	99999.00
Highway 50 (North)	1	2		Infinity	0.00	99999.00
Highway 50 (South)	1	3		Infinity	0.00	99999.00
Highway 50 (South)	1	4		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy	(calculated)	(calculated)	0.781	1415.507
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	4		✓	✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	1			✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	2	✓	✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	3		✓	

Traffic Flows

Demand Set Data Options

Default Vehicle	Vehicle Mix Varies Over	Vehicle Mix Varies Over	Vehicle Mix Varies Over	Vehicle Mix Source	PCE Factor for a Truck	Default Turning	Estimate from entry/exit	Turning Proportions Vary	Turning Proportions Vary	Turning Proportions Vary

Mix	Time	Turn	Entry		(PCE)	Proportions	counts	Over Time	Over Turn	Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy	PHF	✓	556.00	100.000
Highway 50 (North)	PHF	✓	466.00	100.000
Highway 50 (South)	PHF	✓	602.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy	556.00	0.96	SecondQuarter
Highway 50 (North)	466.00	0.96	SecondQuarter
Highway 50 (South)	602.00	0.96	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.000	546.000	56.000
	Highway 50 (North)	276.000	0.000	190.000
	Emil Kolb Pkwy	104.000	452.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.00	0.91	0.09
	Highway 50 (North)	0.59	0.00	0.41
	Emil Kolb Pkwy	0.19	0.81	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	1.000	1.037	1.027
	Highway 50 (North)	1.008	1.000	1.053
	Emil Kolb Pkwy	1.057	1.277	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.0	3.7	2.7
	Highway 50 (North)	0.8	0.0	5.3
	Emil Kolb Pkwy	5.7	27.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy	1.24	0.27	1.60	A	555.66	555.66	12.69	1.37	0.21
Highway 50 (North)	0.71	0.10	0.43	A	469.15	469.15	5.43	0.69	0.09
Highway 50 (South)	1.38	0.26	1.35	A	603.09	603.09	13.25	1.32	0.22

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: King Street & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 11:20:27 AM

Summary of intersection performance

	AM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2041 Future Background						
Emil Kolb Pkwy (North)	0.13	0.65	0.94	N/A	A	0.97	A
Emil Kolb Pkwy (South)	0.11	0.43	0.94	N/A	A		
King Street	0.19	0.97	1.01	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 8:00 AM - 9:00 AM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM " model duration: 8:00 AM - 9:00 AM
"D5 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D8 - 2041 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D9 - 2031 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 8:00 AM - 9:00 AM

Run using Junctions 8.0.6.541 at 2026-02-21 11:20:26 AM

File summary

Title	Bolton North Hill
Location	King Street & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials

1.00	-1	3	1	10	2113717088	3102

(Default Analysis Set) - 2041 Future Background, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2041 Future Background, AM	2041 Future Background	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	0.97	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy (North)	2	Emil Kolb Pkwy (North)	
Emil Kolb Pkwy (South)	1	Emil Kolb Pkwy (South)	
King Street	3	King Street	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	0.00	99999.00
Emil Kolb Pkwy (South)	0.00	99999.00
King Street	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy (North)	7.00	8.00	30.00	25.00	55.00	25.00	
Emil Kolb Pkwy (South)	7.00	8.00	30.00	25.00	55.00	25.00	
King Street	7.00	8.00	30.00	25.00	55.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy (North)	0.00	0.00
Emil Kolb Pkwy (South)	0.00	0.00
King Street	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy (North)	Percentage	Opening day within 10 years		85.00
Emil Kolb Pkwy (South)	Percentage	Opening day within 10 years		85.00
King Street	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)		(calculated)	(calculated)	1.562	2831.014
Emil Kolb Pkwy (South)		(calculated)	(calculated)	1.562	2831.014
King Street		(calculated)	(calculated)	1.562	2831.014

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy (North)	Evenly split	10.00
Emil Kolb Pkwy (South)	Evenly split	10.00
King Street	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	1	1		Infinity	0.00	99999.00
Emil Kolb Pkwy (North)	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	3		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	4		Infinity	0.00	99999.00
King Street	1	2		Infinity	0.00	99999.00
King Street	1	3		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	4		✓	✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	1	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	3	✓	✓	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy (North)	PHF	✓	481.00	100.000
Emil Kolb Pkwy (South)	PHF	✓	348.00	100.000
King Street	PHF	✓	579.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy (North)	481.00	0.95	SecondQuarter
Emil Kolb Pkwy (South)	348.00	0.95	SecondQuarter
King Street	579.00	0.95	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.000	121.000	227.000
	Emil Kolb Pkwy (North)	254.000	0.000	227.000
	King Street	440.000	139.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.00	0.35	0.65
	Emil Kolb Pkwy (North)	0.53	0.00	0.47
	King Street	0.76	0.24	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	1.000	1.310	1.075
	Emil Kolb Pkwy (North)	1.032	1.000	1.022
	King Street	1.061	1.097	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.0	31.0	7.5
	Emil Kolb Pkwy (North)	3.2	0.0	2.2
	King Street	6.1	9.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy (North)	0.94	0.13	0.65	A	480.74	480.74	7.26	0.91	0.12
Emil Kolb Pkwy (South)	0.94	0.11	0.43	A	347.76	347.76	5.79	1.00	0.10
King Street	1.01	0.19	0.97	A	581.28	581.28	10.00	1.03	0.17

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: King Street & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 11:23:41 AM

Summary of intersection performance

	PM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2041 Future Background						
Emil Kolb Pkwy (North)	0.26	1.45	2.06	N/A	A	2.27	A
Emil Kolb Pkwy (South)	0.94	3.91	3.03	N/A	A		
King Street	0.20	0.98	1.07	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 8:00 AM - 9:00 AM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D5 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D8 - 2041 Future Background, PM " model duration: 8:00 AM - 9:00 AM
"D9 - 2031 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 8:00 AM - 9:00 AM

Run using Junctions 8.0.6.541 at 2026-02-21 11:23:40 AM

File summary

Title	Bolton North Hill
Location	King Street & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials

1.00	-1	3	1	10	1833918854	3438

(Default Analysis Set) - 2041 Future Background, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2041 Future Background, PM	2041 Future Background	PM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	2.27	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy (North)	2	Emil Kolb Pkwy (North)	
Emil Kolb Pkwy (South)	1	Emil Kolb Pkwy (South)	
King Street	3	King Street	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	0.00	99999.00
Emil Kolb Pkwy (South)	0.00	99999.00
King Street	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy (North)	7.00	8.00	30.00	25.00	55.00	25.00	
Emil Kolb Pkwy (South)	7.00	8.00	30.00	25.00	55.00	25.00	
King Street	7.00	8.00	30.00	25.00	55.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy (North)	0.00	0.00
Emil Kolb Pkwy (South)	0.00	0.00
King Street	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy (North)	Percentage	Opening day within 10 years		85.00
Emil Kolb Pkwy (South)	Percentage	Opening day within 10 years		85.00
King Street	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)		(calculated)	(calculated)	1.562	2831.014
Emil Kolb Pkwy (South)		(calculated)	(calculated)	1.562	2831.014
King Street		(calculated)	(calculated)	1.562	2831.014

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy (North)	Evenly split	10.00
Emil Kolb Pkwy (South)	Evenly split	10.00
King Street	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	1	1		Infinity	0.00	99999.00
Emil Kolb Pkwy (North)	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	3		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	4		Infinity	0.00	99999.00
King Street	1	2		Infinity	0.00	99999.00
King Street	1	3		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	4		✓	✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	1	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	3	✓	✓	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy (North)	PHF	✓	401.00	100.000
Emil Kolb Pkwy (South)	PHF	✓	1090.00	100.000
King Street	PHF	✓	615.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy (North)	401.00	1.00	SecondQuarter
Emil Kolb Pkwy (South)	1090.00	1.00	SecondQuarter
King Street	615.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.000	450.000	640.000
	Emil Kolb Pkwy (North)	254.000	0.000	147.000
	King Street	369.000	246.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.00	0.41	0.59
	Emil Kolb Pkwy (North)	0.63	0.00	0.37
	King Street	0.60	0.40	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	1.000	1.021	1.067
	Emil Kolb Pkwy (North)	1.103	1.000	1.077
	King Street	1.047	1.015	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.0	2.1	6.7
	Emil Kolb Pkwy (North)	10.3	0.0	7.7
	King Street	4.7	1.5	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy (North)	2.06	0.26	1.45	A	398.55	398.55	14.83	2.23	0.25
Emil Kolb Pkwy (South)	3.03	0.94	3.91	A	1088.13	1088.13	56.75	3.13	0.95
King Street	1.07	0.20	0.98	A	616.49	616.49	11.28	1.10	0.19

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	10	235	3	119	3	235	147	103	430	3
Future Volume (vph)	4	0	10	235	3	119	3	235	147	103	430	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	140.0		30.0	125.0		30.0
Storage Lanes	0		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Frt		0.901			0.853				0.850			0.850
Flt Protected		0.987		0.950			0.950			0.950		
Satd. Flow (prot)	0	952	0	1750	1572	0	892	1830	1595	1700	1883	1591
Flt Permitted		0.941		0.748			0.447			0.601		
Satd. Flow (perm)	0	908	0	1378	1572	0	420	1830	1595	1075	1883	1591
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37			129				160			30
Link Speed (k/h)		50			40			50			60	
Link Distance (m)		127.3			237.9			633.3			977.2	
Travel Time (s)		9.2			21.4			45.6			58.6	
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 (%)	100%	0%	72%	2%	100%	2%	100%	5%	2%	5%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	4	0	11	255	3	129	3	255	160	112	467	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	255	132	0	3	255	160	112	467	3
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												
Headway Factor	0.99	0.99	0.99	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02
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	Left						Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	12.0		8.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	-3.0		-2.0	-2.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	-3.0		-2.0	-2.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	15.0		10.0	10.0		2.0	0.6	2.0	2.0	0.6	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
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												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

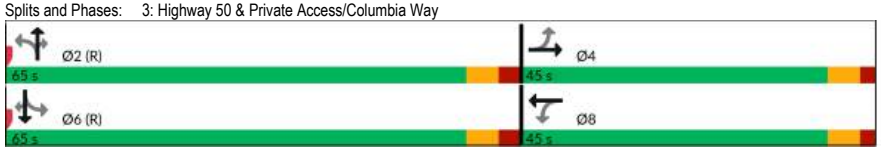
Lanes, Volumes, Timings
3: Highway 50 & Private Access/Columbia Way
2041 Future Background AM
02/20/2026

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	25.0	25.0		25.0	25.0		30.7	30.7	30.7	30.7	30.7	30.7
Total Split (s)	45.0	45.0		45.0	45.0		65.0	65.0	65.0	65.0	65.0	65.0
Total Split (%)	40.9%	40.9%		40.9%	40.9%		59.1%	59.1%	59.1%	59.1%	59.1%	59.1%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0		6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		26.0		26.0	26.0		71.3	71.3	71.3	71.3	71.3	71.3
Actuated g/C Ratio		0.24		0.24	0.24		0.65	0.65	0.65	0.65	0.65	0.65
v/c Ratio		0.06		0.78	0.28		0.01	0.22	0.15	0.16	0.38	0.00
Control Delay (s/veh)		2.2		55.6	6.9		9.7	9.6	2.0	9.8	11.3	0.0
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		2.2		55.6	6.9		9.7	9.6	2.0	9.8	11.3	0.0
LOS		A		E	A		A	A	A	A	B	A
Approach Delay (s/veh)		2.2			39.0			6.7			11.0	
Approach LOS		A			D			A			B	
Queue Length 50th (m)		0.0		54.2	0.5		0.2	21.6	0.0	9.1	45.2	0.0
Queue Length 95th (m)		1.4		76.1	14.1		1.7	42.4	9.0	21.6	82.5	0.0
Internal Link Dist (m)		103.3			213.9			609.3			953.2	
Turn Bay Length (m)							140.0		30.0	125.0		30.0
Base Capacity (vph)		345		488	640		272	1186	1090	696	1220	1042
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		0.04		0.52	0.21		0.01	0.22	0.15	0.16	0.38	0.00

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay (s/veh): 17.3 Intersection LOS: B
Intersection Capacity Utilization 75.2% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 3: Highway 50 & Private Access/Columbia Way



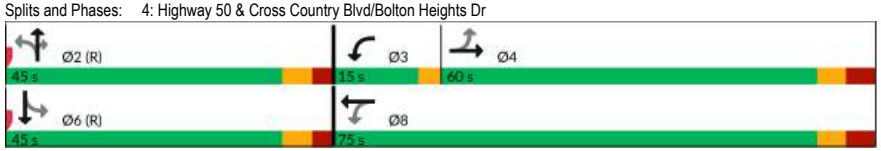
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	29	28	134	15	59	13	296	63	55	585	8
Future Volume (vph)	16	29	28	134	15	59	13	296	63	55	585	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	30.0		0.0	85.0		0.0	90.0		75.0	65.0		90.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				0.98						1.00	
Frt		0.926			0.880				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	1711	0	1785	1628	0	1623	3476	1591	1785	1879	0
Flt Permitted	0.699			0.585			0.277			0.538		
Satd. Flow (perm)	1295	1711	0	1099	1628	0	473	3476	1591	1011	1879	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34			71				76		1	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		112.1			201.9			771.8			633.3	
Travel Time (s)		10.1			18.2			55.6			45.6	
Confl. Peds. (#/hr)	17					17	8					8
Confl. Bikes (#/hr)					2							
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	4%	4%	0%	0%	2%	10%	5%	0%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	19	35	34	161	18	71	16	357	76	66	705	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	69	0	161	89	0	16	357	76	66	715	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												
Headway Factor	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02	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	
Detector Template							Left	Thru	Right	Left	Thru	
Leading Detector (m)	12.0	12.0		12.0	12.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	15.0	15.0		15.0	15.0		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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	47.1	47.1		8.0	47.1		34.7	34.7	34.7	34.7	34.7	
Total Split (s)	60.0	60.0		15.0	75.0		45.0	45.0	45.0	45.0	45.0	
Total Split (%)	50.0%	50.0%		12.5%	62.5%		37.5%	37.5%	37.5%	37.5%	37.5%	
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	4.1	4.1		0.0	4.1		2.7	2.7	2.7	2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	8.1	8.1		3.0	8.1		6.7	6.7	6.7	6.7	6.7	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
Act Effct Green (s)	15.8	15.8		32.9	27.8		77.4	77.4	77.4	77.4	77.4	
Actuated g/C Ratio	0.13	0.13		0.27	0.23		0.65	0.65	0.65	0.65	0.65	
v/c Ratio	0.11	0.27		0.43	0.21		0.05	0.16	0.07	0.10	0.59	
Control Delay (s/veh)	42.0	26.2		35.7	10.1		28.5	22.9	16.1	13.0	18.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	42.0	26.2		35.7	10.1		28.5	22.9	16.1	13.0	18.5	
LOS	D	C		D	B		C	C	B	B	B	
Approach Delay (s/veh)		29.6			26.6			22.0			18.0	
Approach LOS		C			C			C			B	
Queue Length 50th (m)	4.5	8.3		33.0	3.6		2.7	33.7	5.6	5.3	86.8	
Queue Length 95th (m)	8.3	15.1		31.9	10.2		m8.3	50.5	m16.8	18.1	191.2	
Internal Link Dist (m)		88.1			177.9			747.8			609.3	
Turn Bay Length (m)	30.0			85.0			90.0		75.0	65.0		
Base Capacity (vph)	560	759		373	939		305	2242	1053	652	1212	
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	0.03	0.09		0.43	0.09		0.05	0.16	0.07	0.10	0.59	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 39 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay (s/veh): 21.2		Intersection LOS: C	
Intersection Capacity Utilization 79.6%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 4: Highway 50 & Cross Country Blvd/Bolton Heights Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	237	86	307	232	63	55	315	124	62	649	25
Future Volume (vph)	27	237	86	307	232	63	55	315	124	62	649	25
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	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	30.0		35.0	30.0		0.0	55.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Ped Bike Factor									0.97	1.00	1.00	
Frt			0.850		0.968				0.850		0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1606	1695	1437	1591	1635	0	1564	1662	1417	1643	1694	0
Flt Permitted	0.548			0.327			0.161			0.471		
Satd. Flow (perm)	927	1695	1437	547	1635	0	265	1662	1379	812	1694	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			118		11				132		2	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		535.7			353.4			517.9			32.8	
Travel Time (s)		48.2			31.8			37.3			2.4	
Confl. Peds. (#/hr)							2		3	3		2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	0%	1%	3%	0%	5%	4%	1%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	1	0
Adj. Flow (vph)	29	252	91	327	247	67	59	335	132	66	690	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	252	91	327	314	0	59	335	132	66	717	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			3.7			3.7	
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												
Headway Factor	1.16	1.13	1.16	1.16	1.13	1.13	1.13	1.13	1.17	1.13	1.13	1.16
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	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	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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Detector Phase	3	8	8	7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	8.0	31.9	31.9	8.0	31.9		8.0	32.0	32.0	8.0	32.0	
Total Split (s)	11.0	32.0	32.0	18.0	39.0		8.0	59.0	59.0	11.0	62.0	
Total Split (%)	9.2%	26.7%	26.7%	15.0%	32.5%		6.7%	49.2%	49.2%	9.2%	51.7%	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.9	2.9	0.0	2.9		0.0	3.0	3.0	0.0	3.0	
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	6.9	6.9	3.0	6.9		3.0	7.0	7.0	3.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	32.4	21.7	21.7	43.6	33.5		66.6	57.9	57.9	69.3	59.3	
Actuated g/C Ratio	0.27	0.18	0.18	0.36	0.28		0.56	0.48	0.48	0.58	0.49	
v/c Ratio	0.10	0.82	0.26	0.99	0.68		0.28	0.42	0.18	0.13	0.86	
Control Delay (s/veh)	24.6	68.5	5.1	81.8	45.9		15.3	23.8	4.1	10.6	36.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	24.6	68.5	5.1	81.8	45.9		15.3	23.8	4.1	10.6	36.6	
LOS	C	E	A	F	D		B	C	A	B	D	
Approach Delay (s/veh)		49.6			64.2			17.9			34.4	
Approach LOS		D			E			B			C	
Queue Length 50th (m)	4.5	59.8	0.0	63.2	68.8		6.1	55.6	0.0	7.5	174.5	
Queue Length 95th (m)	10.9	#89.6	8.3	#123.5	102.3		13.0	85.1	11.7	m5.9	#244.2	
Internal Link Dist (m)		511.7			329.4			493.9			8.8	
Turn Bay Length (m)	30.0		35.0	30.0			55.0			20.0		
Base Capacity (vph)	305	354	393	329	466		210	802	733	526	837	
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	0.10	0.71	0.23	0.99	0.67		0.28	0.42	0.18	0.13	0.86	

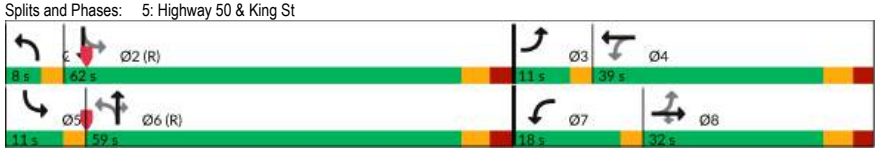
Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 115 (96%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay (s/veh): 41.3		Intersection LOS: D	
Intersection Capacity Utilization 94.8%		ICU Level of Service F	
Analysis Period (min) 15			

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 5: Highway 50 & King St

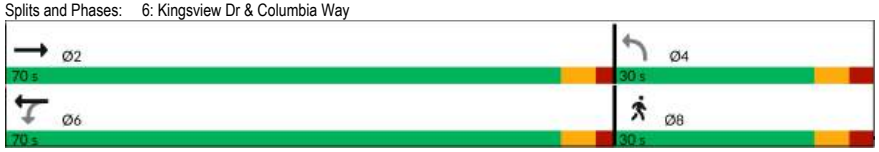


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø8
Lane Configurations							
Traffic Volume (vph)	193	28	110	212	38	54	
Future Volume (vph)	193	28	110	212	38	54	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor	1.00			1.00	0.99		
Frt	0.981				0.921		
Flt Protected				0.983	0.980		
Satd. Flow (prot)	3567	0	0	3484	1712	0	
Flt Permitted				0.745	0.980		
Satd. Flow (perm)	3567	0	0	2634	1712	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	32				65		
Link Speed (k/h)	40			40	40		
Link Distance (m)	237.9			417.0	131.8		
Travel Time (s)	21.4			37.5	11.9		
Confl. Peds. (#/hr)		3	3			5	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	
Heavy Vehicles (%)	0%	0%	3%	3%	0%	0%	
Adj. Flow (vph)	233	34	133	255	46	65	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	267	0	0	388	111	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	0.0			0.0	3.7		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
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		2.0	0.6	2.0		
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		Perm	NA	Perm		
Protected Phases	2			6			8
Permitted Phases			6		4		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø8
Detector Phase	2		6	6	4		
Switch Phase							
Minimum Initial (s)	8.0		8.0	8.0	8.0		8.0
Minimum Split (s)	21.0		21.0	21.0	21.9		21.9
Total Split (s)	70.0		70.0	70.0	30.0		30.0
Total Split (%)	70.0%		70.0%	70.0%	30.0%		30%
Yellow Time (s)	4.0		4.0	4.0	4.0		4.0
All-Red Time (s)	2.0		2.0	2.0	2.9		2.9
Lost Time Adjust (s)	0.0			0.0	0.0		
Total Lost Time (s)	6.0			6.0	6.9		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	Max		Max	Max	None		Ped
Act Effct Green (s)	64.0			64.0	15.0		
Actuated g/C Ratio	0.70			0.70	0.16		
v/c Ratio	0.11			0.21	0.33		
Control Delay (s/veh)	4.1			5.3	19.2		
Queue Delay	0.0			0.0	0.0		
Total Delay (s/veh)	4.1			5.3	19.2		
LOS	A			A	B		
Approach Delay (s/veh)	4.1			5.3	19.2		
Approach LOS	A			A	B		
Queue Length 50th (m)	6.4			11.6	7.4		
Queue Length 95th (m)	9.3			15.4	19.8		
Internal Link Dist (m)	213.9			393.0	107.8		
Turn Bay Length (m)							
Base Capacity (vph)	2493			1834	478		
Starvation Cap Reductn	0			0	0		
Spillback Cap Reductn	0			0	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.11			0.21	0.23		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 91.9			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay (s/veh): 6.9		Intersection LOS: A	
Intersection Capacity Utilization 44.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Kingsview Dr & Columbia Way



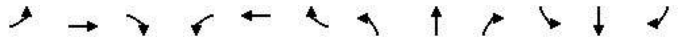
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	168	45	32	191	65	42
Future Volume (vph)	168	45	32	191	65	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.968				0.947	
Flt Protected				0.993	0.971	
Satd. Flow (prot)	3533	0	0	3514	1712	0
Flt Permitted				0.993	0.971	
Satd. Flow (perm)	3533	0	0	3514	1712	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	500.8			180.3	104.8	
Travel Time (s)	30.0			10.8	9.4	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	4%	3%	2%	5%
Adj. Flow (vph)	210	56	40	239	81	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	266	0	0	279	134	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	28.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	168	45	32	191	65	42
Future Volume (Veh/h)	168	45	32	191	65	42
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	210	56	40	239	81	52
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			266		438	133
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			266		438	133
tC, single (s)			4.2		6.8	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			97		85	94
cM capacity (veh/h)			1280		530	882

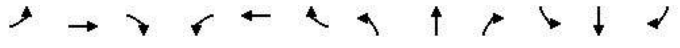
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	140	126	120	159	133
Volume Left	0	0	40	0	81
Volume Right	0	56	0	0	52
cSH	1700	1700	1280	1700	628
Volume to Capacity	0.08	0.07	0.03	0.09	0.21
Queue Length 95th (m)	0.0	0.0	0.8	0.0	6.4
Control Delay (s/veh)	0.0	0.0	2.8	0.0	12.3
Lane LOS			A		B
Approach Delay (s/veh)	0.0		1.2		12.3
Approach LOS					B

Intersection Summary				
Average Delay		2.9		
Intersection Capacity Utilization		28.5%	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)	88	261	13	4	143	26	32	6	14	156	5	69
Future Volume (vph)	88	261	13	4	143	26	32	6	14	156	5	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.995			0.977			0.964			0.959	
Flt Protected		0.988			0.999			0.970			0.967	
Satd. Flow (prot)	0	3463	0	0	3401	0	0	1749	0	0	1766	0
Flt Permitted		0.988			0.999			0.970			0.967	
Satd. Flow (perm)	0	3463	0	0	3401	0	0	1749	0	0	1766	0
Link Speed (k/h)		60			60			40			60	
Link Distance (m)		116.8			228.4			249.8			243.0	
Travel Time (s)		7.0			13.7			22.5			14.6	
Confl. Peds. (#/hr)	1					1	1		2	2		1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	5%	0%	0%	3%	15%	0%	0%	10%	0%	0%	3%
Adj. Flow (vph)	107	318	16	5	174	32	39	7	17	190	6	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	441	0	0	211	0	0	63	0	0	280	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.6%	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)	88	261	13	4	143	26	32	6	14	156	5	69
Future Volume (Veh/h)	88	261	13	4	143	26	32	6	14	156	5	69
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	107	318	16	5	174	32	39	7	17	190	6	84
Pedestrians		1			2						1	
Lane Width (m)		3.7			3.7						3.7	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	207			334			725	757	169	597	749	105
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	207			334			725	757	169	597	749	105
tC, single (s)	4.1			4.1			7.5	6.5	7.1	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	92			100			85	98	98	46	98	91
cM capacity (veh/h)	1375			1237			266	311	819	352	315	924

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	266	175	92	119	63	280
Volume Left	107	0	5	0	39	190
Volume Right	0	16	0	32	17	84
cSH	1375	1700	1237	1700	331	431
Volume to Capacity	0.08	0.10	0.00	0.07	0.19	0.65
Queue Length 95th (m)	2.0	0.0	0.1	0.0	5.5	36.0
Control Delay (s/veh)	3.6	0.0	0.5	0.0	18.4	27.6
Lane LOS	A		A		C	D
Approach Delay (s/veh)	2.1		0.2		18.4	27.6
Approach LOS					C	D

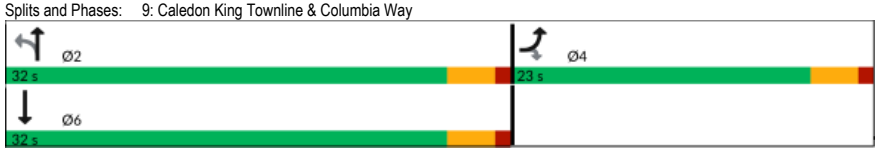
Intersection Summary				
Average Delay	9.9			
Intersection Capacity Utilization	41.6%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	473	82	125	562	23
Future Volume (vph)	39	473	82	125	562	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.995	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1659	1601	1659	1830	1893	0
Flt Permitted	0.950		0.284			
Satd. Flow (perm)	1659	1601	496	1830	1893	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		235			5	
Link Speed (k/h)	60			80	80	
Link Distance (m)	190.9			1113.3	133.7	
Travel Time (s)	11.5			50.1	6.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	10%	2%	10%	5%	1%	0%
Adj. Flow (vph)	41	503	87	133	598	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	503	87	133	622	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	10.0	10.0	20.0	20.0	20.0	
Minimum Split (s)	22.5	22.5	24.5	24.5	24.5	
Total Split (s)	23.0	23.0	32.0	32.0	32.0	
Total Split (%)	41.8%	41.8%	58.2%	58.2%	58.2%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	
Act Effct Green (s)	14.0	14.0	22.6	22.6	22.6	
Actuated g/C Ratio	0.31	0.31	0.50	0.50	0.50	
v/c Ratio	0.08	0.76	0.35	0.14	0.65	
Control Delay (s/veh)	11.8	16.4	12.6	7.3	12.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	11.8	16.4	12.6	7.3	12.7	
LOS	B	B	B	A	B	
Approach Delay (s/veh)	16.1			9.4	12.7	
Approach LOS	B			A	B	
Queue Length 50th (m)	2.1	15.8	3.6	4.9	31.2	
Queue Length 95th (m)	8.1	#56.6	14.4	14.0	72.7	
Internal Link Dist (m)	166.9			1089.3	109.7	
Turn Bay Length (m)						
Base Capacity (vph)	721	828	317	1171	1214	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.06	0.61	0.27	0.11	0.51	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 44.8			
Natural Cycle: 55			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay (s/veh): 13.5		Intersection LOS: B	
Intersection Capacity Utilization 66.9%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 9: Caledon King Townline & Columbia Way



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	42	20	223	505	5
Future Volume (vph)	5	42	20	223	505	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	105.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.880				0.999	
Flt Protected	0.994		0.950			
Satd. Flow (prot)	1637	0	1534	1601	1864	0
Flt Permitted	0.994		0.950			
Satd. Flow (perm)	1637	0	1534	1601	1864	0
Link Speed (k/h)	60			70	50	
Link Distance (m)	388.6			2029.6	1306.7	
Travel Time (s)	23.3			104.4	94.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	19%	20%	3%	0%
Adj. Flow (vph)	6	47	22	248	561	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	53	0	22	248	567	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	42	20	223	505	5
Future Volume (Veh/h)	5	42	20	223	505	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	47	22	248	561	6
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	856	564	567			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	856	564	567			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	98	91	98			
cM capacity (veh/h)	323	523	926			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	53	22	248	567
Volume Left	6	22	0	0
Volume Right	47	0	0	6
cSH	489	926	1700	1700
Volume to Capacity	0.11	0.02	0.15	0.33
Queue Length 95th (m)	2.9	0.6	0.0	0.0
Control Delay (s/veh)	13.3	9.0	0.0	0.0
Lane LOS	B	A		
Approach Delay (s/veh)	13.3	0.7		0.0
Approach LOS	B			

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		36.9%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	429	3	4	101	70	83
Future Volume (vph)	429	3	4	101	70	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.999				0.927	
Flt Protected				0.998	0.978	
Satd. Flow (prot)	3575	0	0	3571	1708	0
Flt Permitted				0.998	0.978	
Satd. Flow (perm)	3575	0	0	3571	1708	0
Link Speed (k/h)	50			60	50	
Link Distance (m)	228.4			304.5	187.8	
Travel Time (s)	16.4			18.3	13.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	429	3	4	101	70	83
Shared Lane Traffic (%)						
Lane Group Flow (vph)	432	0	0	105	153	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	27.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	429	3	4	101	70	83
Future Volume (Veh/h)	429	3	4	101	70	83
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	429	3	4	101	70	83
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			432		489	216
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			432		489	216
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		86	89
cM capacity (veh/h)			1124		506	789

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	286	146	38	67	153
Volume Left	0	0	4	0	70
Volume Right	0	3	0	0	83
cSH	1700	1700	1124	1700	628
Volume to Capacity	0.17	0.09	0.00	0.04	0.24
Queue Length 95th (m)	0.0	0.0	0.1	0.0	7.6
Control Delay (s/veh)	0.0	0.0	0.9	0.0	12.6
Lane LOS			A		B
Approach Delay (s/veh)	0.0		0.3		12.6
Approach LOS					B

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	27.6%	ICU Level of Service		A
Analysis Period (min)	15			

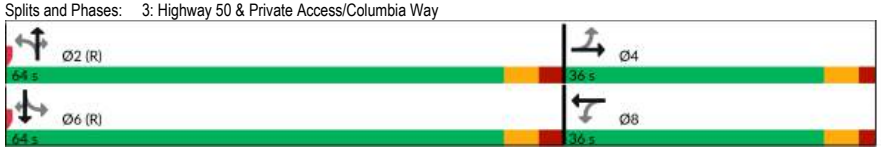
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	3	194	0	81	0	530	255	155	274	3
Future Volume (vph)	0	0	3	194	0	81	0	530	255	155	274	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	140.0		30.0	125.0		30.0
Storage Lanes	0		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Frt		0.865			0.850				0.850			0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1662	0	1750	1555	0	1879	1883	1626	1785	1883	795
Flt Permitted				0.756						0.405		
Satd. Flow (perm)	0	1662	0	1393	1555	0	1879	1883	1626	761	1883	795
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		576			312				266			33
Link Speed (k/h)		50			40			50			60	
Link Distance (m)		127.3			237.9			633.3			975.9	
Travel Time (s)		9.2			21.4			45.6			58.6	
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 (%)	100%	0%	0%	2%	0%	5%	0%	2%	0%	0%	2%	100%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	0	0	3	202	0	84	0	552	266	161	285	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	202	84	0	0	552	266	161	285	3
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												
Headway Factor	0.99	0.99	0.99	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02
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	Left						Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	12.0		8.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	-3.0		-2.0	-2.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	-3.0		-2.0	-2.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	15.0		10.0	10.0		2.0	0.6	2.0	2.0	0.6	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
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												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
3: Highway 50 & Private Access/Columbia Way
2041 Future Background PM
02/20/2026

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	25.0	25.0		25.0	25.0		30.7	30.7	30.7	30.7	30.7	30.7
Total Split (s)	36.0	36.0		36.0	36.0		64.0	64.0	64.0	64.0	64.0	64.0
Total Split (%)	36.0%	36.0%		36.0%	36.0%		64.0%	64.0%	64.0%	64.0%	64.0%	64.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0		6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		19.9		19.9	19.9			67.4	67.4	67.4	67.4	67.4
Actuated g/C Ratio		0.20		0.20	0.20			0.67	0.67	0.67	0.67	0.67
v/c Ratio		0.00		0.73	0.15			0.44	0.23	0.31	0.22	0.01
Control Delay (s/veh)		0.0		51.9	0.6			9.8	1.5	10.1	7.7	0.0
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		0.0		51.9	0.6			9.8	1.5	10.1	7.7	0.0
LOS		A		D	A			A	A	B	A	A
Approach Delay (s/veh)					36.9			7.1			8.5	
Approach LOS					D			A			A	
Queue Length 50th (m)		0.0		38.9	0.0			46.3	0.0	12.1	19.9	0.0
Queue Length 95th (m)		0.0		58.4	0.0			85.9	9.7	29.5	39.5	0.0
Internal Link Dist (m)		103.3			213.9			609.3			951.9	
Turn Bay Length (m)									30.0	125.0		30.0
Base Capacity (vph)		901		417	684			1268	1182	512	1268	546
Starvation Cap Reductn		0		0	0			0	0	0	0	0
Spillback Cap Reductn		0		0	0			0	0	0	0	0
Storage Cap Reductn		0		0	0			0	0	0	0	0
Reduced v/c Ratio		0.00		0.48	0.12			0.44	0.23	0.31	0.22	0.01

Intersection Summary		
Area Type:	Other	
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 60		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.73		
Intersection Signal Delay (s/veh): 13.0		Intersection LOS: B
Intersection Capacity Utilization 78.1%		ICU Level of Service D
Analysis Period (min) 15		

Splits and Phases: 3: Highway 50 & Private Access/Columbia Way

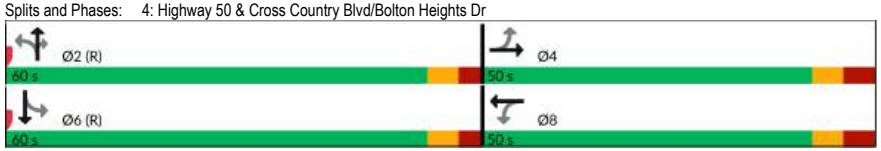


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	8	13	42	10	19	86	795	100	30	376	22
Future Volume (vph)	9	8	13	42	10	19	86	795	100	30	376	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	30.0		0.0	85.0		0.0	90.0		75.0	65.0		90.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	0.99		1.00				1.00	
Frt		0.907			0.900				0.850		0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	1727	0	1785	1713	0	1785	3614	1559	1785	1868	0
Flt Permitted	0.738			0.744			0.510			0.333		
Satd. Flow (perm)	1384	1727	0	1394	1713	0	956	3614	1559	626	1868	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			20				103		4	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		112.1			201.9			771.8			633.3	
Travel Time (s)		10.1			18.2			55.6			45.6	
Confl. Peds. (#/hr)	2		3	3		2	2					2
Confl. Bikes (#/hr)					2							
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 (%)	0%	0%	0%	0%	0%	0%	0%	1%	2%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	9	8	13	43	10	20	89	820	103	31	388	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	21	0	43	30	0	89	820	103	31	411	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												
Headway Factor	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02	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	
Detector Template							Left	Thru	Right	Left	Thru	
Leading Detector (m)	12.0	12.0		12.0	12.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	15.0	15.0		15.0	15.0		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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	47.1	47.1		47.1	47.1		34.7	34.7	34.7	34.7	34.7	
Total Split (s)	50.0	50.0		50.0	50.0		60.0	60.0	60.0	60.0	60.0	
Total Split (%)	45.5%	45.5%		45.5%	45.5%		54.5%	54.5%	54.5%	54.5%	54.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	4.1	4.1		4.1	4.1		2.7	2.7	2.7	2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	8.1	8.1		8.1	8.1		6.7	6.7	6.7	6.7	6.7	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
Act Effct Green (s)	15.9	15.9		15.9	15.9		84.2	84.2	84.2	84.2	84.2	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.77	0.77	0.77	0.77	0.77	
v/c Ratio	0.05	0.08		0.21	0.11		0.12	0.30	0.08	0.06	0.29	
Control Delay (s/veh)	34.2	20.5		40.0	18.5		7.8	7.1	2.3	8.5	7.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	34.2	20.5		40.0	18.5		7.8	7.1	2.3	8.5	7.7	
LOS	C	C		D	B		A	A	A	A	A	
Approach Delay (s/veh)		24.6			31.2			6.7			7.8	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	1.9	1.7		9.3	2.1		4.1	23.3	0.0	1.4	21.8	
Queue Length 95th (m)	4.9	6.7		14.7	8.1		20.4	75.2	8.5	9.1	80.5	
Internal Link Dist (m)		88.1			177.9			747.8			609.3	
Turn Bay Length (m)	30.0			85.0			90.0		75.0	65.0		
Base Capacity (vph)	527	665		530	664		732	2767	1217	479	1431	
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	0.02	0.03		0.08	0.05		0.12	0.30	0.08	0.06	0.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 96 (87%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.30			
Intersection Signal Delay (s/veh): 8.5		Intersection LOS: A	
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 4: Highway 50 & Cross Country Blvd/Bolton Heights Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	272	106	237	304	48	89	835	466	37	422	25
Future Volume (vph)	63	272	106	237	304	48	89	835	466	37	422	25
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	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	30.0		35.0	30.0		0.0	55.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Ped Bike Factor	0.98		0.96	0.99	0.99				0.96		1.00	
Frt			0.850		0.980				0.850		0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1575	1712	1409	1591	1668	0	1610	1712	1432	1643	1683	0
Flt Permitted	0.465			0.258			0.322			0.065		
Satd. Flow (perm)	757	1712	1358	429	1668	0	546	1712	1372	112	1683	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125		6				276		2	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		535.7			353.4			517.9			32.8	
Travel Time (s)		48.2			31.8			37.3			2.4	
Confl. Peds. (#/hr)	11		6	6		11	10		8	8		10
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%	1%	2%	1%	1%	0%	2%	1%	0%	0%	1%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	1	0
Adj. Flow (vph)	65	280	109	244	313	49	92	861	480	38	435	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	280	109	244	362	0	92	861	480	38	461	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			3.7			3.7	
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												
Headway Factor	1.16	1.13	1.16	1.16	1.13	1.13	1.13	1.13	1.17	1.13	1.13	1.16
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	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	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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Detector Phase	3	8	8	7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	8.0	31.9	31.9	8.0	31.9		8.0	32.0	32.0	8.0	32.0	
Total Split (s)	15.0	33.0	33.0	30.0	48.0		22.0	67.0	67.0	10.0	55.0	
Total Split (%)	10.7%	23.6%	23.6%	21.4%	34.3%		15.7%	47.9%	47.9%	7.1%	39.3%	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.9	2.9	0.0	2.9		0.0	3.0	3.0	0.0	3.0	
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	6.9	6.9	3.0	6.9		3.0	7.0	7.0	3.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	39.5	26.5	26.5	55.2	41.1		78.4	66.9	66.9	72.9	62.4	
Actuated g/C Ratio	0.28	0.19	0.19	0.39	0.29		0.56	0.48	0.48	0.52	0.45	
v/c Ratio	0.24	0.86	0.30	0.70	0.73		0.24	1.05	0.60	0.29	0.61	
Control Delay (s/veh)	28.6	80.0	7.8	40.7	53.7		17.2	82.6	15.3	21.7	35.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	28.6	80.0	7.8	40.7	53.7		17.2	82.6	15.3	21.7	35.7	
LOS	C	E	A	D	D		B	F	B	C	D	
Approach Delay (s/veh)		55.3			48.4			55.9			34.6	
Approach LOS		E			D			E			C	
Queue Length 50th (m)	11.4	77.5	0.0	48.2	92.1		12.7	~294.0	45.0	5.1	105.4	
Queue Length 95th (m)	21.2	#132.1	12.7	70.3	132.8		22.9	#379.8	87.0	11.2	153.9	
Internal Link Dist (m)		511.7			329.4			493.9			8.8	
Turn Bay Length (m)	30.0		35.0	30.0			55.0			20.0		
Base Capacity (vph)	299	335	366	393	502		451	818	799	135	751	
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	0.22	0.84	0.30	0.62	0.72		0.20	1.05	0.60	0.28	0.61	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 62 (44%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay (s/veh): 50.7		Intersection LOS: D	
Intersection Capacity Utilization 102.6%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 50 & King St

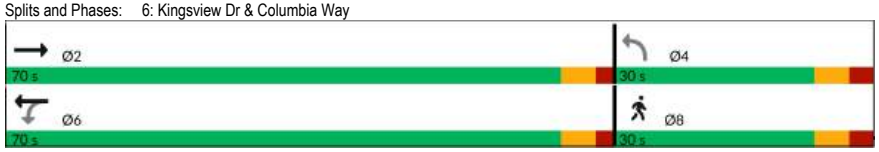


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø8
Lane Configurations							
Traffic Volume (vph)	251	66	62	175	23	37	
Future Volume (vph)	251	66	62	175	23	37	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor	0.99			1.00			
Frt	0.969				0.916		
Flt Protected				0.987	0.981		
Satd. Flow (prot)	3515	0	0	3550	1694	0	
Flt Permitted				0.789	0.981		
Satd. Flow (perm)	3515	0	0	2833	1694	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	66				41		
Link Speed (k/h)	40			40	40		
Link Distance (m)	237.9			417.0	131.8		
Travel Time (s)	21.4			37.5	11.9		
Confl. Peds. (#/hr)		3	3				
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	
Heavy Vehicles (%)	0%	0%	0%	2%	5%	0%	
Adj. Flow (vph)	276	73	68	192	25	41	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	349	0	0	260	66	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	0.0			0.0	3.7		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
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		2.0	0.6	2.0		
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		Perm	NA	Perm		
Protected Phases	2			6			8
Permitted Phases			6		4		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø8
Detector Phase	2		6	6	4		
Switch Phase							
Minimum Initial (s)	8.0		8.0	8.0	8.0		8.0
Minimum Split (s)	21.0		21.0	21.0	21.9		21.9
Total Split (s)	70.0		70.0	70.0	30.0		30.0
Total Split (%)	70.0%		70.0%	70.0%	30.0%		30%
Yellow Time (s)	4.0		4.0	4.0	4.0		4.0
All-Red Time (s)	2.0		2.0	2.0	2.9		2.9
Lost Time Adjust (s)	0.0			0.0	0.0		
Total Lost Time (s)	6.0			6.0	6.9		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	Max		Max	Max	None		Ped
Act Effct Green (s)	64.0			64.0	15.0		
Actuated g/C Ratio	0.70			0.70	0.16		
v/c Ratio	0.14			0.13	0.21		
Control Delay (s/veh)	3.9			4.9	18.5		
Queue Delay	0.0			0.0	0.0		
Total Delay (s/veh)	3.9			4.9	18.5		
LOS	A			A	B		
Approach Delay (s/veh)	3.9			4.9	18.5		
Approach LOS	A			A	B		
Queue Length 50th (m)	7.8			7.3	4.0		
Queue Length 95th (m)	12.2			11.3	15.7		
Internal Link Dist (m)	213.9			393.0	107.8		
Turn Bay Length (m)							
Base Capacity (vph)	2467			1972	456		
Starvation Cap Reductn	0			0	0		
Spillback Cap Reductn	0			0	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.14			0.13	0.14		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 91.9			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.21			
Intersection Signal Delay (s/veh): 5.7		Intersection LOS: A	
Intersection Capacity Utilization 41.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Kingsview Dr & Columbia Way



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	136	90	42	128	39	23
Future Volume (vph)	136	90	42	128	39	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.940				0.950	
Flt Protected				0.988	0.970	
Satd. Flow (prot)	3431	0	0	3553	1770	0
Flt Permitted				0.988	0.970	
Satd. Flow (perm)	3431	0	0	3553	1770	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	500.8			180.3	104.8	
Travel Time (s)	30.0			10.8	9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	148	98	46	139	42	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	246	0	0	185	67	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	25.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	136	90	42	128	39	23
Future Volume (Veh/h)	136	90	42	128	39	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	148	98	46	139	42	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			246		359	123
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			246		359	123
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		93	97
cM capacity (veh/h)			1332		598	911

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	99	147	92	93	67
Volume Left	0	0	46	0	42
Volume Right	0	98	0	0	25
cSH	1700	1700	1332	1700	686
Volume to Capacity	0.06	0.09	0.03	0.05	0.10
Queue Length 95th (m)	0.0	0.0	0.9	0.0	2.6
Control Delay (s/veh)	0.0	0.0	4.0	0.0	10.8
Lane LOS			A		B
Approach Delay (s/veh)	0.0		2.0		10.8
Approach LOS					B

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	25.0%	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)	46	173	34	20	313	148	18	6	10	45	9	40
Future Volume (vph)	46	173	34	20	313	148	18	6	10	45	9	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980			0.954			0.959			0.942	
Flt Protected		0.991			0.998			0.974			0.977	
Satd. Flow (prot)	0	3545	0	0	3431	0	0	1794	0	0	1768	0
Flt Permitted		0.991			0.998			0.974			0.977	
Satd. Flow (perm)	0	3545	0	0	3431	0	0	1794	0	0	1768	0
Link Speed (k/h)		60			60			40			60	
Link Distance (m)		116.8			228.4			249.8			243.0	
Travel Time (s)		7.0			13.7			22.5			14.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	48	182	36	21	329	156	19	6	11	47	9	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	266	0	0	506	0	0	36	0	0	98	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	37.6%	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)	46	173	34	20	313	148	18	6	10	45	9	40
Future Volume (Veh/h)	46	173	34	20	313	148	18	6	10	45	9	40
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	48	182	36	21	329	156	19	6	11	47	9	42
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	485			218			549	823	109	650	763	243
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	485			218			549	823	109	650	763	243
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			98			95	98	99	86	97	95
cM capacity (veh/h)	1088			1364			374	292	930	333	317	764

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	139	127	186	321	36	98
Volume Left	48	0	21	0	19	47
Volume Right	0	36	0	156	11	42
cSH	1088	1700	1364	1700	433	436
Volume to Capacity	0.04	0.07	0.02	0.19	0.08	0.22
Queue Length 95th (m)	1.1	0.0	0.4	0.0	2.2	6.8
Control Delay (s/veh)	3.2	0.0	1.0	0.0	14.1	15.6
Lane LOS	A		A		B	C
Approach Delay (s/veh)	1.7		0.4		14.1	15.6
Approach LOS					B	C

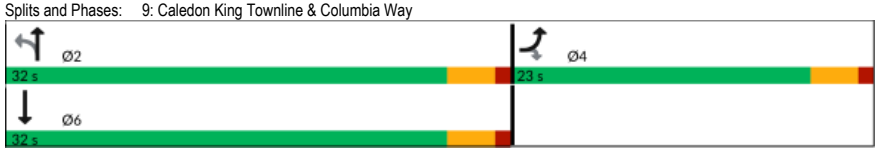
Intersection Summary					
Average Delay	2.9				
Intersection Capacity Utilization	37.6%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	87	89	162	522	226	362
Future Volume (vph)	87	89	162	522	226	362
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.917	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1825	1633	1807	1902	1748	0
Flt Permitted	0.950		0.335			
Satd. Flow (perm)	1825	1633	637	1902	1748	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		92			213	
Link Speed (k/h)	60			80	80	
Link Distance (m)	190.9			1113.3	133.7	
Travel Time (s)	11.5			50.1	6.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	1%	1%	2%	0%
Adj. Flow (vph)	90	92	167	538	233	373
Shared Lane Traffic (%)						
Lane Group Flow (vph)	90	92	167	538	606	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	10.0	10.0	20.0	20.0	20.0	
Minimum Split (s)	22.5	22.5	24.5	24.5	24.5	
Total Split (s)	23.0	23.0	32.0	32.0	32.0	
Total Split (%)	41.8%	41.8%	58.2%	58.2%	58.2%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	
Act Effct Green (s)	13.7	13.7	22.1	22.1	22.1	
Actuated g/C Ratio	0.40	0.40	0.64	0.64	0.64	
v/c Ratio	0.12	0.13	0.41	0.44	0.51	
Control Delay (s/veh)	13.6	5.0	9.2	6.5	5.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	13.6	5.0	9.2	6.5	5.2	
LOS	B	A	A	A	A	
Approach Delay (s/veh)	9.3			7.2	5.2	
Approach LOS	A			A	A	
Queue Length 50th (m)	4.6	0.0	6.0	20.0	13.6	
Queue Length 95th (m)	15.4	8.4	17.2	36.0	29.2	
Internal Link Dist (m)	166.9			1089.3	109.7	
Turn Bay Length (m)						
Base Capacity (vph)	1054	982	482	1439	1375	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.09	0.09	0.35	0.37	0.44	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 34.4			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay (s/veh): 6.6		Intersection LOS: A	
Intersection Capacity Utilization 69.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Caledon King Townline & Columbia Way



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	19	72	549	250	6
Future Volume (vph)	5	19	72	549	250	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	105.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.893				0.997	
Flt Protected	0.990		0.950			
Satd. Flow (prot)	1698	0	1825	1865	1729	0
Flt Permitted	0.990		0.950			
Satd. Flow (perm)	1698	0	1825	1865	1729	0
Link Speed (k/h)	60			70	50	
Link Distance (m)	388.6			2029.6	1306.7	
Travel Time (s)	23.3			104.4	94.1	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	0%	3%	11%	0%
Adj. Flow (vph)	6	23	86	654	298	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	0	86	654	305	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	19	72	549	250	6
Future Volume (Veh/h)	5	19	72	549	250	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	6	23	86	654	298	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1128	302	305			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1128	302	305			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	97	93			
cM capacity (veh/h)	213	743	1267			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	29	86	654	305
Volume Left	6	86	0	0
Volume Right	23	0	0	7
cSH	490	1267	1700	1700
Volume to Capacity	0.06	0.07	0.38	0.18
Queue Length 95th (m)	1.5	1.7	0.0	0.0
Control Delay (s/veh)	12.8	8.0	0.0	0.0
Lane LOS	B	A		
Approach Delay (s/veh)	12.8	0.9		0.0
Approach LOS	B			

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		38.9%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	164	62	47	477	4	11
Future Volume (vph)	164	62	47	477	4	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.959				0.901	
Flt Protected				0.996	0.987	
Satd. Flow (prot)	3432	0	0	3564	1675	0
Flt Permitted				0.996	0.987	
Satd. Flow (perm)	3432	0	0	3564	1675	0
Link Speed (k/h)	50			60	50	
Link Distance (m)	228.4			304.5	187.8	
Travel Time (s)	16.4			18.3	13.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	164	62	47	477	4	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	226	0	0	524	15	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	164	62	47	477	4	11
Future Volume (Veh/h)	164	62	47	477	4	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	164	62	47	477	4	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			226		528	113
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			226		528	113
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		99	99
cM capacity (veh/h)			1340		464	918

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	109	117	206	318	15
Volume Left	0	0	47	0	4
Volume Right	0	62	0	0	11
cSH	1700	1700	1340	1700	728
Volume to Capacity	0.06	0.07	0.04	0.19	0.02
Queue Length 95th (m)	0.0	0.0	0.9	0.0	0.5
Control Delay (s/veh)	0.0	0.0	2.0	0.0	10.0
Lane LOS			A		B
Approach Delay (s/veh)	0.0		0.8		10.0
Approach LOS					B

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization	34.4%	ICU Level of Service		A
Analysis Period (min)	15			

FUTURE BACKGROUND 2051

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: Highway 50 & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 1:01:24 PM

Summary of intersection performance

	AM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2051 Future Background						
Emil Kolb Pkwy	0.13	0.78	1.35	N/A	A	1.24	A
Highway 50 (North)	0.40	1.95	1.47	N/A	A		
Highway 50 (South)	0.07	0.07	0.57	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 3:00 PM - 4:00 PM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 3:00 PM - 4:00 PM
"D8 - 2041 Future Background, PM" model duration: 3:00 PM - 4:00 PM
"D10 - 2051 Future Background, AM " model duration: 8:00 AM - 9:00 AM
"D11 - 2051 Future Background, PM" model duration: 3:00 PM - 4:00 PM

Run using Junctions 8.0.6.541 at 2026-02-21 1:01:23 PM

File summary

Title	Bolton North Hill
Location	Highway 50 & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	700347623	3113

(Default Analysis Set) - 2051 Future Background, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2051 Future Background, AM	2051 Future Background	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	1.24	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy	3	Emil Kolb Pkwy	
Highway 50 (North)	2	Highway 50 (North)	
Highway 50 (South)	1	Highway 50 (South)	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	0.00	99999.00
Highway 50 (North)	0.00	99999.00
Highway 50 (South)	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy	7.00	8.00	30.00	25.00	55.00	25.00	
Highway 50 (North)	7.00	8.00	30.00	35.00	60.00	25.00	
Highway 50 (South)	7.00	8.00	30.00	35.00	60.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy	0.00	0.00
Highway 50 (North)	0.00	0.00
Highway 50 (South)	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy	Percentage	Opening day within 10 years		85.00
Highway 50 (North)	Percentage	Opening day within 10 years		85.00
Highway 50 (South)	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy		(calculated)	(calculated)	1.562	2831.014
Highway 50 (North)		(calculated)	(calculated)	1.505	2853.857
Highway 50 (South)		(calculated)	(calculated)	1.505	2853.857

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy	Evenly split	10.00
Highway 50 (North)	Evenly split	10.00
Highway 50 (South)	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy	1	3		Infinity	0.00	99999.00
Highway 50 (North)	1	1		Infinity	0.00	99999.00
Highway 50 (North)	1	2		Infinity	0.00	99999.00
Highway 50 (South)	1	3		Infinity	0.00	99999.00
Highway 50 (South)	1	4		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy	(calculated)	(calculated)	0.781	1415.507
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	4		✓	✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	1			✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	2	✓	✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	3		✓	

Traffic Flows

Demand Set Data Options

Default Vehicle	Vehicle Mix Varies Over	Vehicle Mix Varies Over	Vehicle Mix Varies Over	Vehicle Mix Source	PCE Factor for a Truck	Default Turning	Estimate from entry/exit	Turning Proportions Vary	Turning Proportions Vary	Turning Proportions Vary

Mix	Time	Turn	Entry		(PCE)	Proportions	counts	Over Time	Over Turn	Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy	PHF	✓	246.00	100.000
Highway 50 (North)	PHF	✓	868.00	100.000
Highway 50 (South)	PHF	✓	355.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy	246.00	0.96	SecondQuarter
Highway 50 (North)	868.00	0.96	SecondQuarter
Highway 50 (South)	355.00	0.96	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.000	247.000	108.000
	Highway 50 (North)	479.000	0.000	389.000
	Emil Kolb Pkwy	52.000	194.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.00	0.70	0.30
	Highway 50 (North)	0.55	0.00	0.45
	Emil Kolb Pkwy	0.21	0.79	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	1.000	1.037	1.027
	Highway 50 (North)	1.008	1.000	1.053
	Emil Kolb Pkwy	1.057	1.277	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.0	3.7	2.7
	Highway 50 (North)	0.8	0.0	5.3
	Emil Kolb Pkwy	5.7	27.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy	1.35	0.13	0.78	A	248.56	248.56	6.29	1.52	0.10
Highway 50 (North)	1.47	0.40	1.95	A	869.55	869.55	20.53	1.42	0.34
Highway 50 (South)	0.57	0.07	0.07	A	353.27	353.27	3.55	0.60	0.06

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: Highway 50 & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 1:04:55 PM

Summary of intersection performance

	PM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2051 Future Background						
Emil Kolb Pkwy	0.28	1.61	1.38	N/A	A	1.28	A
Highway 50 (North)	0.11	0.50	0.73	N/A	A		
Highway 50 (South)	0.29	1.48	1.62	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 3:00 PM - 4:00 PM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 3:00 PM - 4:00 PM
"D8 - 2041 Future Background, PM" model duration: 3:00 PM - 4:00 PM
"D10 - 2051 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D11 - 2051 Future Background, PM " model duration: 3:00 PM - 4:00 PM

Run using Junctions 8.0.6.541 at 2026-02-21 1:04:55 PM

File summary

Title	Bolton North Hill
Location	Highway 50 & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1203036355	1614

(Default Analysis Set) - 2051 Future Background, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2051 Future Background, PM	2051 Future Background	PM		PHF	15:00	16:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	1.28	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy	3	Emil Kolb Pkwy	
Highway 50 (North)	2	Highway 50 (North)	
Highway 50 (South)	1	Highway 50 (South)	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	0.00	99999.00
Highway 50 (North)	0.00	99999.00
Highway 50 (South)	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy	7.00	8.00	30.00	25.00	55.00	25.00	
Highway 50 (North)	7.00	8.00	30.00	35.00	60.00	25.00	
Highway 50 (South)	7.00	8.00	30.00	35.00	60.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy	0.00	0.00
Highway 50 (North)	0.00	0.00
Highway 50 (South)	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy	Percentage	Opening day within 10 years		85.00
Highway 50 (North)	Percentage	Opening day within 10 years		85.00
Highway 50 (South)	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy		(calculated)	(calculated)	1.562	2831.014
Highway 50 (North)		(calculated)	(calculated)	1.505	2853.857
Highway 50 (South)		(calculated)	(calculated)	1.505	2853.857

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy	Evenly split	10.00
Highway 50 (North)	Evenly split	10.00
Highway 50 (South)	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy	1	3		Infinity	0.00	99999.00
Highway 50 (North)	1	1		Infinity	0.00	99999.00
Highway 50 (North)	1	2		Infinity	0.00	99999.00
Highway 50 (South)	1	3		Infinity	0.00	99999.00
Highway 50 (South)	1	4		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy	(calculated)	(calculated)	0.781	1415.507
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	4		✓	✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	1			✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	2	✓	✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	3		✓	

Traffic Flows

Demand Set Data Options

Default Vehicle	Vehicle Mix Varies Over	Vehicle Mix Varies Over	Vehicle Mix Varies Over	Vehicle Mix Source	PCE Factor for a Truck	Default Turning	Estimate from entry/exit	Turning Proportions Vary	Turning Proportions Vary	Turning Proportions Vary

Mix	Time	Turn	Entry		(PCE)	Proportions	counts	Over Time	Over Turn	Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy	PHF	✓	610.00	100.000
Highway 50 (North)	PHF	✓	488.00	100.000
Highway 50 (South)	PHF	✓	631.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy	610.00	0.96	SecondQuarter
Highway 50 (North)	488.00	0.96	SecondQuarter
Highway 50 (South)	631.00	0.96	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.000	573.000	58.000
	Highway 50 (North)	290.000	0.000	198.000
	Emil Kolb Pkwy	114.000	496.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.00	0.91	0.09
	Highway 50 (North)	0.59	0.00	0.41
	Emil Kolb Pkwy	0.19	0.81	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	1.000	1.037	1.027
	Highway 50 (North)	1.008	1.000	1.053
	Emil Kolb Pkwy	1.057	1.277	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Highway 50 (South)	Highway 50 (North)	Emil Kolb Pkwy
From	Highway 50 (South)	0.0	3.7	2.7
	Highway 50 (North)	0.8	0.0	5.3
	Emil Kolb Pkwy	5.7	27.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy	1.38	0.28	1.61	A	610.34	610.34	15.26	1.50	0.25
Highway 50 (North)	0.73	0.11	0.50	A	489.20	489.20	5.92	0.73	0.10
Highway 50 (South)	1.62	0.29	1.48	A	629.06	629.06	16.14	1.54	0.27

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: King Street & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 11:31:16 AM

Summary of intersection performance

	AM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2051 Future Background						
Emil Kolb Pkwy (North)	0.17	0.87	1.04	N/A	A	1.05	A
Emil Kolb Pkwy (South)	0.13	0.70	1.03	N/A	A		
King Street	0.22	1.23	1.08	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 8:00 AM - 9:00 AM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D5 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D8 - 2041 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D9 - 2031 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D11 - 2051 Future Background, AM " model duration: 8:00 AM - 9:00 AM
"D12 - 2051 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D13 - 2051 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D14 - 2051 Future Total, PM" model duration: 8:00 AM - 9:00 AM

Run using Junctions 8.0.6.541 at 2026-02-21 11:31:16 AM

File summary

Title	Bolton North Hill
Location	King Street & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	2074968000	3657

(Default Analysis Set) - 2051 Future Background, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2051 Future Background, AM	2051 Future Background	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	1.05	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy (North)	2	Emil Kolb Pkwy (North)	
Emil Kolb Pkwy (South)	1	Emil Kolb Pkwy (South)	
King Street	3	King Street	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	0.00	99999.00
Emil Kolb Pkwy (South)	0.00	99999.00
King Street	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy (North)	7.00	8.00	30.00	25.00	55.00	25.00	
Emil Kolb Pkwy (South)	7.00	8.00	30.00	25.00	55.00	25.00	
King Street	7.00	8.00	30.00	25.00	55.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy (North)	0.00	0.00
Emil Kolb Pkwy (South)	0.00	0.00
King Street	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy (North)	Percentage	Opening day within 10 years		85.00
Emil Kolb Pkwy (South)	Percentage	Opening day within 10 years		85.00
King Street	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)		(calculated)	(calculated)	1.562	2831.014
Emil Kolb Pkwy (South)		(calculated)	(calculated)	1.562	2831.014
King Street		(calculated)	(calculated)	1.562	2831.014

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy (North)	Evenly split	10.00
Emil Kolb Pkwy (South)	Evenly split	10.00
King Street	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	1	1		Infinity	0.00	99999.00
Emil Kolb Pkwy (North)	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	3		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	4		Infinity	0.00	99999.00
King Street	1	2		Infinity	0.00	99999.00
King Street	1	3		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	4		✓	✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	1	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	3	✓	✓	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy (North)	PHF	✓	503.00	100.000
Emil Kolb Pkwy (South)	PHF	✓	378.00	100.000
King Street	PHF	✓	630.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy (North)	503.00	0.95	SecondQuarter
Emil Kolb Pkwy (South)	378.00	0.95	SecondQuarter
King Street	630.00	0.95	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.000	130.000	248.000
	Emil Kolb Pkwy (North)	254.000	0.000	249.000
	King Street	476.000	154.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.00	0.34	0.66
	Emil Kolb Pkwy (North)	0.50	0.00	0.50
	King Street	0.76	0.24	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	1.000	1.310	1.075
	Emil Kolb Pkwy (North)	1.032	1.000	1.022
	King Street	1.061	1.097	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.0	31.0	7.5
	Emil Kolb Pkwy (North)	3.2	0.0	2.2
	King Street	6.1	9.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy (North)	1.04	0.17	0.87	A	503.73	503.73	8.41	1.00	0.14
Emil Kolb Pkwy (South)	1.03	0.13	0.70	A	376.45	376.45	6.82	1.09	0.11
King Street	1.08	0.22	1.23	A	629.02	629.02	11.52	1.10	0.19

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: King Street & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 11:33:50 AM

Summary of intersection performance

	PM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2051 Future Background						
Emil Kolb Pkwy (North)	0.35	1.63	2.54	N/A	A	3.57	A
Emil Kolb Pkwy (South)	1.69	6.18	5.21	N/A	A		
King Street	0.27	1.50	1.32	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 8:00 AM - 9:00 AM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D5 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D8 - 2041 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D9 - 2031 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D11 - 2051 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D12 - 2051 Future Background, PM " model duration: 8:00 AM - 9:00 AM
"D13 - 2051 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D14 - 2051 Future Total, PM" model duration: 8:00 AM - 9:00 AM

Run using Junctions 8.0.6.541 at 2026-02-21 11:33:50 AM

File summary

Title	Bolton North Hill
Location	King Street & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1987833757	2291

(Default Analysis Set) - 2051 Future Background, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2051 Future Background, PM	2051 Future Background	PM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	3.57	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy (North)	2	Emil Kolb Pkwy (North)	
Emil Kolb Pkwy (South)	1	Emil Kolb Pkwy (South)	
King Street	3	King Street	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	0.00	99999.00
Emil Kolb Pkwy (South)	0.00	99999.00
King Street	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy (North)	7.00	8.00	30.00	25.00	55.00	25.00	
Emil Kolb Pkwy							

(South)	7.00	8.00	30.00	25.00	55.00	25.00	
King Street	7.00	8.00	30.00	25.00	55.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy (North)	0.00	0.00
Emil Kolb Pkwy (South)	0.00	0.00
King Street	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy (North)	Percentage	Opening day within 10 years		85.00
Emil Kolb Pkwy (South)	Percentage	Opening day within 10 years		85.00
King Street	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)		(calculated)	(calculated)	1.562	2831.014
Emil Kolb Pkwy (South)		(calculated)	(calculated)	1.562	2831.014
King Street		(calculated)	(calculated)	1.562	2831.014

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy (North)	Evenly split	10.00
Emil Kolb Pkwy (South)	Evenly split	10.00
King Street	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	1	1		Infinity	0.00	99999.00
Emil Kolb Pkwy (North)	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	3		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	4		Infinity	0.00	99999.00
King Street	1	2		Infinity	0.00	99999.00
King Street	1	3		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	4		✓	✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	1	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	3	✓	✓	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy (North)	PHF	✓	416.00	100.000
Emil Kolb Pkwy (South)	PHF	✓	1184.00	100.000
King Street	PHF	✓	672.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy (North)	416.00	0.95	SecondQuarter
Emil Kolb Pkwy (South)	1184.00	0.95	SecondQuarter
King Street	672.00	0.95	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.000	487.000	697.000
	Emil Kolb Pkwy (North)	254.000	0.000	162.000
	King Street	401.000	271.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.00	0.41	0.59
	Emil Kolb Pkwy (North)	0.61	0.00	0.39
	King Street	0.60	0.40	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	1.000	1.310	1.075
	Emil Kolb Pkwy (North)	1.032	1.000	1.022
	King Street	1.061	1.097	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.0	31.0	7.5
	Emil Kolb Pkwy (North)	3.2	0.0	2.2
	King Street	6.1	9.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy (North)	2.54	0.35	1.63	A	416.93	416.93	16.02	2.31	0.27
Emil Kolb Pkwy (South)	5.21	1.69	6.18	A	1183.28	1183.28	89.03	4.51	1.48
King Street	1.32	0.27	1.50	A	674.33	674.33	15.07	1.34	0.25

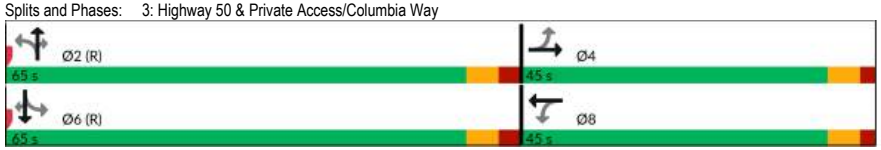
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	11	246	3	128	3	247	151	106	452	3
Future Volume (vph)	4	0	11	246	3	128	3	247	151	106	452	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	140.0		30.0	125.0		30.0
Storage Lanes	0		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Frt		0.899			0.853				0.850			0.850
Flt Protected		0.988		0.950			0.950			0.950		
Satd. Flow (prot)	0	953	0	1750	1575	0	892	1830	1595	1700	1883	1591
Flt Permitted		0.944		0.747			0.427			0.592		
Satd. Flow (perm)	0	911	0	1376	1575	0	401	1830	1595	1059	1883	1591
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37			139				164			30
Link Speed (k/h)		50			40			50			60	
Link Distance (m)		127.3			237.9			633.3			977.2	
Travel Time (s)		9.2			21.4			45.6			58.6	
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 (%)	100%	0%	72%	2%	100%	2%	100%	5%	2%	5%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	4	0	12	267	3	139	3	268	164	115	491	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	0	267	142	0	3	268	164	115	491	3
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												
Headway Factor	0.99	0.99	0.99	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02
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	Left						Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	12.0		8.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	-3.0		-2.0	-2.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	-3.0		-2.0	-2.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	15.0		10.0	10.0		2.0	0.6	2.0	2.0	0.6	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
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												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	25.0	25.0		25.0	25.0		30.7	30.7	30.7	30.7	30.7	30.7
Total Split (s)	45.0	45.0		45.0	45.0		65.0	65.0	65.0	65.0	65.0	65.0
Total Split (%)	40.9%	40.9%		40.9%	40.9%		59.1%	59.1%	59.1%	59.1%	59.1%	59.1%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0		6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		27.1		27.1	27.1		70.2	70.2	70.2	70.2	70.2	70.2
Actuated g/C Ratio		0.25		0.25	0.25		0.64	0.64	0.64	0.64	0.64	0.64
v/c Ratio		0.06		0.79	0.29		0.01	0.23	0.15	0.17	0.41	0.00
Control Delay (s/veh)		2.6		54.6	6.5		10.3	10.3	2.1	10.5	12.3	0.0
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		2.6		54.6	6.5		10.3	10.3	2.1	10.5	12.3	0.0
LOS		A		D	A		B	B	A	B	B	A
Approach Delay (s/veh)		2.6			37.9			7.2			11.9	
Approach LOS		A			D			A			B	
Queue Length 50th (m)		0.0		56.6	0.5		0.2	23.6	0.0	9.7	49.9	0.0
Queue Length 95th (m)		1.8		78.1	14.3		1.7	46.3	9.6	23.0	91.5	0.0
Internal Link Dist (m)		103.3			213.9			609.3			953.2	
Turn Bay Length (m)							140.0		30.0	125.0		30.0
Base Capacity (vph)		346		487	648		255	1167	1077	675	1201	1026
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		0.05		0.55	0.22		0.01	0.23	0.15	0.17	0.41	0.00

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay (s/veh): 17.6 Intersection LOS: B
Intersection Capacity Utilization 76.9% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 3: Highway 50 & Private Access/Columbia Way



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	29	28	134	15	59	14	309	66	58	610	8
Future Volume (vph)	16	29	28	134	15	59	14	309	66	58	610	8
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	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	30.0		0.0	85.0		0.0	90.0		75.0	65.0		90.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				0.98						1.00	
Frt		0.926			0.880				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	1711	0	1785	1628	0	1623	3476	1591	1785	1879	0
Flt Permitted	0.699			0.585			0.259			0.531		
Satd. Flow (perm)	1295	1711	0	1099	1628	0	442	3476	1591	998	1879	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34			71				80		1	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		112.1			201.9			771.8			633.3	
Travel Time (s)		10.1			18.2			55.6			45.6	
Confl. Peds. (#/hr)	17					17	8					8
Confl. Bikes (#/hr)					2							
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	4%	4%	0%	0%	2%	10%	5%	0%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	19	35	34	161	18	71	17	372	80	70	735	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	69	0	161	89	0	17	372	80	70	745	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												
Headway Factor	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02	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	
Detector Template							Left	Thru	Right	Left	Thru	
Leading Detector (m)	12.0	12.0		12.0	12.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	15.0	15.0		15.0	15.0		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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	47.1	47.1		8.0	47.1		34.7	34.7	34.7	34.7	34.7	
Total Split (s)	60.0	60.0		15.0	75.0		45.0	45.0	45.0	45.0	45.0	
Total Split (%)	50.0%	50.0%		12.5%	62.5%		37.5%	37.5%	37.5%	37.5%	37.5%	
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	4.1	4.1		0.0	4.1		2.7	2.7	2.7	2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	8.1	8.1		3.0	8.1		6.7	6.7	6.7	6.7	6.7	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
Act Effct Green (s)	15.8	15.8		32.9	27.8		77.4	77.4	77.4	77.4	77.4	
Actuated g/C Ratio	0.13	0.13		0.27	0.23		0.65	0.65	0.65	0.65	0.65	
v/c Ratio	0.11	0.27		0.43	0.21		0.06	0.17	0.08	0.11	0.61	
Control Delay (s/veh)	42.0	26.2		35.7	10.1		28.2	22.9	16.0	13.1	19.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	42.0	26.2		35.7	10.1		28.2	22.9	16.0	13.1	19.0	
LOS	D	C		D	B		C	C	B	B	B	
Approach Delay (s/veh)		29.6			26.6			21.9			18.5	
Approach LOS		C			C			C			B	
Queue Length 50th (m)	4.5	8.3		33.0	3.6		2.8	35.0	6.3	5.7	92.7	
Queue Length 95th (m)	8.3	15.1		31.9	10.2		m7.8	52.2	m17.2	19.1	#217.6	
Internal Link Dist (m)		88.1			177.9			747.8			609.3	
Turn Bay Length (m)	30.0			85.0			90.0		75.0	65.0		
Base Capacity (vph)	560	759		373	939		285	2242	1054	643	1212	
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	0.03	0.09		0.43	0.09		0.06	0.17	0.08	0.11	0.61	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 39 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay (s/veh): 21.4		Intersection LOS: C	
Intersection Capacity Utilization 80.9%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Highway 50 & Cross Country Blvd/Bolton Heights Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	262	95	339	256	70	58	329	131	65	678	27
Future Volume (vph)	30	262	95	339	256	70	58	329	131	65	678	27
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	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	30.0		35.0	30.0		0.0	55.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Ped Bike Factor									0.97	1.00	1.00	
Frt			0.850		0.968				0.850		0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1606	1695	1437	1591	1635	0	1564	1662	1417	1643	1694	0
Flt Permitted	0.487			0.293			0.127			0.449		
Satd. Flow (perm)	824	1695	1437	491	1635	0	209	1662	1379	774	1694	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			118		11				139		2	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		535.7			353.4			517.9			32.8	
Travel Time (s)		48.2			31.8			37.3			2.4	
Confl. Peds. (#/hr)							2		3	3		2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	0%	1%	3%	0%	5%	4%	1%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	1	0
Adj. Flow (vph)	32	279	101	361	272	74	62	350	139	69	721	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	279	101	361	346	0	62	350	139	69	750	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			3.7			3.7	
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												
Headway Factor	1.16	1.13	1.16	1.16	1.13	1.13	1.13	1.13	1.17	1.13	1.13	1.16
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	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	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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Detector Phase	3	8	8	7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	8.0	31.9	31.9	8.0	31.9		8.0	32.0	32.0	8.0	32.0	
Total Split (s)	11.0	32.0	32.0	18.0	39.0		8.0	59.0	59.0	11.0	62.0	
Total Split (%)	9.2%	26.7%	26.7%	15.0%	32.5%		6.7%	49.2%	49.2%	9.2%	51.7%	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.9	2.9	0.0	2.9		0.0	3.0	3.0	0.0	3.0	
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	6.9	6.9	3.0	6.9		3.0	7.0	7.0	3.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	33.8	23.0	23.0	44.9	34.7		64.9	56.6	56.6	68.5	58.4	
Actuated g/C Ratio	0.28	0.19	0.19	0.37	0.29		0.54	0.47	0.47	0.57	0.49	
v/c Ratio	0.12	0.86	0.27	1.13	0.72		0.36	0.45	0.19	0.14	0.91	
Control Delay (s/veh)	24.4	71.5	6.9	120.0	47.5		18.0	25.0	4.0	10.7	42.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	24.4	71.5	6.9	120.0	47.5		18.0	25.0	4.0	10.7	42.0	
LOS	C	E	A	F	D		B	C	A	B	D	
Approach Delay (s/veh)		52.0			84.5			18.9			39.3	
Approach LOS		D			F			B			D	
Queue Length 50th (m)	4.9	65.9	0.0	~79.4	76.1		6.7	60.9	0.0	8.3	187.1	
Queue Length 95th (m)	11.7	#107.7	11.3	#126.7	#122.0		13.6	89.5	12.0	m5.7	#262.4	
Internal Link Dist (m)		511.7			329.4			493.9			8.8	
Turn Bay Length (m)	30.0		35.0	30.0			55.0			20.0		
Base Capacity (vph)	292	354	393	320	480		174	783	723	501	824	
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	0.11	0.79	0.26	1.13	0.72		0.36	0.45	0.19	0.14	0.91	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 115 (96%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay (s/veh): 49.7		Intersection LOS: D	
Intersection Capacity Utilization 100.1%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 5: Highway 50 & King St

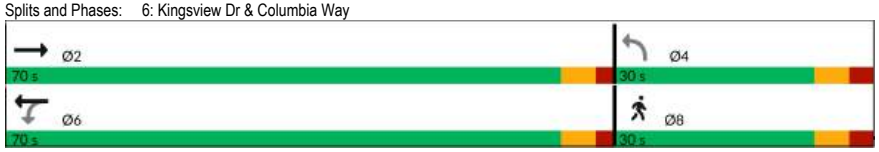


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø8
Lane Configurations							
Traffic Volume (vph)	205	31	121	227	38	54	
Future Volume (vph)	205	31	121	227	38	54	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor	1.00			1.00	0.99		
Frt	0.980				0.921		
Flt Protected				0.983	0.980		
Satd. Flow (prot)	3563	0	0	3484	1712	0	
Flt Permitted				0.733	0.980		
Satd. Flow (perm)	3563	0	0	2592	1712	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	33				65		
Link Speed (k/h)	40			40	40		
Link Distance (m)	237.9			417.0	131.8		
Travel Time (s)	21.4			37.5	11.9		
Confl. Peds. (#/hr)		3	3			5	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	
Heavy Vehicles (%)	0%	0%	3%	3%	0%	0%	
Adj. Flow (vph)	247	37	146	273	46	65	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	284	0	0	419	111	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	0.0			0.0	3.7		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
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		2.0	0.6	2.0		
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		Perm	NA	Perm		
Protected Phases	2			6			8
Permitted Phases			6		4		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø8
Detector Phase	2		6	6	4		
Switch Phase							
Minimum Initial (s)	8.0		8.0	8.0	8.0		8.0
Minimum Split (s)	21.0		21.0	21.0	21.9		21.9
Total Split (s)	70.0		70.0	70.0	30.0		30.0
Total Split (%)	70.0%		70.0%	70.0%	30.0%		30%
Yellow Time (s)	4.0		4.0	4.0	4.0		4.0
All-Red Time (s)	2.0		2.0	2.0	2.9		2.9
Lost Time Adjust (s)	0.0			0.0	0.0		
Total Lost Time (s)	6.0			6.0	6.9		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	Max		Max	Max	None		Ped
Act Effct Green (s)	64.0			64.0	15.0		
Actuated g/C Ratio	0.70			0.70	0.16		
v/c Ratio	0.11			0.23	0.33		
Control Delay (s/veh)	4.2			5.4	19.2		
Queue Delay	0.0			0.0	0.0		
Total Delay (s/veh)	4.2			5.4	19.2		
LOS	A			A	B		
Approach Delay (s/veh)	4.2			5.4	19.2		
Approach LOS	A			A	B		
Queue Length 50th (m)	6.9			12.8	7.4		
Queue Length 95th (m)	9.8			16.7	19.8		
Internal Link Dist (m)	213.9			393.0	107.8		
Turn Bay Length (m)							
Base Capacity (vph)	2491			1805	478		
Starvation Cap Reductn	0			0	0		
Spillback Cap Reductn	0			0	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.11			0.23	0.23		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 91.9			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay (s/veh): 6.9		Intersection LOS: A	
Intersection Capacity Utilization 45.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Kingsview Dr & Columbia Way



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	176	49	35	208	65	42
Future Volume (vph)	176	49	35	208	65	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.967				0.947	
Flt Protected				0.993	0.971	
Satd. Flow (prot)	3530	0	0	3514	1712	0
Flt Permitted				0.993	0.971	
Satd. Flow (perm)	3530	0	0	3514	1712	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	500.8			180.3	104.8	
Travel Time (s)	30.0			10.8	9.4	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	4%	3%	2%	5%
Adj. Flow (vph)	220	61	44	260	81	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	281	0	0	304	134	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	176	49	35	208	65	42
Future Volume (Veh/h)	176	49	35	208	65	42
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	220	61	44	260	81	52
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			281		469	141
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			281		469	141
tC, single (s)			4.2		6.8	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			97		84	94
cM capacity (veh/h)			1264		505	872

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	147	134	131	173	133
Volume Left	0	0	44	0	81
Volume Right	0	61	0	0	52
cSH	1700	1700	1264	1700	605
Volume to Capacity	0.09	0.08	0.03	0.10	0.22
Queue Length 95th (m)	0.0	0.0	0.9	0.0	6.7
Control Delay (s/veh)	0.0	0.0	2.9	0.0	12.6
Lane LOS			A		B
Approach Delay (s/veh)	0.0		1.2		12.6
Approach LOS					B

Intersection Summary				
Average Delay	2.9			
Intersection Capacity Utilization	29.4%	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)	91	270	15	4	154	27	35	7	16	159	6	74
Future Volume (vph)	91	270	15	4	154	27	35	7	16	159	6	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.978			0.962			0.958	
Flt Protected		0.988			0.999			0.971			0.968	
Satd. Flow (prot)	0	3460	0	0	3407	0	0	1746	0	0	1765	0
Flt Permitted		0.988			0.999			0.971			0.968	
Satd. Flow (perm)	0	3460	0	0	3407	0	0	1746	0	0	1765	0
Link Speed (k/h)		60			60			40			60	
Link Distance (m)		116.8			228.4			249.8			243.0	
Travel Time (s)		7.0			13.7			22.5			14.6	
Confl. Peds. (#/hr)	1					1	1		2	2		1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	5%	0%	0%	3%	15%	0%	0%	10%	0%	0%	3%
Adj. Flow (vph)	111	329	18	5	188	33	43	9	20	194	7	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	458	0	0	226	0	0	72	0	0	291	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	270	15	4	154	27	35	7	16	159	6	74
Future Volume (Veh/h)	91	270	15	4	154	27	35	7	16	159	6	74
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	111	329	18	5	188	33	43	9	20	194	7	90
Pedestrians		1			2						1	
Lane Width (m)		3.7			3.7						3.7	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	222			347			759	792	176	629	785	113
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	222			347			759	792	176	629	785	113
tC, single (s)	4.1			4.1			7.5	6.5	7.1	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	92			100			83	97	98	41	98	90
cM capacity (veh/h)	1358			1223			247	296	811	330	299	914

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	276	183	99	127	72	291
Volume Left	111	0	5	0	43	194
Volume Right	0	18	0	33	20	90
cSH	1358	1700	1223	1700	315	409
Volume to Capacity	0.08	0.11	0.00	0.07	0.23	0.71
Queue Length 95th (m)	2.1	0.0	0.1	0.0	6.9	43.2
Control Delay (s/veh)	3.6	0.0	0.4	0.0	19.8	32.6
Lane LOS	A		A		C	D
Approach Delay (s/veh)	2.2		0.2		19.8	32.6
Approach LOS					C	D

Intersection Summary					
Average Delay	11.4				
Intersection Capacity Utilization	43.1%	ICU Level of Service		A	
Analysis Period (min)	15				

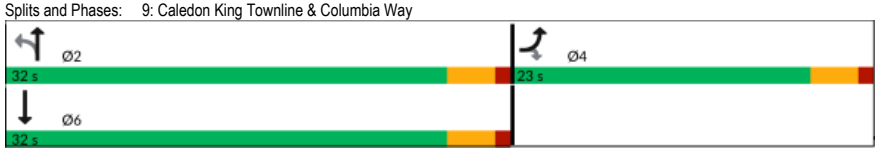
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	493	86	138	621	25
Future Volume (vph)	41	493	86	138	621	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.995	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1659	1601	1659	1830	1893	0
Flt Permitted	0.950		0.227			
Satd. Flow (perm)	1659	1601	396	1830	1893	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		199			5	
Link Speed (k/h)	60			80	80	
Link Distance (m)	190.9			1113.3	133.7	
Travel Time (s)	11.5			50.1	6.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	10%	2%	10%	5%	1%	0%
Adj. Flow (vph)	44	524	91	147	661	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	524	91	147	688	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	10.0	10.0	20.0	20.0	20.0	
Minimum Split (s)	22.5	22.5	24.5	24.5	24.5	
Total Split (s)	23.0	23.0	32.0	32.0	32.0	
Total Split (%)	41.8%	41.8%	58.2%	58.2%	58.2%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	
Act Effct Green (s)	15.1	15.1	23.5	23.5	23.5	
Actuated g/C Ratio	0.32	0.32	0.50	0.50	0.50	
v/c Ratio	0.08	0.80	0.46	0.16	0.72	
Control Delay (s/veh)	12.2	20.9	17.8	7.6	15.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	12.2	20.9	17.8	7.6	15.0	
LOS	B	C	B	A	B	
Approach Delay (s/veh)	20.2			11.5	15.0	
Approach LOS	C			B	B	
Queue Length 50th (m)	2.4	21.5	4.8	6.5	43.5	
Queue Length 95th (m)	8.6	#76.4	18.1	15.2	85.4	
Internal Link Dist (m)	166.9			1089.3	109.7	
Turn Bay Length (m)						
Base Capacity (vph)	689	781	242	1119	1160	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.06	0.67	0.38	0.13	0.59	

Intersection Summary

Area Type: Other
Cycle Length: 55
Actuated Cycle Length: 46.8
Natural Cycle: 55
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.80
Intersection Signal Delay (s/veh): 16.4 Intersection LOS: B
Intersection Capacity Utilization 71.4% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Caledon King Townline & Columbia Way



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	47	22	241	554	6
Future Volume (vph)	6	47	22	241	554	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	105.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.881				0.998	
Flt Protected	0.994		0.950			
Satd. Flow (prot)	1639	0	1534	1601	1862	0
Flt Permitted	0.994		0.950			
Satd. Flow (perm)	1639	0	1534	1601	1862	0
Link Speed (k/h)	60			70	50	
Link Distance (m)	388.6			2029.6	1306.7	
Travel Time (s)	23.3			104.4	94.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	19%	20%	3%	0%
Adj. Flow (vph)	7	52	24	268	616	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	59	0	24	268	623	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 39.5% ICU Level of Service A
Analysis Period (min) 15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	47	22	241	554	6
Future Volume (Veh/h)	6	47	22	241	554	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	52	24	268	616	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	936	620	623			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	936	620	623			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	98	89	97			
cM capacity (veh/h)	289	486	881			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	59	24	268	623
Volume Left	7	24	0	0
Volume Right	52	0	0	7
cSH	450	881	1700	1700
Volume to Capacity	0.13	0.03	0.16	0.37
Queue Length 95th (m)	3.6	0.7	0.0	0.0
Control Delay (s/veh)	14.2	9.2	0.0	0.0
Lane LOS	B	A		
Approach Delay (s/veh)	14.2	0.8		0.0
Approach LOS	B			

Intersection Summary				
Average Delay			1.1	
Intersection Capacity Utilization			39.5%	ICU Level of Service A
Analysis Period (min)			15	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	442	3	4	106	77	92
Future Volume (vph)	442	3	4	106	77	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.999				0.927	
Flt Protected				0.998	0.978	
Satd. Flow (prot)	3575	0	0	3571	1708	0
Flt Permitted				0.998	0.978	
Satd. Flow (perm)	3575	0	0	3571	1708	0
Link Speed (k/h)	50			60	50	
Link Distance (m)	228.4			304.5	187.8	
Travel Time (s)	16.4			18.3	13.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	442	3	4	106	77	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	445	0	0	110	169	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	28.9%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	442	3	4	106	77	92
Future Volume (Veh/h)	442	3	4	106	77	92
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	442	3	4	106	77	92
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			445		505	223
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			445		505	223
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		84	88
cM capacity (veh/h)			1112		495	781

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	295	150	39	71	169
Volume Left	0	0	4	0	77
Volume Right	0	3	0	0	92
cSH	1700	1700	1112	1700	618
Volume to Capacity	0.17	0.09	0.00	0.04	0.27
Queue Length 95th (m)	0.0	0.0	0.1	0.0	8.9
Control Delay (s/veh)	0.0	0.0	0.9	0.0	13.0
Lane LOS			A		B
Approach Delay (s/veh)	0.0		0.3		13.0
Approach LOS					B

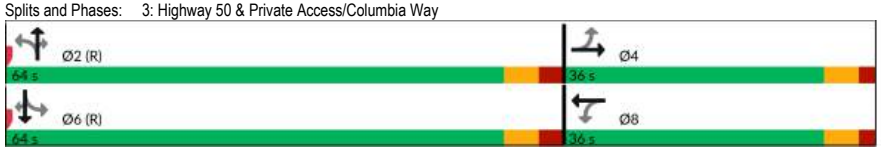
Intersection Summary					
Average Delay	3.1				
Intersection Capacity Utilization	28.9%	ICU Level of Service			A
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	3	202	0	87	0	556	264	159	288	3
Future Volume (vph)	0	0	3	202	0	87	0	556	264	159	288	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	140.0		30.0	125.0		30.0
Storage Lanes	0		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Frt		0.865			0.850				0.850			0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1662	0	1750	1555	0	1879	1883	1626	1785	1883	795
Flt Permitted				0.756						0.386		
Satd. Flow (perm)	0	1662	0	1393	1555	0	1879	1883	1626	725	1883	795
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		557			293				275			33
Link Speed (k/h)		50			40			50			60	
Link Distance (m)		127.3			237.9			633.3			975.9	
Travel Time (s)		9.2			21.4			45.6			58.6	
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 (%)	100%	0%	0%	2%	0%	5%	0%	2%	0%	0%	2%	100%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	0	0	3	210	0	91	0	579	275	166	300	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	210	91	0	0	579	275	166	300	3
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												
Headway Factor	0.99	0.99	0.99	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02
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	Left						Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	12.0		8.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	-3.0		-2.0	-2.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	-3.0		-2.0	-2.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	15.0		10.0	10.0		2.0	0.6	2.0	2.0	0.6	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
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												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	25.0	25.0		25.0	25.0		30.7	30.7	30.7	30.7	30.7	30.7
Total Split (s)	36.0	36.0		36.0	36.0		64.0	64.0	64.0	64.0	64.0	64.0
Total Split (%)	36.0%	36.0%		36.0%	36.0%		64.0%	64.0%	64.0%	64.0%	64.0%	64.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0		6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		20.5		20.5	20.5			66.8	66.8	66.8	66.8	66.8
Actuated g/C Ratio		0.21		0.21	0.21			0.67	0.67	0.67	0.67	0.67
v/c Ratio		0.00		0.74	0.17			0.46	0.23	0.34	0.24	0.01
Control Delay (s/veh)		0.0		52.0	0.6			10.4	1.6	11.0	8.1	0.0
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		0.0		52.0	0.6			10.4	1.6	11.0	8.1	0.0
LOS		A		D	A			B	A	B	A	A
Approach Delay (s/veh)					36.5			7.6			9.0	
Approach LOS					D			A			A	
Queue Length 50th (m)		0.0		40.4	0.0			50.8	0.0	13.1	21.7	0.0
Queue Length 95th (m)		0.0		60.3	0.0			93.1	10.0	32.1	42.4	0.0
Internal Link Dist (m)		103.3			213.9			609.3			951.9	
Turn Bay Length (m)									30.0	125.0		30.0
Base Capacity (vph)		888		417	671			1258	1177	484	1258	542
Starvation Cap Reductn		0		0	0			0	0	0	0	0
Spillback Cap Reductn		0		0	0			0	0	0	0	0
Storage Cap Reductn		0		0	0			0	0	0	0	0
Reduced v/c Ratio		0.00		0.50	0.14			0.46	0.23	0.34	0.24	0.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay (s/veh): 13.3		Intersection LOS: B	
Intersection Capacity Utilization 80.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Highway 50 & Private Access/Columbia Way

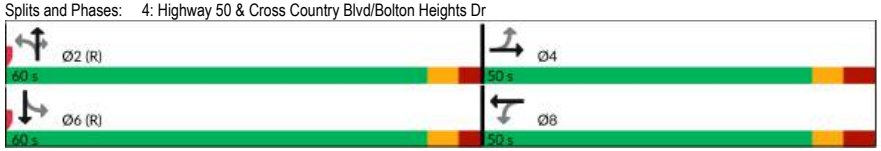


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	8	13	42	10	19	90	831	105	31	393	23
Future Volume (vph)	9	8	13	42	10	19	90	831	105	31	393	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	30.0		0.0	85.0		0.0	90.0		75.0	65.0		90.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	0.99		1.00				1.00	
Frt		0.907			0.900				0.850		0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	1727	0	1785	1713	0	1785	3614	1559	1785	1868	0
Flt Permitted	0.738			0.744			0.498			0.318		
Satd. Flow (perm)	1384	1727	0	1394	1713	0	934	3614	1559	597	1868	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			20				108		4	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		112.1			201.9			771.8			633.3	
Travel Time (s)		10.1			18.2			55.6			45.6	
Confl. Peds. (#/hr)	2		3	3		2	2					2
Confl. Bikes (#/hr)					2							
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 (%)	0%	0%	0%	0%	0%	0%	0%	1%	2%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	9	8	13	43	10	20	93	857	108	32	405	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	21	0	43	30	0	93	857	108	32	429	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												
Headway Factor	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02	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	
Detector Template							Left	Thru	Right	Left	Thru	
Leading Detector (m)	12.0	12.0		12.0	12.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	15.0	15.0		15.0	15.0		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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	47.1	47.1		47.1	47.1		34.7	34.7	34.7	34.7	34.7	
Total Split (s)	50.0	50.0		50.0	50.0		60.0	60.0	60.0	60.0	60.0	
Total Split (%)	45.5%	45.5%		45.5%	45.5%		54.5%	54.5%	54.5%	54.5%	54.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	4.1	4.1		4.1	4.1		2.7	2.7	2.7	2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	8.1	8.1		8.1	8.1		6.7	6.7	6.7	6.7	6.7	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
Act Effct Green (s)	15.9	15.9		15.9	15.9		84.2	84.2	84.2	84.2	84.2	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.77	0.77	0.77	0.77	0.77	
v/c Ratio	0.05	0.08		0.21	0.11		0.13	0.31	0.09	0.07	0.30	
Control Delay (s/veh)	34.2	20.5		40.0	18.5		7.9	7.2	2.3	8.5	7.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	34.2	20.5		40.0	18.5		7.9	7.2	2.3	8.5	7.9	
LOS	C	C		D	B		A	A	A	A	A	
Approach Delay (s/veh)		24.6			31.2			6.8			7.9	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	1.9	1.7		9.3	2.1		4.3	24.7	0.0	1.4	23.0	
Queue Length 95th (m)	4.9	6.7		14.7	8.1		21.5	79.4	8.6	9.4	84.6	
Internal Link Dist (m)		88.1			177.9			747.8			609.3	
Turn Bay Length (m)	30.0			85.0			90.0		75.0	65.0		
Base Capacity (vph)	527	665		530	664		715	2767	1219	457	1431	
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	0.02	0.03		0.08	0.05		0.13	0.31	0.09	0.07	0.30	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 96 (87%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.31			
Intersection Signal Delay (s/veh): 8.5		Intersection LOS: A	
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 4: Highway 50 & Cross Country Blvd/Bolton Heights Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	301	117	262	335	53	93	873	490	39	440	27
Future Volume (vph)	70	301	117	262	335	53	93	873	490	39	440	27
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	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	30.0		35.0	30.0		0.0	55.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Ped Bike Factor	0.98		0.96	0.99	0.99				0.96		1.00	
Frt			0.850		0.979				0.850		0.991	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1575	1712	1409	1591	1667	0	1610	1712	1432	1643	1681	0
Flt Permitted	0.426			0.232			0.283			0.068		
Satd. Flow (perm)	695	1712	1358	386	1667	0	480	1712	1372	118	1681	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125		6				278		2	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		535.7			353.4			517.9			32.8	
Travel Time (s)		48.2			31.8			37.3			2.4	
Confl. Peds. (#/hr)	11		6	6		11	10		8	8		10
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%	1%	2%	1%	1%	0%	2%	1%	0%	0%	1%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	1	0
Adj. Flow (vph)	72	310	121	270	345	55	96	900	505	40	454	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	310	121	270	400	0	96	900	505	40	482	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			3.7			3.7	
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												
Headway Factor	1.16	1.13	1.16	1.16	1.13	1.13	1.13	1.13	1.17	1.13	1.13	1.16
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	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	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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Detector Phase	3	8	8	7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	8.0	31.9	31.9	8.0	31.9		8.0	32.0	32.0	8.0	32.0	
Total Split (s)	15.0	33.0	33.0	30.0	48.0		22.0	67.0	67.0	10.0	55.0	
Total Split (%)	10.7%	23.6%	23.6%	21.4%	34.3%		15.7%	47.9%	47.9%	7.1%	39.3%	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.9	2.9	0.0	2.9		0.0	3.0	3.0	0.0	3.0	
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	6.9	6.9	3.0	6.9		3.0	7.0	7.0	3.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	41.8	28.6	28.6	58.4	44.1		75.3	63.7	63.7	69.5	58.9	
Actuated g/C Ratio	0.30	0.20	0.20	0.42	0.32		0.54	0.46	0.46	0.50	0.42	
v/c Ratio	0.27	0.89	0.32	0.75	0.76		0.29	1.16	0.65	0.31	0.68	
Control Delay (s/veh)	28.3	80.8	9.7	42.3	53.4		18.6	120.3	17.7	22.7	39.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	28.3	80.8	9.7	42.3	53.4		18.6	120.3	17.7	22.7	39.8	
LOS	C	F	A	D	D		B	F	B	C	D	
Approach Delay (s/veh)		56.2			48.9			79.3			38.5	
Approach LOS		E			D			E			D	
Queue Length 50th (m)	12.4	87.6	0.0	53.5	103.8		13.6	~322.4	53.2	5.5	114.5	
Queue Length 95th (m)	23.1	#152.0	16.9	78.2	#158.0		23.7	#404.0	97.1	11.8	164.2	
Internal Link Dist (m)		511.7			329.4			493.9			8.8	
Turn Bay Length (m)	30.0		35.0	30.0			55.0			20.0		
Base Capacity (vph)	296	349	376	393	529		412	778	775	135	708	
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	0.24	0.89	0.32	0.69	0.76		0.23	1.16	0.65	0.30	0.68	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 62 (44%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay (s/veh): 62.6		Intersection LOS: E	
Intersection Capacity Utilization 107.8%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 50 & King St

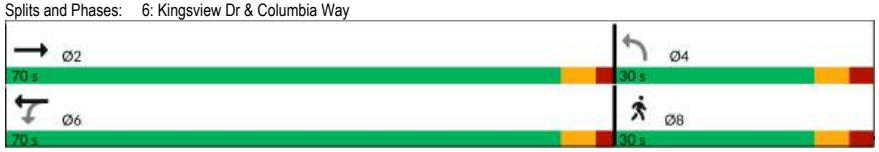


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø8
Lane Configurations							
Traffic Volume (vph)	271	72	68	186	23	37	
Future Volume (vph)	271	72	68	186	23	37	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor	0.99			1.00			
Frt	0.969				0.916		
Flt Protected				0.987	0.981		
Satd. Flow (prot)	3515	0	0	3551	1694	0	
Flt Permitted				0.773	0.981		
Satd. Flow (perm)	3515	0	0	2776	1694	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	66				41		
Link Speed (k/h)	40			40	40		
Link Distance (m)	237.9			417.0	131.8		
Travel Time (s)	21.4			37.5	11.9		
Confl. Peds. (#/hr)		3	3				
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	
Heavy Vehicles (%)	0%	0%	0%	2%	5%	0%	
Adj. Flow (vph)	298	79	75	204	25	41	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	377	0	0	279	66	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	0.0			0.0	3.7		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2		1	2	1		
Detector Template	Thru		Left	Thru	Left		
Leading Detector (m)	10.0		2.0	10.0	2.0		
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		2.0	0.6	2.0		
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		Perm	NA	Perm		
Protected Phases	2			6			8
Permitted Phases			6		4		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø8
Detector Phase	2		6	6	4		
Switch Phase							
Minimum Initial (s)	8.0		8.0	8.0	8.0		8.0
Minimum Split (s)	21.0		21.0	21.0	21.9		21.9
Total Split (s)	70.0		70.0	70.0	30.0		30.0
Total Split (%)	70.0%		70.0%	70.0%	30.0%		30%
Yellow Time (s)	4.0		4.0	4.0	4.0		4.0
All-Red Time (s)	2.0		2.0	2.0	2.9		2.9
Lost Time Adjust (s)	0.0			0.0	0.0		
Total Lost Time (s)	6.0			6.0	6.9		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	Max		Max	Max	None		Ped
Act Effct Green (s)	64.0			64.0	15.0		
Actuated g/C Ratio	0.70			0.70	0.16		
v/c Ratio	0.15			0.14	0.21		
Control Delay (s/veh)	4.0			4.9	18.5		
Queue Delay	0.0			0.0	0.0		
Total Delay (s/veh)	4.0			4.9	18.5		
LOS	A			A	B		
Approach Delay (s/veh)	4.0			4.9	18.5		
Approach LOS	A			A	B		
Queue Length 50th (m)	8.7			7.9	4.0		
Queue Length 95th (m)	13.3			12.1	15.7		
Internal Link Dist (m)	213.9			393.0	107.8		
Turn Bay Length (m)							
Base Capacity (vph)	2467			1933	456		
Starvation Cap Reductn	0			0	0		
Spillback Cap Reductn	0			0	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.15			0.14	0.14		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 91.9			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.21			
Intersection Signal Delay (s/veh): 5.7		Intersection LOS: A	
Intersection Capacity Utilization 42.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Kingsview Dr & Columbia Way



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	151	99	47	140	39	23
Future Volume (vph)	151	99	47	140	39	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.940				0.950	
Flt Protected				0.988	0.970	
Satd. Flow (prot)	3431	0	0	3553	1770	0
Flt Permitted				0.988	0.970	
Satd. Flow (perm)	3431	0	0	3553	1770	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	500.8			180.3	104.8	
Travel Time (s)	30.0			10.8	9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	164	108	51	152	42	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	272	0	0	203	67	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	151	99	47	140	39	23
Future Volume (Veh/h)	151	99	47	140	39	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	164	108	51	152	42	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			272		396	136
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			272		396	136
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		93	97
cM capacity (veh/h)			1303		564	894

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	109	163	102	101	67
Volume Left	0	0	51	0	42
Volume Right	0	108	0	0	25
cSH	1700	1700	1303	1700	654
Volume to Capacity	0.06	0.10	0.04	0.06	0.10
Queue Length 95th (m)	0.0	0.0	1.0	0.0	2.7
Control Delay (s/veh)	0.0	0.0	4.1	0.0	11.1
Lane LOS			A		B
Approach Delay (s/veh)	0.0		2.1		11.1
Approach LOS					B

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	26.1%	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)	48	186	38	22	324	149	20	7	11	46	9	43
Future Volume (vph)	48	186	38	22	324	149	20	7	11	46	9	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979			0.955			0.959			0.940	
Flt Protected		0.991			0.998			0.974			0.977	
Satd. Flow (prot)	0	3541	0	0	3434	0	0	1794	0	0	1764	0
Flt Permitted		0.991			0.998			0.974			0.977	
Satd. Flow (perm)	0	3541	0	0	3434	0	0	1794	0	0	1764	0
Link Speed (k/h)		60			60			40			60	
Link Distance (m)		116.8			228.4			249.8			243.0	
Travel Time (s)		7.0			13.7			22.5			14.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	51	196	40	23	341	157	21	7	12	48	9	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	287	0	0	521	0	0	40	0	0	102	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.8%	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)	48	186	38	22	324	149	20	7	11	46	9	43
Future Volume (Veh/h)	48	186	38	22	324	149	20	7	11	46	9	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	51	196	40	23	341	157	21	7	12	48	9	45
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	498			236			584	862	118	681	804	249
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	498			236			584	862	118	681	804	249
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			98			94	97	99	85	97	94
cM capacity (veh/h)	1076			1343			349	276	918	313	299	757

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	149	138	194	328	40	102
Volume Left	51	0	23	0	21	48
Volume Right	0	40	0	157	12	45
cSH	1076	1700	1343	1700	406	420
Volume to Capacity	0.05	0.08	0.02	0.19	0.10	0.24
Queue Length 95th (m)	1.2	0.0	0.4	0.0	2.6	7.5
Control Delay (s/veh)	3.2	0.0	1.0	0.0	14.8	16.3
Lane LOS	A		A		B	C
Approach Delay (s/veh)	1.7		0.4		14.8	16.3
Approach LOS					B	C

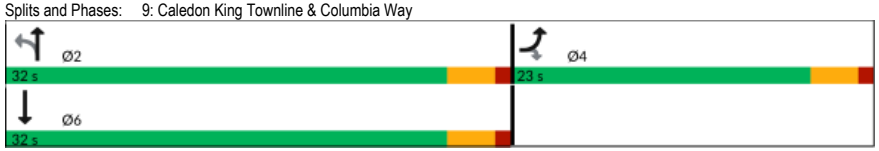
Intersection Summary					
Average Delay	3.1				
Intersection Capacity Utilization	38.8%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	88	97	177	576	249	365
Future Volume (vph)	88	97	177	576	249	365
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.920	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1825	1633	1807	1902	1753	0
Flt Permitted	0.950		0.348			
Satd. Flow (perm)	1825	1633	662	1902	1753	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		100			195	
Link Speed (k/h)	60			80	80	
Link Distance (m)	190.9			1113.3	133.7	
Travel Time (s)	11.5			50.1	6.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	1%	1%	2%	0%
Adj. Flow (vph)	91	100	182	594	257	376
Shared Lane Traffic (%)						
Lane Group Flow (vph)	91	100	182	594	633	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	10.0	10.0	20.0	20.0	20.0	
Minimum Split (s)	22.5	22.5	24.5	24.5	24.5	
Total Split (s)	23.0	23.0	32.0	32.0	32.0	
Total Split (%)	41.8%	41.8%	58.2%	58.2%	58.2%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	
Act Effct Green (s)	10.6	10.6	25.4	25.4	25.4	
Actuated g/C Ratio	0.27	0.27	0.66	0.66	0.66	
v/c Ratio	0.18	0.19	0.42	0.48	0.52	
Control Delay (s/veh)	15.1	5.5	9.0	6.7	5.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	15.1	5.5	9.0	6.7	5.4	
LOS	B	A	A	A	A	
Approach Delay (s/veh)	10.1			7.2	5.4	
Approach LOS	B			A	A	
Queue Length 50th (m)	5.0	0.0	6.7	23.1	15.6	
Queue Length 95th (m)	15.6	8.7	18.7	41.5	33.3	
Internal Link Dist (m)	166.9			1089.3	109.7	
Turn Bay Length (m)						
Base Capacity (vph)	949	898	485	1395	1338	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.10	0.11	0.38	0.43	0.47	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 38.6			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay (s/veh): 6.8		Intersection LOS: A	
Intersection Capacity Utilization 70.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Caledon King Townline & Columbia Way



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	21	80	603	271	7
Future Volume (vph)	6	21	80	603	271	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	105.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.895				0.997	
Flt Protected	0.989		0.950			
Satd. Flow (prot)	1700	0	1825	1865	1730	0
Flt Permitted	0.989		0.950			
Satd. Flow (perm)	1700	0	1825	1865	1730	0
Link Speed (k/h)	60			70	50	
Link Distance (m)	388.6			2029.6	1306.7	
Travel Time (s)	23.3			104.4	94.1	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	0%	3%	11%	0%
Adj. Flow (vph)	7	25	95	718	323	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	0	95	718	331	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	21	80	603	271	7
Future Volume (Veh/h)	6	21	80	603	271	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	7	25	95	718	323	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1235	327	331			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1235	327	331			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	97	92			
cM capacity (veh/h)	182	719	1240			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	32	95	718	331
Volume Left	7	95	0	0
Volume Right	25	0	0	8
cSH	436	1240	1700	1700
Volume to Capacity	0.07	0.08	0.42	0.19
Queue Length 95th (m)	1.9	2.0	0.0	0.0
Control Delay (s/veh)	13.9	8.1	0.0	0.0
Lane LOS	B	A		
Approach Delay (s/veh)	13.9	1.0		0.0
Approach LOS	B			

Intersection Summary				
Average Delay			1.0	
Intersection Capacity Utilization			41.7%	ICU Level of Service A
Analysis Period (min)			15	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	173	68	52	490	4	12
Future Volume (vph)	173	68	52	490	4	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.958				0.899	
Flt Protected				0.995	0.988	
Satd. Flow (prot)	3428	0	0	3561	1673	0
Flt Permitted				0.995	0.988	
Satd. Flow (perm)	3428	0	0	3561	1673	0
Link Speed (k/h)	50			60	50	
Link Distance (m)	228.4			304.5	187.8	
Travel Time (s)	16.4			18.3	13.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	173	68	52	490	4	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	241	0	0	542	16	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	35.3%			ICU Level of Service A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	173	68	52	490	4	12
Future Volume (Veh/h)	173	68	52	490	4	12
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	173	68	52	490	4	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			241		556	121
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			241		556	121
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		99	99
cM capacity (veh/h)			1323		443	908

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	115	126	215	327	16
Volume Left	0	0	52	0	4
Volume Right	0	68	0	0	12
cSH	1700	1700	1323	1700	719
Volume to Capacity	0.07	0.07	0.04	0.19	0.02
Queue Length 95th (m)	0.0	0.0	1.0	0.0	0.5
Control Delay (s/veh)	0.0	0.0	2.1	0.0	10.1
Lane LOS			A		B
Approach Delay (s/veh)	0.0		0.9		10.1
Approach LOS					B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

FUTURE TOTAL 2031

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: Highway 50 & Emil Kolb Pkwy Future Total.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 1:13:19 PM

Summary of intersection performance

	AM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2031 Future Total						
Emil Kolb Pkwy	0.48	2.18	3.56	N/A	A	3.00	A
Highway 50 (North)	1.21	4.47	3.79	N/A	A		
Highway 50 (South)	0.34	1.73	1.47	N/A	A		
Street B	0.19	0.85	3.13	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 3:00 PM - 4:00 PM
"D11 - 2031 Future Total, AM " model duration: 8:00 AM - 9:00 AM
"D12 - 2031 Future Total, PM" model duration: 3:00 PM - 4:00 PM
"D13 - 2051 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D14 - 2051 Future Total, PM" model duration: 3:00 PM - 4:00 PM

Run using Junctions 8.0.6.541 at 2026-02-21 1:13:19 PM

File summary

Title	Bolton North Hill
Location	Highway 50 & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	568495693	1501

(Default Analysis Set) - 2031 Future Total, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2031 Future Total, AM	2031 Future Total	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3,4		✓	3.00	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy	3	Emil Kolb Pkwy	
Highway 50 (North)	2	Highway 50 (North)	
Highway 50 (South)	4	Highway 50 (South)	
Street B	1	Street B	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	0.00	99999.00
Highway 50 (North)	0.00	99999.00
Highway 50 (South)	0.00	99999.00
Street B	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy	7.00	8.00	30.00	25.00	60.00	25.00	
Highway 50 (North)	7.00	8.00	30.00	35.00	60.00	25.00	
Highway 50 (South)	7.00	8.00	30.00	35.00	60.00	25.00	
Street B	7.00	8.00	30.00	35.00	60.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy	0.00	0.00
Highway 50 (North)	0.00	0.00
Highway 50 (South)	0.00	0.00
Street B	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy	Percentage	Opening day within 10 years		85.00
Highway 50 (North)	Percentage	Opening day within 10 years		85.00
Highway 50 (South)	Percentage	Opening day within 10 years		85.00
Street B	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy		(calculated)	(calculated)	1.489	2831.014
Highway 50 (North)		(calculated)	(calculated)	1.505	2853.857
Highway 50 (South)		(calculated)	(calculated)	1.505	2853.857
Street B		(calculated)	(calculated)	1.505	2853.857

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy	Evenly split	10.00
Highway 50 (North)	Evenly split	10.00
Highway 50 (South)	Evenly split	10.00
Street B	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy	1	3		Infinity	0.00	99999.00
Highway 50 (North)	1	1		Infinity	0.00	99999.00
Highway 50 (North)	1	2		Infinity	0.00	99999.00
Highway 50 (South)	1	3		Infinity	0.00	99999.00
Highway 50 (South)	1	4		Infinity	0.00	99999.00
Street B	1	3		Infinity	0.00	99999.00
Street B	1	4		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy	(calculated)	(calculated)	0.745	1415.507
Emil Kolb Pkwy	(calculated)	(calculated)	0.745	1415.507
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929

Street B	(calculated)	(calculated)	0.753	1426.929
Street B	(calculated)	(calculated)	0.753	1426.929

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
Highway 50 & Emil Kolb Pkwy	Street B	1	3		✓	✓	
Highway 50 & Emil Kolb Pkwy	Street B	1	4	✓		✓	✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	1			✓	✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	2	✓	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	2	✓			✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	3		✓	✓	
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	3	✓	✓		
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	4		✓	✓	✓

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy	PHF	✓	424.00	100.000
Highway 50 (North)	PHF	✓	1103.00	100.000
Highway 50 (South)	PHF	✓	742.00	100.000
Street B	PHF	✓	203.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy	424.00	0.96	SecondQuarter
Highway 50 (North)	1103.00	0.96	SecondQuarter
Highway 50 (South)	742.00	0.96	SecondQuarter
Street B	203.00	0.96	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	Street B	0.000	41.000	81.000	81.000
	Highway 50 (North)	21.000	0.000	436.000	646.000
	Emil Kolb Pkwy	42.000	233.000	0.000	149.000
	Highway 50 (South)	42.000	377.000	323.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

	To				

		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	Street B	0.00	0.20	0.40	0.40
	Highway 50 (North)	0.02	0.00	0.40	0.59
	Emil Kolb Pkwy	0.10	0.55	0.00	0.35
	Highway 50 (South)	0.06	0.51	0.44	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	Street B	1.000	1.037	1.027	1.000
	Highway 50 (North)	1.008	1.000	1.053	1.000
	Emil Kolb Pkwy	1.057	1.277	1.000	1.000
	Highway 50 (South)	1.000	1.037	1.027	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	Street B	0.0	3.7	2.7	0.0
	Highway 50 (North)	0.8	0.0	5.3	0.0
	Emil Kolb Pkwy	5.7	27.7	0.0	0.0
	Highway 50 (South)	0.0	3.7	2.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy	3.56	0.48	2.18	A	421.62	421.62	25.53	3.63	0.43
Highway 50 (North)	3.79	1.21	4.47	A	1098.36	1098.36	63.18	3.45	1.05
Highway 50 (South)	1.47	0.34	1.73	A	742.65	742.65	17.61	1.42	0.29
Street B	3.13	0.19	0.85	A	203.26	203.26	9.53	2.81	0.16

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: Highway 50 & Emil Kolb Pkwy Future Total.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 1:24:12 PM

Summary of intersection performance

	PM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2031 Future Total						
Emil Kolb Pkwy	1.69	6.48	5.97	N/A	A	6.50	A
Highway 50 (North)	0.34	1.65	1.53	N/A	A		
Highway 50 (South)	1.54	5.59	5.12	N/A	A		
Street B	2.16	7.90	26.73	N/A	D		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 3:00 PM - 4:00 PM
"D11 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D12 - 2031 Future Total, PM " model duration: 3:00 PM - 4:00 PM
"D13 - 2051 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D14 - 2051 Future Total, PM" model duration: 3:00 PM - 4:00 PM

Run using Junctions 8.0.6.541 at 2026-02-21 1:24:12 PM

File summary

Title	Bolton North Hill
Location	Highway 50 & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1832831303	1147

(Default Analysis Set) - 2031 Future Total, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2031 Future Total, PM	2031 Future Total	PM		PHF	15:00	16:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3,4		✓	6.50	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy	3	Emil Kolb Pkwy	
Highway 50 (North)	2	Highway 50 (North)	
Highway 50 (South)	4	Highway 50 (South)	
Street B	1	Street B	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	0.00	99999.00
Highway 50 (North)	0.00	99999.00
Highway 50 (South)	0.00	99999.00
Street B	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy	7.00	8.00	30.00	25.00	60.00	25.00	
Highway 50 (North)	7.00	8.00	30.00	35.00	60.00	25.00	
Highway 50 (South)	7.00	8.00	30.00	35.00	60.00	25.00	
Street B	7.00	8.00	30.00	35.00	60.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy	0.00	0.00
Highway 50 (North)	0.00	0.00
Highway 50 (South)	0.00	0.00
Street B	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy	Percentage	Opening day within 10 years		85.00
Highway 50 (North)	Percentage	Opening day within 10 years		85.00
Highway 50 (South)	Percentage	Opening day within 10 years		85.00
Street B	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy		(calculated)	(calculated)	1.489	2831.014
Highway 50 (North)		(calculated)	(calculated)	1.505	2853.857
Highway 50 (South)		(calculated)	(calculated)	1.505	2853.857
Street B		(calculated)	(calculated)	1.505	2853.857

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy	Evenly split	10.00
Highway 50 (North)	Evenly split	10.00
Highway 50 (South)	Evenly split	10.00
Street B	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	**1**	2		Infinity	0.00	99999.00
Emil Kolb Pkwy	**1**	3		Infinity	0.00	99999.00
Highway 50 (North)	**1**	1		Infinity	0.00	99999.00
Highway 50 (North)	**1**	2		Infinity	0.00	99999.00
Highway 50 (South)	**1**	3		Infinity	0.00	99999.00
Highway 50 (South)	**1**	4		Infinity	0.00	99999.00
Street B	**1**	3		Infinity	0.00	99999.00
Street B	**1**	4		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy	(calculated)	(calculated)	0.745	1415.507
Emil Kolb Pkwy	(calculated)	(calculated)	0.745	1415.507
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929

Street B	(calculated)	(calculated)	0.753	1426.929
Street B	(calculated)	(calculated)	0.753	1426.929

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
Highway 50 & Emil Kolb Pkwy	**Street B**	1	3		✓	✓	
Highway 50 & Emil Kolb Pkwy	**Street B**	1	4	✓		✓	✓
Highway 50 & Emil Kolb Pkwy	**Highway 50 (North)**	1	1			✓	✓
Highway 50 & Emil Kolb Pkwy	**Highway 50 (North)**	1	2	✓	✓		✓
Highway 50 & Emil Kolb Pkwy	**Emil Kolb Pkwy**	1	2	✓			✓
Highway 50 & Emil Kolb Pkwy	**Emil Kolb Pkwy**	1	3		✓	✓	
Highway 50 & Emil Kolb Pkwy	**Highway 50 (South)**	1	3	✓	✓		
Highway 50 & Emil Kolb Pkwy	**Highway 50 (South)**	1	4		✓	✓	✓

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy	PHF	✓	909.00	100.000
Highway 50 (North)	PHF	✓	725.00	100.000
Highway 50 (South)	PHF	✓	980.00	100.000
Street B	PHF	✓	266.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy	909.00	0.96	SecondQuarter
Highway 50 (North)	725.00	0.96	SecondQuarter
Highway 50 (South)	980.00	0.96	SecondQuarter
Street B	266.00	0.96	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	**Highway 50 (North)**	**Emil Kolb Pkwy**	**Highway 50 (South)**
From	**Street B**	0.000	97.000	71.000	98.000
	Highway 50 (North)	49.000	0.000	236.000	440.000
	Emil Kolb Pkwy	97.000	533.000	0.000	279.000
	Highway 50 (South)	97.000	665.000	218.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	**Highway 50 (North)**	**Emil Kolb Pkwy**	**Highway 50 (South)**
From	**Street B**	0.00	0.36	0.27	0.37
	Highway 50 (North)	0.07	0.00	0.33	0.61
	Emil Kolb Pkwy	0.11	0.59	0.00	0.31
	Highway 50 (South)	0.10	0.68	0.22	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	**Highway 50 (North)**	**Emil Kolb Pkwy**	**Highway 50 (South)**
From	**Street B**	1.000	1.037	1.027	1.000
	Highway 50 (North)	1.008	1.000	1.053	1.000
	Emil Kolb Pkwy	1.057	1.277	1.000	1.000
	Highway 50 (South)	1.000	1.037	1.027	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	**Highway 50 (North)**	**Emil Kolb Pkwy**	**Highway 50 (South)**
From	**Street B**	0.0	3.7	2.7	0.0
	Highway 50 (North)	0.8	0.0	5.3	0.0
	Emil Kolb Pkwy	5.7	27.7	0.0	0.0
	Highway 50 (South)	0.0	3.7	2.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy	5.97	1.69	6.48	A	905.03	905.03	87.73	5.82	1.46
Highway 50 (North)	1.53	0.34	1.65	A	723.75	723.75	17.64	1.46	0.29
Highway 50 (South)	5.12	1.54	5.59	A	983.45	983.45	73.23	4.47	1.22
Street B	26.73	2.16	7.90	D	268.04	268.04	93.39	20.91	1.56

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: King Street & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 11:37:10 AM

Summary of intersection performance

	AM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2031 Future Total						
Emil Kolb Pkwy (North)	0.34	1.77	1.71	N/A	A	1.39	A
Emil Kolb Pkwy (South)	0.15	0.95	1.14	N/A	A		
King Street	0.24	1.38	1.18	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 8:00 AM - 9:00 AM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D5 - 2031 Future Total, AM " model duration: 8:00 AM - 9:00 AM
"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D8 - 2041 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D9 - 2031 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D11 - 2051 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D12 - 2051 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D13 - 2051 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D14 - 2051 Future Total, PM" model duration: 8:00 AM - 9:00 AM

Run using Junctions 8.0.6.541 at 2026-02-21 11:37:10 AM

File summary

Title	Bolton North Hill
Location	King Street & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1431798116	4481

(Default Analysis Set) - 2031 Future Total, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2031 Future Total, AM	2031 Future Total	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	1.39	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy (North)	2	Emil Kolb Pkwy (North)	
Emil Kolb Pkwy (South)	1	Emil Kolb Pkwy (South)	
King Street	3	King Street	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	0.00	99999.00
Emil Kolb Pkwy (South)	0.00	99999.00
King Street	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy (North)	7.00	8.00	30.00	25.00	55.00	25.00	
Emil Kolb Pkwy (South)	7.00	8.00	30.00	25.00	55.00	25.00	
King Street	7.00	8.00	30.00	25.00	55.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy (North)	0.00	0.00
Emil Kolb Pkwy (South)	0.00	0.00
King Street	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy (North)	Percentage	Opening day within 10 years		85.00
Emil Kolb Pkwy (South)	Percentage	Opening day within 10 years		85.00
King Street	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)		(calculated)	(calculated)	1.562	2831.014
Emil Kolb Pkwy (South)		(calculated)	(calculated)	1.562	2831.014
King Street		(calculated)	(calculated)	1.562	2831.014

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy (North)	Evenly split	10.00
Emil Kolb Pkwy (South)	Evenly split	10.00
King Street	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	1	1		Infinity	0.00	99999.00
Emil Kolb Pkwy (North)	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	3		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	4		Infinity	0.00	99999.00
King Street	1	2		Infinity	0.00	99999.00
King Street	1	3		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	4		✓	✓

Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	1	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	3	✓	✓	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy (North)	PHF	✓	707.00	100.000
Emil Kolb Pkwy (South)	PHF	✓	417.00	100.000
King Street	PHF	✓	630.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy (North)	707.00	0.95	SecondQuarter
Emil Kolb Pkwy (South)	417.00	0.95	SecondQuarter
King Street	630.00	0.95	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.000	208.000	209.000
	Emil Kolb Pkwy (North)	254.000	0.000	453.000
	King Street	408.000	222.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.00	0.50	0.50
	Emil Kolb Pkwy (North)	0.36	0.00	0.64
	King Street	0.65	0.35	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	1.000	1.310	1.075
	Emil Kolb Pkwy (North)	1.032	1.000	1.022

	King Street	1.061	1.097	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.0	31.0	7.5
	Emil Kolb Pkwy (North)	3.2	0.0	2.2
	King Street	6.1	9.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy (North)	1.71	0.34	1.77	A	705.32	705.32	19.01	1.62	0.32
Emil Kolb Pkwy (South)	1.14	0.15	0.95	A	416.85	416.85	8.33	1.20	0.14
King Street	1.18	0.24	1.38	A	628.20	628.20	12.76	1.22	0.21

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: King Street & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 11:39:32 AM

Summary of intersection performance

	PM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2031 Future Total						
Emil Kolb Pkwy (North)	0.46	2.07	2.66	N/A	A	3.25	A
Emil Kolb Pkwy (South)	1.64	6.03	4.52	N/A	A		
King Street	0.36	1.84	1.65	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 8:00 AM - 9:00 AM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D5 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D8 - 2041 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D9 - 2031 Future Total, PM " model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D11 - 2051 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D12 - 2051 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D13 - 2051 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D14 - 2051 Future Total, PM" model duration: 8:00 AM - 9:00 AM

Run using Junctions 8.0.6.541 at 2026-02-21 11:39:32 AM

File summary

Title	Bolton North Hill
Location	King Street & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units

m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1281602641	2097

(Default Analysis Set) - 2031 Future Total, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2031 Future Total, PM	2031 Future Total	PM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	3.25	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy (North)	2	Emil Kolb Pkwy (North)	
Emil Kolb Pkwy (South)	1	Emil Kolb Pkwy (South)	
King Street	3	King Street	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	0.00	99999.00
Emil Kolb Pkwy (South)	0.00	99999.00
King Street	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy (North)	7.00	8.00	30.00	25.00	55.00	25.00	
Emil Kolb Pkwy (South)	7.00	8.00	30.00	25.00	55.00	25.00	
King Street	7.00	8.00	30.00	25.00	55.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy (North)	0.00	0.00
Emil Kolb Pkwy (South)	0.00	0.00
King Street	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy (North)	Percentage	Opening day within 10 years		85.00
Emil Kolb Pkwy (South)	Percentage	Opening day within 10 years		85.00
King Street	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)		(calculated)	(calculated)	1.562	2831.014
Emil Kolb Pkwy (South)		(calculated)	(calculated)	1.562	2831.014
King Street		(calculated)	(calculated)	1.562	2831.014

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy (North)	Evenly split	10.00
Emil Kolb Pkwy (South)	Evenly split	10.00
King Street	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	1	1		Infinity	0.00	99999.00
Emil Kolb Pkwy (North)	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	3		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	4		Infinity	0.00	99999.00
King Street	1	2		Infinity	0.00	99999.00
King Street	1	3		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	4		✓	✓

Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	1	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	3	✓	✓	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy (North)	PHF	✓	545.00	100.000
Emil Kolb Pkwy (South)	PHF	✓	1206.00	100.000
King Street	PHF	✓	765.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy (North)	545.00	1.00	SecondQuarter
Emil Kolb Pkwy (South)	1206.00	1.00	SecondQuarter
King Street	765.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.000	618.000	588.000
	Emil Kolb Pkwy (North)	254.000	0.000	291.000
	King Street	340.000	425.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.00	0.51	0.49
	Emil Kolb Pkwy (North)	0.47	0.00	0.53
	King Street	0.44	0.56	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	1.000	1.021	1.067
	Emil Kolb Pkwy (North)	1.103	1.000	1.077
	King Street	1.047	1.015	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.0	2.1	6.7
	Emil Kolb Pkwy (North)	10.3	0.0	7.7
	King Street	4.7	1.5	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy (North)	2.66	0.46	2.07	A	543.37	543.37	25.38	2.80	0.42
Emil Kolb Pkwy (South)	4.52	1.64	6.03	A	1209.81	1209.81	92.51	4.59	1.54
King Street	1.65	0.36	1.84	A	765.78	765.78	21.37	1.67	0.36

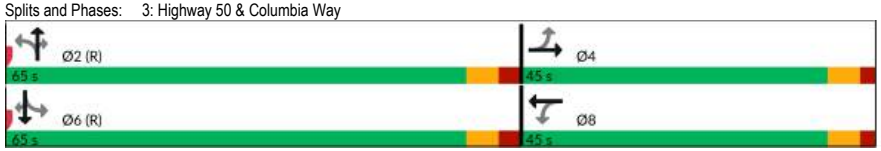
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	9	302	3	181	3	345	169	207	707	3
Future Volume (vph)	4	0	9	302	3	181	3	345	169	207	707	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	70.0		0.0	140.0		0.0	100.0		30.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Frt		0.904			0.852				0.850			0.850
Flt Protected		0.986		0.950			0.950			0.950		
Satd. Flow (prot)	0	951	0	1750	1582	0	892	1830	1595	1700	1883	1591
Flt Permitted		0.934		0.748			0.227			0.499		
Satd. Flow (perm)	0	901	0	1378	1582	0	213	1830	1595	893	1883	1591
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37			197				184			30
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		127.3			237.9			633.3			400.2	
Travel Time (s)		11.5			21.4			38.0			24.0	
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 (%)	100%	0%	72%	2%	100%	2%	100%	5%	2%	5%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	4	0	10	328	3	197	3	375	184	225	768	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	0	328	200	0	3	375	184	225	768	3
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												
Headway Factor	0.99	0.99	0.99	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02
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	Left						Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	12.0		8.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	-3.0		-2.0	-2.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	-3.0		-2.0	-2.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	15.0		10.0	10.0		2.0	0.6	2.0	2.0	0.6	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
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												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	25.0	25.0		25.0	25.0		30.7	30.7	30.7	30.7	30.7	30.7
Total Split (s)	45.0	45.0		45.0	45.0		65.0	65.0	65.0	65.0	65.0	65.0
Total Split (%)	40.9%	40.9%		40.9%	40.9%		59.1%	59.1%	59.1%	59.1%	59.1%	59.1%
Maximum Green (s)	39.0	39.0		39.0	39.0		58.3	58.3	58.3	58.3	58.3	58.3
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0		6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0
Flash Don't Walk (s)	11.0	11.0		11.0	11.0		16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		31.3		31.3	31.3		66.0	66.0	66.0	66.0	66.0	66.0
Actuated g/C Ratio		0.28		0.28	0.28		0.60	0.60	0.60	0.60	0.60	0.60
v/c Ratio		0.05		0.84	0.34		0.02	0.34	0.18	0.42	0.68	0.00
Control Delay (s/veh)		1.5		55.2	5.4		12.3	13.4	2.3	16.5	20.3	0.0
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		1.5		55.2	5.4		12.3	13.4	2.3	16.5	20.3	0.0
LOS		A		E	A		B	B	A	B	C	A
Approach Delay (s/veh)		1.5			36.4			9.7			19.4	
Approach LOS		A			D			A			B	
Queue Length 50th (m)		0.0		69.0	0.5		0.3	40.5	0.0	25.8	111.4	0.0
Queue Length 95th (m)		1.0		95.9	15.9		1.9	70.1	10.5	52.9	185.3	0.0
Internal Link Dist (m)		103.3			213.9			609.3			376.2	
Turn Bay Length (m)				70.0			140.0			100.0		30.0
Base Capacity (vph)		343		488	688		127	1098	1030	535	1130	967
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		0.04		0.67	0.29		0.02	0.34	0.18	0.42	0.68	0.00

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay (s/veh): 21.0	Intersection LOS: C

Intersection Capacity Utilization 93.4% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 3: Highway 50 & Columbia Way



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	29	28	134	15	59	13	429	60	53	933	8
Future Volume (vph)	16	29	28	134	15	59	13	429	60	53	933	8
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	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	85.0		0.0	85.0		75.0	65.0		50.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.98							0.96
Frt		0.948			0.880				0.850			0.850
Flt Protected		0.989		0.950			0.950			0.950		
Satd. Flow (prot)	0	1746	0	1785	1628	0	1623	3476	1591	1785	1883	1591
Flt Permitted		0.900		0.644			0.053			0.453		
Satd. Flow (perm)	0	1584	0	1210	1628	0	91	3476	1591	851	1883	1532
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			71				74			74
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		112.1			201.9			771.8			633.3	
Travel Time (s)		10.1			18.2			46.3			38.0	
Confl. Peds. (#/hr)	17					17	8					8
Confl. Bikes (#/hr)					2							
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	4%	4%	0%	0%	2%	10%	5%	0%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	19	35	34	161	18	71	16	517	72	64	1124	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	88	0	161	89	0	16	517	72	64	1124	10
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												
Headway Factor	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02	1.01	0.99	1.02
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							Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	12.0	12.0		12.0	12.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	15.0	15.0		15.0	15.0		2.0	0.6	2.0	2.0	0.6	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
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	

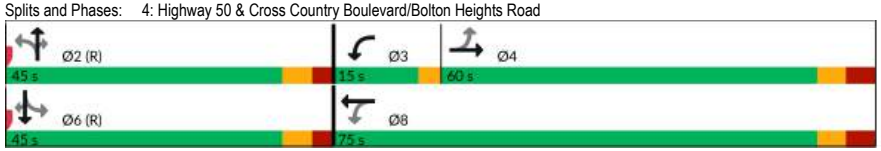
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		3	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.1	47.1		8.0	47.1		34.7	34.7	34.7	34.7	34.7	34.7
Total Split (s)	60.0	60.0		15.0	75.0		45.0	45.0	45.0	45.0	45.0	45.0
Total Split (%)	50.0%	50.0%		12.5%	62.5%		37.5%	37.5%	37.5%	37.5%	37.5%	37.5%
Maximum Green (s)	51.9	51.9		12.0	66.9		38.3	38.3	38.3	38.3	38.3	38.3
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	4.1	4.1		0.0	4.1		2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		8.1		3.0	8.1		6.7	6.7	6.7	6.7	6.7	6.7
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	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	10.0	10.0			10.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Don't Walk (s)	29.0	29.0			29.0		18.0	18.0	18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	4	4			4		2	2	2	2	2	2
Act Effct Green (s)		16.2		33.3	28.2		77.0	77.0	77.0	77.0	77.0	77.0
Actuated g/C Ratio		0.14		0.28	0.24		0.64	0.64	0.64	0.64	0.64	0.64
v/c Ratio		0.36		0.41	0.20		0.28	0.23	0.07	0.12	0.93	0.01
Control Delay (s/veh)		31.8		34.9	10.0		45.8	20.1	12.8	13.6	35.8	0.0
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		31.8		34.9	10.0		45.8	20.1	12.8	13.6	35.8	0.0
LOS		C		C	A		D	C	B	B	D	A
Approach Delay (s/veh)		31.8			26.0			19.9			34.3	
Approach LOS		C			C			B			C	
Queue Length 50th (m)		13.2		33.0	3.6		2.2	36.4	1.9	5.2	209.7	0.0
Queue Length 95th (m)		19.9		31.9	10.2		m6.6	65.2	m14.1	18.2	#403.5	0.0
Internal Link Dist (m)		88.1			177.9			747.8			609.3	
Turn Bay Length (m)				85.0			85.0		75.0	65.0		50.0
Base Capacity (vph)		703		396	939		58	2231	1047	546	1208	1010
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		0.13		0.41	0.09		0.28	0.23	0.07	0.12	0.93	0.01

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 39 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay (s/veh): 29.1 Intersection LOS: C
Intersection Capacity Utilization 83.5% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Highway 50 & Cross Country Boulevard/Bolton Heights Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	215	78	278	210	57	53	448	118	59	994	24
Future Volume (vph)	25	215	78	278	210	57	53	448	118	59	994	24
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	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	30.0		35.0	30.0		0.0	55.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Ped Bike Factor									0.97	1.00	1.00	
Frt			0.850		0.968				0.850		0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1606	1695	1437	1591	1635	0	1579	1695	1363	1643	1698	0
Flt Permitted	0.586			0.357			0.070			0.349		
Satd. Flow (perm)	991	1695	1437	598	1635	0	116	1695	1327	602	1698	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			118		11				126		1	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		535.7			353.4			517.9			32.8	
Travel Time (s)		48.2			31.8			31.1			2.0	
Confl. Peds. (#/hr)							2		3	3		2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	0%	1%	3%	0%	4%	2%	5%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	1	0
Adj. Flow (vph)	27	229	83	296	223	61	56	477	126	63	1057	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	229	83	296	284	0	56	477	126	63	1083	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			3.7			3.7	
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												
Headway Factor	1.16	1.13	1.16	1.16	1.13	1.13	1.13	1.13	1.17	1.13	1.13	1.16
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	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	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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Detector Phase	3	8	8	7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	8.0	31.9	31.9	8.0	31.9		8.0	32.0	32.0	8.0	32.0	
Total Split (s)	11.0	32.0	32.0	18.0	39.0		8.0	59.0	59.0	11.0	62.0	
Total Split (%)	9.2%	26.7%	26.7%	15.0%	32.5%		6.7%	49.2%	49.2%	9.2%	51.7%	
Maximum Green (s)	8.0	25.1	25.1	15.0	32.1		5.0	52.0	52.0	8.0	55.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.9	2.9	0.0	2.9		0.0	3.0	3.0	0.0	3.0	
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	6.9	6.9	3.0	6.9		3.0	7.0	7.0	3.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	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	None	None	None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)		10.0	10.0		10.0			10.0	10.0		10.0	
Flash Don't Walk (s)		15.0	15.0		15.0			15.0	15.0		15.0	
Pedestrian Calls (#/hr)		4	4		4			8	8		8	
Act Effct Green (s)	31.3	20.6	20.6	42.5	32.4		67.9	59.0	59.0	70.2	60.2	
Actuated g/C Ratio	0.26	0.17	0.17	0.35	0.27		0.57	0.49	0.49	0.59	0.50	
v/c Ratio	0.09	0.79	0.24	0.88	0.63		0.41	0.57	0.18	0.15	1.27	
Control Delay (s/veh)	24.9	66.2	4.3	59.0	44.5		21.5	26.9	4.1	6.0	153.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	24.9	66.2	4.3	59.0	44.5		21.5	26.9	4.1	6.0	153.4	
LOS	C	E	A	E	D		C	C	A	A	F	
Approach Delay (s/veh)		47.8			51.9			22.0			145.3	
Approach LOS		D			D			C			F	
Queue Length 50th (m)	4.3	54.5	0.0	57.2	61.8		5.6	85.2	0.0	5.8	~354.7	
Queue Length 95th (m)	10.4	80.7	6.3	#96.9	91.0		13.3	130.4	11.4	m1.4	m#411.6	
Internal Link Dist (m)		511.7			329.4			493.9			8.8	
Turn Bay Length (m)	30.0		35.0	30.0			55.0			20.0		
Base Capacity (vph)	309	354	393	336	456		138	833	716	424	851	
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	0.09	0.65	0.21	0.88	0.62		0.41	0.57	0.18	0.15	1.27	

Intersection Summary	
Area Type:	CBD
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 115 (96%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	

Maximum v/c Ratio: 1.27	
Intersection Signal Delay (s/veh): 83.5	Intersection LOS: F
Intersection Capacity Utilization 104.4%	ICU Level of Service G
Analysis Period (min) 15	

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

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

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

Splits and Phases: 5: Highway 50 & King Street West/King Street East



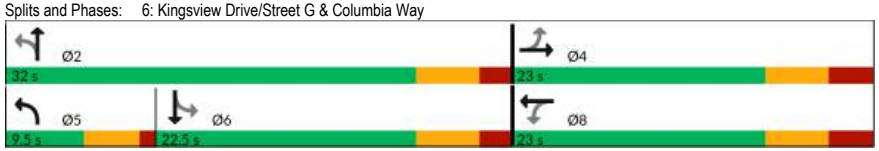
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	293	28	99	287	26	39	4	54	49	9	154
Future Volume (vph)	60	293	28	99	287	26	39	4	54	49	9	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.98			1.00	
Frt		0.990			0.992			0.925			0.902	
Flt Protected		0.992			0.988			0.980			0.989	
Satd. Flow (prot)	0	1877	0	0	1829	0	0	1712	0	0	1680	0
Flt Permitted		0.862			0.802			0.809			0.886	
Satd. Flow (perm)	0	1631	0	0	1484	0	0	1413	0	0	1502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			6			65			186	
Link Speed (k/h)		40			40			40			50	
Link Distance (m)		237.9			417.0			131.8			93.0	
Travel Time (s)		21.4			37.5			11.9			6.7	
Confl. Peds. (#/hr)			3	3					5	5		
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	2%	0%	0%	3%	3%	2%	0%	2%	0%	2%	2%	2%
Adj. Flow (vph)	72	353	34	119	346	31	47	5	65	59	11	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	459	0	0	496	0	0	117	0	0	256	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			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	100		15	25		100	25		15	100		100
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		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	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	8.0		8.0	8.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		9.5	21.0		21.0	21.0	
Total Split (s)	23.0	23.0		23.0	23.0		9.5	32.0		22.5	22.5	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		17.3%	58.2%		40.9%	40.9%	
Maximum Green (s)	16.1	16.1		16.1	16.1		5.0	26.0		16.5	16.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	2.9	2.9		2.9	2.9		1.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.9			6.9			6.0			6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0			8.0		8.0	8.0	
Flash Don't Walk (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		3	3	
Act Effct Green (s)		16.2			16.2			9.5			9.5	
Actuated g/C Ratio		0.42			0.42			0.25			0.25	
v/c Ratio		0.67			0.79			0.30			0.50	
Control Delay (s/veh)		17.2			24.3			8.3			8.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay (s/veh)		17.2			24.3			8.3			8.0	
LOS		B			C			A			A	
Approach Delay (s/veh)		17.2			24.3			8.3			8.0	
Approach LOS		B			C			A			A	
Queue Length 50th (m)		20.8			24.3			2.8			3.8	
Queue Length 95th (m)		#61.4			#74.3			9.6			13.5	
Internal Link Dist (m)		213.9			393.0			107.8			69.0	
Turn Bay Length (m)												
Base Capacity (vph)		687			625			976			750	
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		0.67			0.79			0.12			0.34	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 38.6			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay (s/veh): 17.3		Intersection LOS: B	
Intersection Capacity Utilization 59.8%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 6: Kingsview Drive/Street G & Columbia Way



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	293	42	29	271	66	42
Future Volume (vph)	293	42	29	271	66	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983				0.947	
Flt Protected				0.995	0.970	
Satd. Flow (prot)	1888	0	0	1854	1711	0
Flt Permitted				0.995	0.970	
Satd. Flow (perm)	1888	0	0	1854	1711	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	500.8			180.3	104.8	
Travel Time (s)	45.1			16.2	9.4	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	4%	3%	2%	5%
Adj. Flow (vph)	366	53	36	339	83	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	419	0	0	375	136	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	293	42	29	271	66	42
Future Volume (Veh/h)	293	42	29	271	66	42
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	366	52	36	339	82	52
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			418		803	392
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			418		803	392
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		76	92
cM capacity (veh/h)			1130		341	650

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	418	375	134
Volume Left	0	36	82
Volume Right	52	0	52
cSH	1700	1130	419
Volume to Capacity	0.25	0.03	0.32
Queue Length 95th (m)	0.0	0.8	10.9
Control Delay (s/veh)	0.0	1.1	17.6
Lane LOS		A	C
Approach Delay (s/veh)	0.0	1.1	17.6
Approach LOS			C

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	50.1%	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)	91	381	12	4	216	25	29	6	13	154	5	77
Future Volume (vph)	91	381	12	4	216	25	29	6	13	154	5	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Ped Bike Factor												
Frt		0.995			0.985			0.963			0.956	
Flt Protected	0.950			0.950				0.971			0.968	
Satd. Flow (prot)	1825	1823	0	1825	1816	0	0	1748	0	0	1761	0
Flt Permitted	0.950			0.950				0.971			0.968	
Satd. Flow (perm)	1825	1823	0	1825	1816	0	0	1748	0	0	1761	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		116.8			228.4			249.8			412.3	
Travel Time (s)		10.5			20.6			22.5			37.1	
Confl. Peds. (#/hr)	1					1	1		2	2		1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	5%	0%	0%	3%	15%	0%	0%	10%	0%	0%	3%
Adj. Flow (vph)	111	465	15	5	263	30	35	7	16	188	6	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	111	480	0	5	293	0	0	58	0	0	288	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)		3.7			3.7			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	50.8%	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)	91	381	12	4	216	25	29	6	13	154	5	77
Future Volume (Veh/h)	91	381	12	4	216	25	29	6	13	154	5	77
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	111	465	15	5	263	30	35	7	16	188	6	94
Pedestrians		1			2						1	
Lane Width (m)		3.7			3.7						3.7	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	294			480			1066	999	475	998	991	280
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	294			480			1066	999	475	998	991	280
tC, single (s)	4.1			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	91			100			78	97	97	5	97	88
cM capacity (veh/h)	1278			1093			161	223	573	198	225	755

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	111	480	5	293	58	288
Volume Left	111	0	5	0	35	188
Volume Right	0	15	0	30	16	94
cSH	1278	1700	1093	1700	210	261
Volume to Capacity	0.09	0.28	0.00	0.17	0.28	1.10
Queue Length 95th (m)	2.3	0.0	0.1	0.0	8.7	97.5
Control Delay (s/veh)	8.1	0.0	8.3	0.0	28.6	127.4
Lane LOS	A		A		D	F
Approach Delay (s/veh)	1.5		0.1		28.6	127.4
Approach LOS					D	F

Intersection Summary				
Average Delay	31.8			
Intersection Capacity Utilization	50.8%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	38	575	119	113	509	22
Future Volume (vph)	38	575	119	113	509	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.873				0.994	
Flt Protected	0.997			0.975		
Satd. Flow (prot)	1631	0	0	1741	1891	0
Flt Permitted	0.997			0.975		
Satd. Flow (perm)	1631	0	0	1741	1891	0
Link Speed (k/h)	40			80	80	
Link Distance (m)	190.9			1113.3	133.7	
Travel Time (s)	17.2			50.1	6.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	10%	2%	10%	5%	1%	0%
Adj. Flow (vph)	40	612	127	120	541	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	652	0	0	247	564	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			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	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	575	119	113	509	22
Future Volume (Veh/h)	38	575	119	113	509	22
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	40	612	127	120	541	23
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	927	553	564			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	927	553	564			
tC, single (s)	6.5	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.3			
p0 queue free %	84	0	87			
cM capacity (veh/h)	251	533	969			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	652	247	564
Volume Left	40	127	0
Volume Right	612	0	23
cSH	499	969	1700
Volume to Capacity	1.31	0.13	0.33
Queue Length 95th (m)	223.5	3.6	0.0
Control Delay (s/veh)	176.6	5.4	0.0
Lane LOS	F	A	
Approach Delay (s/veh)	176.6	5.4	0.0
Approach LOS	F		

Intersection Summary				
Average Delay	79.6			
Intersection Capacity Utilization	88.3%	ICU Level of Service	E	
Analysis Period (min)	15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	44	77	32	382	914	19
Future Volume (vph)	44	77	32	382	914	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	105.0			115.0
Storage Lanes	1	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.914					0.850
Flt Protected	0.982		0.950			
Satd. Flow (prot)	1692	0	1534	1601	1865	1633
Flt Permitted	0.982		0.950			
Satd. Flow (perm)	1692	0	1534	1601	1865	1633
Link Speed (k/h)	50			70	50	
Link Distance (m)	423.7			2029.6	967.4	
Travel Time (s)	30.5			104.4	69.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	19%	20%	3%	0%
Adj. Flow (vph)	49	86	36	424	1016	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	135	0	36	424	1016	21
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	100	100	100			100
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	44	77	32	382	914	19
Future Volume (Veh/h)	44	77	32	382	914	19
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	49	86	36	424	1016	21
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1512	1016	1037			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1512	1016	1037			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	61	70	94			
cM capacity (veh/h)	126	288	609			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	135	36	424	1016	21
Volume Left	49	36	0	0	0
Volume Right	86	0	0	0	21
cSH	196	609	1700	1700	1700
Volume to Capacity	0.69	0.06	0.25	0.60	0.01
Queue Length 95th (m)	34.1	1.5	0.0	0.0	0.0
Control Delay (s/veh)	56.3	11.3	0.0	0.0	0.0
Lane LOS	F	B			
Approach Delay (s/veh)	56.3	0.9		0.0	
Approach LOS	F				

Intersection Summary				
Average Delay	4.9			
Intersection Capacity Utilization	61.9%	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)	0	0	0	62	0	0	0	6	22	0	16	0
Future Volume (vph)	0	0	0	62	0	0	0	6	22	0	16	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt								0.894				
Flt Protected					0.950							
Satd. Flow (prot)	0	1883	0	0	1789	0	0	1684	0	0	1883	0
Flt Permitted					0.950							
Satd. Flow (perm)	0	1883	0	0	1789	0	0	1684	0	0	1883	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		379.8			1317.6			423.7			282.6	
Travel Time (s)		27.3			94.9			30.5			20.3	
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
Adj. Flow (vph)	0	0	0	62	0	0	0	6	22	0	16	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	62	0	0	28	0	0	16	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
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	13.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	62	0	0	0	6	22	0	16	0
Future Volume (Veh/h)	0	0	0	62	0	0	0	6	22	0	16	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	0	0	0	62	0	0	0	6	22	0	16	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	33	44	16	33	33	17	16			28		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	33	44	16	33	33	17	16			28		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	94	100	100	100			100		
cM capacity (veh/h)	974	848	1063	974	860	1062	1602			1585		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	62	28	16
Volume Left	0	62	0	0
Volume Right	0	0	22	0
cSH	1700	974	1602	1585
Volume to Capacity	0.00	0.06	0.00	0.00
Queue Length 95th (m)	0.0	1.6	0.0	0.0
Control Delay (s/veh)	0.0	8.9	0.0	0.0
Lane LOS	A	A		
Approach Delay (s/veh)	0.0	8.9	0.0	0.0
Approach LOS	A	A		

Intersection Summary				
Average Delay		5.2		
Intersection Capacity Utilization		13.4%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	423	827	64	0	104
Future Volume (vph)	0	423	827	64	0	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.990		0.865	0.865
Flt Protected						
Satd. Flow (prot)	0	1883	1865	0	0	1629
Flt Permitted						
Satd. Flow (perm)	0	1883	1865	0	0	1629
Link Speed (k/h)		70	50		50	
Link Distance (m)		967.4	348.7		100.8	
Travel Time (s)		49.8	25.1		7.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	423	827	64	0	104
Shared Lane Traffic (%)						10%
Lane Group Flow (vph)	0	423	891	0	10	94
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	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	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	423	827	64	0	104
Future Volume (Veh/h)	0	423	827	64	0	104
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	423	827	64	0	104
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	891				1282	859
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	891				1282	859
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	71
cM capacity (veh/h)	761				182	356

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	423	891	104
Volume Left	0	0	0
Volume Right	0	64	104
cSH	1700	1700	356
Volume to Capacity	0.25	0.52	0.29
Queue Length 95th (m)	0.0	0.0	9.5
Control Delay (s/veh)	0.0	0.0	19.2
Lane LOS			C
Approach Delay (s/veh)	0.0	0.0	19.2
Approach LOS			C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	60.5%	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)	71	0	104	151	0	38	28	501	52	13	847	21
Future Volume (vph)	71	0	104	151	0	38	28	501	52	13	847	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	50.0		0.0	20.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Frt		0.920			0.973			0.988			0.997	
Flt Protected		0.980			0.962			0.998			0.999	
Satd. Flow (prot)	0	1698	0	0	1763	0	0	1857	0	0	1876	0
Flt Permitted		0.841			0.720			0.949			0.992	
Satd. Flow (perm)	0	1457	0	0	1319	0	0	1766	0	0	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		104			28			14			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		1317.6			152.8			145.3			176.9	
Travel Time (s)		94.9			11.0			8.7			10.6	
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
Adj. Flow (vph)	71	0	104	151	0	38	28	501	52	13	847	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	175	0	0	189	0	0	581	0	0	881	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		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		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	22.0	22.0		22.0	22.0		28.0	28.0		28.0	28.0	
Total Split (%)	44.0%	44.0%		44.0%	44.0%		56.0%	56.0%		56.0%	56.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Don't Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		12.4			12.4			25.4			25.4	
Actuated g/C Ratio		0.31			0.31			0.63			0.63	
v/c Ratio		0.34			0.44			0.52			0.75	
Control Delay (s/veh)		8.0			15.1			9.0			16.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay (s/veh)		8.0			15.1			9.0			16.1	
LOS		A			B			A			B	
Approach Delay (s/veh)		8.0			15.1			9.0			16.1	
Approach LOS		A			B			A			B	
Queue Length 50th (m)		4.3			10.6			23.1			46.0	
Queue Length 95th (m)		15.1			24.4			63.3			#143.0	
Internal Link Dist (m)		1293.6			128.8			121.3			152.9	
Turn Bay Length (m)												
Base Capacity (vph)		755			650			1124			1181	
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		0.23			0.29			0.52			0.75	

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 40.1			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay (s/veh): 12.9		Intersection LOS: B	
Intersection Capacity Utilization 74.2%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 14: Highway 50 & Street A



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	119	627	28	41	831
Future Volume (vph)	0	119	627	28	41	831
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	40.0	
Storage Lanes	0	1		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.994			
Flt Protected					0.950	
Satd. Flow (prot)	0	1629	1872	0	1789	1883
Flt Permitted					0.950	
Satd. Flow (perm)	0	1629	1872	0	1789	1883
Link Speed (k/h)	50		60			60
Link Distance (m)	259.7		476.7			275.2
Travel Time (s)	18.7		28.6			16.5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	119	627	28	41	831
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	119	655	0	41	831
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		3.7			3.7
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	0.99	0.99
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	119	627	28	41	831
Future Volume (Veh/h)	0	119	627	28	41	831
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	119	627	28	41	831
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1554	641			655	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1554	641			655	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	75			96	
cM capacity (veh/h)	119	475			932	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	119	655	41	831
Volume Left	0	0	41	0
Volume Right	119	28	0	0
cSH	475	1700	932	1700
Volume to Capacity	0.25	0.39	0.04	0.49
Queue Length 95th (m)	7.9	0.0	1.1	0.0
Control Delay (s/veh)	15.1	0.0	9.0	0.0
Lane LOS	C		A	
Approach Delay (s/veh)	15.1	0.0	0.4	
Approach LOS	C			

Intersection Summary			
Average Delay		1.3	
Intersection Capacity Utilization		48.7%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	91	138	473	4	48	784
Future Volume (vph)	91	138	473	4	48	784
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	55.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.919		0.999			
Flt Protected	0.981				0.950	
Satd. Flow (prot)	1698	0	1882	0	1789	1883
Flt Permitted	0.981				0.950	
Satd. Flow (perm)	1698	0	1882	0	1789	1883
Link Speed (k/h)	50		60			60
Link Distance (m)	269.3		400.2			476.7
Travel Time (s)	19.4		24.0			28.6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	91	138	473	4	48	784
Shared Lane Traffic (%)						
Lane Group Flow (vph)	229	0	477	0	48	784
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
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	0.99	0.99
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.4%			ICU Level of Service B
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	91	138	473	4	48	784
Future Volume (Veh/h)	91	138	473	4	48	784
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)	91	138	473	4	48	784
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			400			
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	1355	475			477	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1348	424			426	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	40	77			96	
cM capacity (veh/h)	151	600			1080	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	229	477	48	784
Volume Left	91	0	48	0
Volume Right	138	4	0	0
cSH	276	1700	1080	1700
Volume to Capacity	0.83	0.28	0.04	0.46
Queue Length 95th (m)	54.4	0.0	1.1	0.0
Control Delay (s/veh)	59.5	0.0	8.5	0.0
Lane LOS	F		A	
Approach Delay (s/veh)	59.5	0.0	0.5	
Approach LOS	F			

Intersection Summary			
Average Delay		9.1	
Intersection Capacity Utilization		61.4%	ICU Level of Service B
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	13	0	35	5	0	66
Future Volume (vph)	13	0	35	5	0	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.983			
Flt Protected	0.950					
Satd. Flow (prot)	1789	0	1851	0	0	1883
Flt Permitted	0.950					
Satd. Flow (perm)	1789	0	1851	0	0	1883
Link Speed (k/h)	50		40			40
Link Distance (m)	313.5		412.3			235.5
Travel Time (s)	22.6		37.1			21.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	13	0	35	5	0	66
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	0	40	0	0	66
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.5%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	0	35	5	0	66
Future Volume (Veh/h)	13	0	35	5	0	66
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)	13	0	35	5	0	66
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	104	38			40	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	104	38			40	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	895	1035			1570	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	13	40	66
Volume Left	13	0	0
Volume Right	0	5	0
cSH	895	1700	1570
Volume to Capacity	0.01	0.02	0.00
Queue Length 95th (m)	0.4	0.0	0.0
Control Delay (s/veh)	9.1	0.0	0.0
Lane LOS	A		
Approach Delay (s/veh)	9.1	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		13.5%	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)	15	532	3	4	136	3	64	0	75	7	0	44
Future Volume (vph)	15	532	3	4	136	3	64	0	75	7	0	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Frt		0.999			0.997			0.927			0.884	
Flt Protected	0.950			0.950				0.977			0.993	
Satd. Flow (prot)	1789	1882	0	1789	1878	0	0	1706	0	0	1653	0
Flt Permitted	0.950			0.950				0.977			0.993	
Satd. Flow (perm)	1789	1882	0	1789	1878	0	0	1706	0	0	1653	0
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		228.4			304.5			187.8			203.8	
Travel Time (s)		20.6			27.4			13.5			14.7	
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
Adj. Flow (vph)	15	532	3	4	136	3	64	0	75	7	0	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	535	0	4	139	0	0	139	0	0	51	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)		3.7			3.7			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	49.7%		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)	15	532	3	4	136	3	64	0	75	7	0	44
Future Volume (Veh/h)	15	532	3	4	136	3	64	0	75	7	0	44
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	15	532	3	4	136	3	64	0	75	7	0	44
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	139			535			752	711	534	783	711	138
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	139			535			752	711	534	783	711	138
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			79	100	86	97	100	95
cM capacity (veh/h)	1445			1033			308	353	546	266	353	911

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	15	535	4	139	139	51
Volume Left	15	0	4	0	64	7
Volume Right	0	3	0	3	75	44
cSH	1445	1700	1033	1700	403	683
Volume to Capacity	0.01	0.31	0.00	0.08	0.35	0.07
Queue Length 95th (m)	0.3	0.0	0.1	0.0	12.1	1.9
Control Delay (s/veh)	7.5	0.0	8.5	0.0	18.6	10.7
Lane LOS	A		A		C	B
Approach Delay (s/veh)	0.2		0.2		18.6	10.7
Approach LOS					C	B

Intersection Summary					
Average Delay	3.7				
Intersection Capacity Utilization	49.7%	ICU Level of Service		A	
Analysis Period (min)	15				

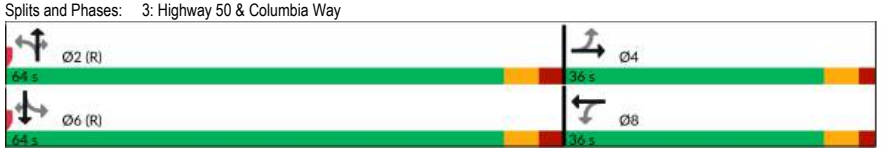
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	3	230	0	173	0	747	310	239	459	3
Future Volume (vph)	0	0	3	230	0	173	0	747	310	239	459	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	70.0		0.0	140.0		0.0	100.0		30.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Frt		0.865			0.850				0.850			0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1662	0	1750	1555	0	1879	1883	1626	1785	1883	795
Flt Permitted				0.756						0.257		
Satd. Flow (perm)	0	1662	0	1393	1555	0	1879	1883	1626	483	1883	795
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		371			184				323			33
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		127.3			237.9			633.3			400.2	
Travel Time (s)		11.5			21.4			38.0			24.0	
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
Heavy Vehicles (%)	100%	0%	0%	2%	0%	5%	0%	2%	0%	0%	2%	100%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	0	0	3	240	0	180	0	778	323	249	478	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	240	180	0	0	778	323	249	478	3
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												
Headway Factor	0.99	0.99	0.99	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02
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	Left						Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	12.0		8.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	-3.0		-2.0	-2.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	-3.0		-2.0	-2.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	15.0		10.0	10.0		2.0	0.6	2.0	2.0	0.6	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
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												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	25.0	25.0		14.0	14.0		30.7	30.7	30.7	30.7	30.7	30.7
Total Split (s)	36.0	36.0		36.0	36.0		64.0	64.0	64.0	64.0	64.0	64.0
Total Split (%)	36.0%	36.0%		36.0%	36.0%		64.0%	64.0%	64.0%	64.0%	64.0%	64.0%
Maximum Green (s)	30.0	30.0		30.0	30.0		57.3	57.3	57.3	57.3	57.3	57.3
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0		6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0	8.0	8.0	8.0	8.0
Flash Don't Walk (s)	11.0	11.0		11.0	11.0		16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		22.4		22.4	22.4			64.9	64.9	64.9	64.9	64.9
Actuated g/C Ratio		0.22		0.22	0.22			0.65	0.65	0.65	0.65	0.65
v/c Ratio		0.00		0.77	0.37			0.64	0.28	0.80	0.39	0.01
Control Delay (s/veh)		0.0		52.1	6.2			14.9	1.7	37.1	10.5	0.0
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		0.0		52.1	6.2			14.9	1.7	37.1	10.5	0.0
LOS		A		D	A			B	A	D	B	A
Approach Delay (s/veh)					32.4			11.0			19.5	
Approach LOS					C			B			B	
Queue Length 50th (m)		0.0		46.0	0.0			86.7	0.0	33.6	41.9	0.0
Queue Length 95th (m)		0.0		67.5	14.7			155.8	11.2	#96.7	76.5	0.0
Internal Link Dist (m)		103.3			213.9			609.3			376.2	
Turn Bay Length (m)				70.0						100.0		30.0
Base Capacity (vph)		758		417	595			1221	1168	313	1221	527
Starvation Cap Reductn		0		0	0			0	0	0	0	0
Spillback Cap Reductn		0		0	0			0	0	0	0	0
Storage Cap Reductn		0		0	0			0	0	0	0	0
Reduced v/c Ratio		0.00		0.58	0.30			0.64	0.28	0.80	0.39	0.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 15 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay (s/veh): 17.7		Intersection LOS: B	

Intersection Capacity Utilization 91.6% ICU Level of Service F
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Highway 50 & Columbia Way



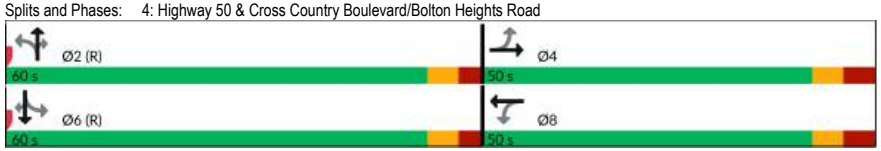
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	8	13	42	10	19	81	1065	95	28	602	21
Future Volume (vph)	9	8	13	42	10	19	81	1065	95	28	602	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	85.0		0.0	85.0		75.0	65.0		50.0
Storage Lanes	0		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor									0.98			
Frt		0.898			0.902				0.850			0.850
Flt Protected		0.994		0.950			0.950			0.950		
Satd. Flow (prot)	0	1715	0	1785	1733	0	1785	3614	1559	1785	1883	1591
Flt Permitted		0.953		0.712			0.395			0.248		
Satd. Flow (perm)	0	1644	0	1338	1733	0	742	3614	1522	466	1883	1591
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			19				380			51
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		112.1			201.9			771.8			633.3	
Travel Time (s)		10.1			18.2			46.3			38.0	
Confl. Peds. (#/hr)									2			
Confl. Bikes (#/hr)					2							
Peak Hour Factor	1.00	1.00	0.25	1.00	1.00	1.00	1.00	1.00	0.25	0.25	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	2%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	9	8	52	42	10	19	81	1065	380	112	602	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	69	0	42	29	0	81	1065	380	112	602	21
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												
Headway Factor	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02	1.01	0.99	1.02
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							Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	12.0	12.0		12.0	12.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	15.0	15.0		15.0	15.0		2.0	0.6	2.0	2.0	0.6	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
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	47.1	47.1		47.1	47.1		34.7	34.7	34.7	34.7	34.7	34.7
Total Split (s)	50.0	50.0		50.0	50.0		60.0	60.0	60.0	60.0	60.0	60.0
Total Split (%)	45.5%	45.5%		45.5%	45.5%		54.5%	54.5%	54.5%	54.5%	54.5%	54.5%
Maximum Green (s)	41.9	41.9		41.9	41.9		53.3	53.3	53.3	53.3	53.3	53.3
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	4.1	4.1		4.1	4.1		2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		8.1		8.1	8.1		6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Don't Walk (s)	29.0	29.0		29.0	29.0		18.0	18.0	18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	4	4		4	4		2	2	2	2	2	2
Act Effct Green (s)		15.9		15.9	15.9		84.2	84.2	84.2	84.2	84.2	84.2
Actuated g/C Ratio		0.14		0.14	0.14		0.77	0.77	0.77	0.77	0.77	0.77
v/c Ratio		0.24		0.22	0.11		0.14	0.38	0.30	0.31	0.42	0.02
Control Delay (s/veh)		15.4		40.1	18.9		8.4	7.9	1.9	12.1	9.3	0.5
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		15.4		40.1	18.9		8.4	7.9	1.9	12.1	9.3	0.5
LOS		B		D	B		A	A	A	B	A	A
Approach Delay (s/veh)		15.4			31.4			6.4			9.5	
Approach LOS		B			C			A			A	
Queue Length 50th (m)		3.6		9.1	2.1		3.8	33.2	0.0	6.2	37.0	0.0
Queue Length 95th (m)		12.2		14.5	7.9		19.8	104.9	0.0	6.4	132.6	0.7
Internal Link Dist (m)		88.1			177.9			747.8			609.3	
Turn Bay Length (m)				85.0			85.0		75.0	65.0		50.0
Base Capacity (vph)		658		509	671		568	2767	1254	356	1442	1230
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		0.08	0.04		0.14	0.38	0.30	0.31	0.42	0.02

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 96 (87%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 85	

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.42	
Intersection Signal Delay (s/veh): 8.3	Intersection LOS: A
Intersection Capacity Utilization 66.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: Highway 50 & Cross Country Boulevard/Bolton Heights Road



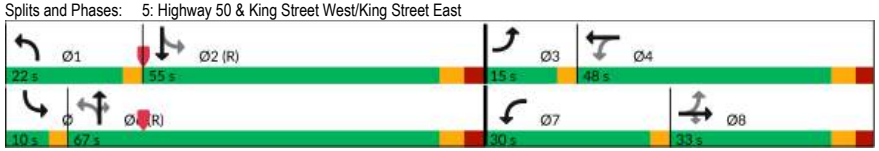
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	246	96	215	275	44	85	1103	443	35	645	24
Future Volume (vph)	57	246	96	215	275	44	85	1103	443	35	645	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.5	3.5	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	30.0		35.0	30.0		0.0	55.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Ped Bike Factor	0.98		0.96	0.99	0.99				0.96		1.00	
Frt			0.850		0.979				0.850		0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1575	1712	1409	1591	1667	0	1579	1695	1432	1643	1694	0
Flt Permitted	0.500			0.291			0.147			0.062		
Satd. Flow (perm)	813	1712	1358	483	1667	0	244	1695	1372	107	1694	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125		6				199		1	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		535.7			353.4			517.9			32.8	
Travel Time (s)		48.2			31.8			31.1			2.0	
Confl. Peds. (#/hr)	11		6	6		11	10		8	8		10
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%	1%	2%	1%	1%	0%	4%	2%	0%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	1	0
Adj. Flow (vph)	59	254	99	222	284	45	88	1137	457	36	665	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	254	99	222	329	0	88	1137	457	36	690	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			3.7			3.7	
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												
Headway Factor	1.16	1.13	1.16	1.16	1.13	1.13	1.13	1.13	1.17	1.13	1.13	1.16
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	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	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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Detector Phase	3	8	8	7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	8.0	31.9	31.9	8.0	31.9		8.0	32.0	32.0	8.0	32.0	
Total Split (s)	15.0	33.0	33.0	30.0	48.0		22.0	67.0	67.0	10.0	55.0	
Total Split (%)	10.7%	23.6%	23.6%	21.4%	34.3%		15.7%	47.9%	47.9%	7.1%	39.3%	
Maximum Green (s)	12.0	26.1	26.1	27.0	41.1		19.0	60.0	60.0	7.0	48.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.9	2.9	0.0	2.9		0.0	3.0	3.0	0.0	3.0	
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	6.9	6.9	3.0	6.9		3.0	7.0	7.0	3.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	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	None	None	None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)		10.0	10.0		10.0			10.0	10.0		10.0	
Flash Don't Walk (s)		15.0	15.0		15.0			15.0	15.0		15.0	
Pedestrian Calls (#/hr)		4	4		4			8	8		8	
Act Effct Green (s)	37.8	25.1	25.1	52.5	38.7		81.0	69.6	69.6	75.7	65.1	
Actuated g/C Ratio	0.27	0.18	0.18	0.38	0.28		0.58	0.50	0.50	0.54	0.47	
v/c Ratio	0.22	0.83	0.29	0.65	0.71		0.38	1.35	0.58	0.28	0.88	
Control Delay (s/veh)	29.1	77.0	5.7	39.9	53.7		19.6	195.5	18.6	20.8	48.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	29.1	77.0	5.7	39.9	53.7		19.6	195.5	18.6	20.8	48.9	
LOS	C	E	A	D	D		B	F	B	C	D	
Approach Delay (s/veh)		53.0			48.1			138.2			47.5	
Approach LOS		D			D			F			D	
Queue Length 50th (m)	10.9	71.2	0.0	45.8	85.5		11.2	~445.6	54.5	4.4	181.2	
Queue Length 95th (m)	19.7	#108.4	9.5	63.6	117.9		21.9	#551.9	100.7	10.8	#298.9	
Internal Link Dist (m)		511.7			329.4			493.9			8.8	
Turn Bay Length (m)	30.0		35.0	30.0			55.0			20.0		
Base Capacity (vph)	303	333	364	394	499		323	843	782	135	788	
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	0.19	0.76	0.27	0.56	0.66		0.27	1.35	0.58	0.27	0.88	

Intersection Summary
Area Type: CBD
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 62 (44%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.35
Intersection Signal Delay (s/veh): 93.6 Intersection LOS: F
Intersection Capacity Utilization 115.7% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 50 & King Street West/King Street East



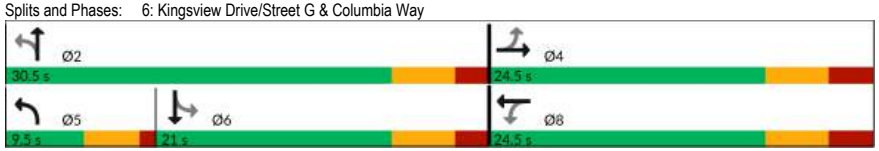
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	333	63	56	273	60	24	8	37	34	5	98
Future Volume (vph)	144	333	63	56	273	60	24	8	37	34	5	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00				
Frt		0.984			0.943			0.889			0.903	
Flt Protected		0.987			0.995			0.993			0.988	
Satd. Flow (prot)	0	1856	0	0	1771	0	0	1683	0	0	1680	0
Flt Permitted		0.748			0.899			0.927			0.886	
Satd. Flow (perm)	0	1406	0	0	1600	0	0	1570	0	0	1507	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			70			148			98	
Link Speed (k/h)		40			40			40			50	
Link Distance (m)		237.9			417.0			131.8			93.0	
Travel Time (s)		21.4			37.5			11.9			6.7	
Confl. Peds. (#/hr)							5					
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	0.25	1.00	1.00	0.25	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	0%	2%	2%	5%	2%	0%	2%	2%	2%
Adj. Flow (vph)	144	333	63	56	273	240	24	8	148	34	5	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	540	0	0	569	0	0	180	0	0	137	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			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	100		15	25		100	25		15	100		100
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		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	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	8.0		8.0	8.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		9.5	21.0		21.0	21.0	
Total Split (s)	24.5	24.5		24.5	24.5		9.5	30.5		21.0	21.0	
Total Split (%)	44.5%	44.5%		44.5%	44.5%		17.3%	55.5%		38.2%	38.2%	
Maximum Green (s)	17.6	17.6		17.6	17.6		5.0	24.5		15.0	15.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	2.9	2.9		2.9	2.9		1.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.9			6.9			6.0			6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0			8.0		8.0	8.0	
Flash Don't Walk (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		3	3	
Act Effct Green (s)		20.5			20.5			9.5			9.5	
Actuated g/C Ratio		0.55			0.55			0.26			0.26	
v/c Ratio		0.69			0.62			0.35			0.30	
Control Delay (s/veh)		19.1			14.5			6.2			7.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay (s/veh)		19.1			14.5			6.2			7.2	
LOS		B			B			A			A	
Approach Delay (s/veh)		19.1			14.5			6.2			7.2	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		28.1			24.3			1.8			2.2	
Queue Length 95th (m)		#96.6			#88.5			11.8			11.1	
Internal Link Dist (m)		213.9			393.0			107.8			69.0	
Turn Bay Length (m)												
Base Capacity (vph)		781			914			1128			692	
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			0.62			0.16			0.20	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 37.1			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay (s/veh): 14.5		Intersection LOS: B	
Intersection Capacity Utilization 71.0%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 6: Kingsview Drive/Street G & Columbia Way



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	232	85	38	242	40	23
Future Volume (vph)	232	85	38	242	40	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.964				0.950	
Flt Protected				0.993	0.969	
Satd. Flow (prot)	1789	0	0	1875	1743	0
Flt Permitted				0.993	0.969	
Satd. Flow (perm)	1789	0	0	1875	1743	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	500.8			180.3	104.8	
Travel Time (s)	45.1			16.2	9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	0%	2%	0%	4%
Adj. Flow (vph)	252	92	41	263	43	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	344	0	0	304	68	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

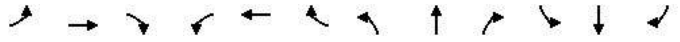
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	232	85	38	242	40	23
Future Volume (Veh/h)	232	85	38	242	40	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	252	92	41	263	43	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			344		643	298
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			344		643	298
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		90	97
cM capacity (veh/h)			1226		426	737

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	344	304	68
Volume Left	0	41	43
Volume Right	92	0	25
cSH	1700	1226	504
Volume to Capacity	0.20	0.03	0.13
Queue Length 95th (m)	0.0	0.8	3.7
Control Delay (s/veh)	0.0	1.4	13.2
Lane LOS		A	B
Approach Delay (s/veh)	0.0	1.4	13.2
Approach LOS			B

Intersection Summary			
Average Delay		1.8	
Intersection Capacity Utilization		45.8%	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)	54	262	31	18	422	148	16	6	9	43	8	44
Future Volume (vph)	54	262	31	18	422	148	16	6	9	43	8	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Frt		0.984			0.961			0.962			0.937	
Flt Protected	0.950			0.950				0.974			0.978	
Satd. Flow (prot)	1706	1826	0	1460	1819	0	0	1800	0	0	1714	0
Flt Permitted	0.950			0.950				0.974			0.978	
Satd. Flow (perm)	1706	1826	0	1460	1819	0	0	1800	0	0	1714	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		116.8			228.4			249.8			412.3	
Travel Time (s)		10.5			20.6			22.5			37.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	3%	8%	25%	2%	0%	0%	0%	0%	6%	0%	0%
Adj. Flow (vph)	57	276	33	19	444	156	17	6	9	45	8	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	309	0	19	600	0	0	32	0	0	99	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)		3.7			3.7			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	51.1%		ICU Level of Service A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	262	31	18	422	148	16	6	9	43	8	44
Future Volume (Veh/h)	54	262	31	18	422	148	16	6	9	43	8	44
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	57	276	33	19	444	156	17	6	9	45	8	46
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	600			309			939	1045	293	962	983	522
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600			309			939	1045	293	962	983	522
tC, single (s)	4.2			4.4			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.4			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	94			98			92	97	99	79	97	92
cM capacity (veh/h)	953			1132			207	213	752	211	232	559

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	57	309	19	600	32	99
Volume Left	57	0	19	0	17	45
Volume Right	0	33	0	156	9	46
cSH	953	1700	1132	1700	262	300
Volume to Capacity	0.06	0.18	0.02	0.35	0.12	0.33
Queue Length 95th (m)	1.5	0.0	0.4	0.0	3.3	11.2
Control Delay (s/veh)	9.0	0.0	8.2	0.0	20.6	22.8
Lane LOS	A		A		C	C
Approach Delay (s/veh)	1.4		0.3		20.6	22.8
Approach LOS					C	C

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	51.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	85	148	248	472	204	360
Future Volume (vph)	85	148	248	472	204	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.914				0.914	
Flt Protected	0.982			0.983		
Satd. Flow (prot)	1713	0	0	1870	1743	0
Flt Permitted	0.982			0.983		
Satd. Flow (perm)	1713	0	0	1870	1743	0
Link Speed (k/h)	40			80	80	
Link Distance (m)	190.9			1113.3	133.7	
Travel Time (s)	17.2			50.1	6.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	1%	1%	2%	0%
Adj. Flow (vph)	88	153	256	487	210	371
Shared Lane Traffic (%)						
Lane Group Flow (vph)	241	0	0	743	581	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			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	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	85	148	248	472	204	360
Future Volume (Veh/h)	85	148	248	472	204	360
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	88	153	256	487	210	371
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1395	396	581			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1395	396	581			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	25	77	74			
cM capacity (veh/h)	117	656	998			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	241	743	581
Volume Left	88	256	0
Volume Right	153	0	371
cSH	245	998	1700
Volume to Capacity	0.98	0.26	0.34
Queue Length 95th (m)	74.2	8.2	0.0
Control Delay (s/veh)	97.1	5.7	0.0
Lane LOS	F	A	
Approach Delay (s/veh)	97.1	5.7	0.0
Approach LOS	F		

Intersection Summary			
Average Delay		17.7	
Intersection Capacity Utilization		95.2%	ICU Level of Service F
Analysis Period (min)		15	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	27	39	99	870	523	39
Future Volume (vph)	27	39	99	870	523	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	105.0			115.0
Storage Lanes	1	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.920					0.850
Flt Protected	0.980		0.950			
Satd. Flow (prot)	1698	0	1789	1865	1731	1601
Flt Permitted	0.980		0.950			
Satd. Flow (perm)	1698	0	1789	1865	1731	1601
Link Speed (k/h)	50			70	50	
Link Distance (m)	423.7			2029.6	973.3	
Travel Time (s)	30.5			104.4	70.1	
Peak Hour Factor	1.00	1.00	1.00	0.84	0.84	1.00
Heavy Vehicles (%)	2%	2%	2%	3%	11%	2%
Adj. Flow (vph)	27	39	99	1036	623	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	0	99	1036	623	39
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	100	100	100			100
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	56.3%		ICU Level of Service B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	27	39	99	870	523	39
Future Volume (Veh/h)	27	39	99	870	523	39
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	0.84	0.84	1.00
Hourly flow rate (vph)	27	39	99	1036	623	39
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1857	623	662			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1857	623	662			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	63	92	89			
cM capacity (veh/h)	72	486	927			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	66	99	1036	623	39
Volume Left	27	99	0	0	0
Volume Right	39	0	0	0	39
cSH	145	927	1700	1700	1700
Volume to Capacity	0.45	0.11	0.61	0.37	0.02
Queue Length 95th (m)	16.5	2.9	0.0	0.0	0.0
Control Delay (s/veh)	48.9	9.3	0.0	0.0	0.0
Lane LOS	E	A			
Approach Delay (s/veh)	48.9	0.8		0.0	
Approach LOS	E				

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	56.3%	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)	0	0	0	35	0	0	0	13	52	0	9	0
Future Volume (vph)	0	0	0	35	0	0	0	13	52	0	9	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt								0.892				
Flt Protected					0.950							
Satd. Flow (prot)	0	1883	0	0	1789	0	0	1680	0	0	1883	0
Flt Permitted					0.950							
Satd. Flow (perm)	0	1883	0	0	1789	0	0	1680	0	0	1883	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		379.8			1317.6			423.7			282.6	
Travel Time (s)		27.3			94.9			30.5			20.3	
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
Adj. Flow (vph)	0	0	0	35	0	0	0	13	52	0	9	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	35	0	0	65	0	0	9	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
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	13.9%	ICU Level of Service A		
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	35	0	0	0	13	52	0	9	0
Future Volume (Veh/h)	0	0	0	35	0	0	0	13	52	0	9	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	0	0	0	35	0	0	0	13	52	0	9	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	48	74	9	48	48	39	9			65		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	48	74	9	48	48	39	9			65		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	96	100	100	100			100		
cM capacity (veh/h)	953	816	1073	953	844	1033	1611			1537		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	35	65	9
Volume Left	0	35	0	0
Volume Right	0	0	52	0
cSH	1700	953	1611	1537
Volume to Capacity	0.00	0.04	0.00	0.00
Queue Length 95th (m)	0.0	0.9	0.0	0.0
Control Delay (s/veh)	0.0	8.9	0.0	0.0
Lane LOS	A	A		
Approach Delay (s/veh)	0.0	8.9	0.0	0.0
Approach LOS	A	A		

Intersection Summary				
Average Delay	2.9			
Intersection Capacity Utilization	13.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	895	458	151	0	91
Future Volume (vph)	0	895	458	151	0	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.967		0.865	0.865
Flt Protected						
Satd. Flow (prot)	0	1883	1821	0	0	1629
Flt Permitted						
Satd. Flow (perm)	0	1883	1821	0	0	1629
Link Speed (k/h)		70	50		50	
Link Distance (m)		973.3	342.6		106.2	
Travel Time (s)		50.1	24.7		7.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	895	458	151	0	91
Shared Lane Traffic (%)						10%
Lane Group Flow (vph)	0	895	609	0	9	82
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	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	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	895	458	151	0	91
Future Volume (Veh/h)	0	895	458	151	0	91
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	895	458	151	0	91
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	609				1429	534
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	609				1429	534
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	83
cM capacity (veh/h)	970				149	546

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	895	609	91
Volume Left	0	0	0
Volume Right	0	151	91
cSH	1700	1700	546
Volume to Capacity	0.53	0.36	0.17
Queue Length 95th (m)	0.0	0.0	4.7
Control Delay (s/veh)	0.0	0.0	12.9
Lane LOS			B
Approach Delay (s/veh)	0.0	0.0	12.9
Approach LOS			B

Intersection Summary				
Average Delay			0.7	
Intersection Capacity Utilization			50.4%	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)	57	0	80	85	0	22	64	992	125	32	549	51
Future Volume (vph)	57	0	80	85	0	22	64	992	125	32	549	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	50.0		0.0	20.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Frt		0.921			0.972			0.986			0.989	
Flt Protected		0.980			0.962			0.997			0.997	
Satd. Flow (prot)	0	1700	0	0	1761	0	0	1852	0	0	1857	0
Flt Permitted		0.850			0.781			0.946			0.922	
Satd. Flow (perm)	0	1474	0	0	1430	0	0	1757	0	0	1717	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		80			22			16			12	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		1317.6			152.8			145.3			176.9	
Travel Time (s)		94.9			11.0			8.7			10.6	
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
Adj. Flow (vph)	57	0	80	85	0	22	64	992	125	32	549	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	137	0	0	107	0	0	1181	0	0	632	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		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		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	22.0	22.0		22.0	22.0		28.0	28.0		28.0	28.0	
Total Split (%)	44.0%	44.0%		44.0%	44.0%		56.0%	56.0%		56.0%	56.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Don't Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		10.6			10.6			25.8			25.8	
Actuated g/C Ratio		0.27			0.27			0.65			0.65	
v/c Ratio		0.30			0.27			1.02			0.56	
Control Delay (s/veh)		8.9			12.9			50.1			8.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay (s/veh)		8.9			12.9			50.1			8.4	
LOS		A			B			D			A	
Approach Delay (s/veh)		8.9			12.9			50.1			8.4	
Approach LOS		A			B			D			A	
Queue Length 50th (m)		3.4			5.2			~115.1			26.0	
Queue Length 95th (m)		13.4			14.6			#186.6			56.8	
Internal Link Dist (m)		1293.6			128.8			121.3			152.9	
Turn Bay Length (m)												
Base Capacity (vph)		733			681			1153			1125	
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		0.19			0.16			1.02			0.56	

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 39.5			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay (s/veh): 32.6		Intersection LOS: C	
Intersection Capacity Utilization 99.1%		ICU Level of Service F	
Analysis Period (min) 15			

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

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

Splits and Phases: 14: Highway 50 & Street A



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	67	901	66	98	709
Future Volume (vph)	0	67	901	66	98	709
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	40.0	
Storage Lanes	0	1		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.991			
Flt Protected					0.950	
Satd. Flow (prot)	0	1629	1866	0	1789	1883
Flt Permitted					0.950	
Satd. Flow (perm)	0	1629	1866	0	1789	1883
Link Speed (k/h)	50		60			60
Link Distance (m)	251.8		478.9			273.0
Travel Time (s)	18.1		28.7			16.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	67	901	66	98	709
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	67	967	0	98	709
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		3.7			3.7
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	0.99	0.99
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	67	901	66	98	709
Future Volume (Veh/h)	0	67	901	66	98	709
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	67	901	66	98	709
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1839	934			967	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1839	934			967	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	79			86	
cM capacity (veh/h)	72	322			712	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	67	967	98	709
Volume Left	0	0	98	0
Volume Right	67	66	0	0
cSH	322	1700	712	1700
Volume to Capacity	0.21	0.57	0.14	0.42
Queue Length 95th (m)	6.2	0.0	3.8	0.0
Control Delay (s/veh)	19.1	0.0	10.9	0.0
Lane LOS	C		B	
Approach Delay (s/veh)	19.1	0.0	1.3	
Approach LOS	C			

Intersection Summary				
Average Delay		1.3		
Intersection Capacity Utilization	63.5%	ICU Level of Service	B	
Analysis Period (min)	15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	51	77	864	10	114	596
Future Volume (vph)	51	77	864	10	114	596
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	55.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.919		0.998			
Flt Protected	0.980				0.950	
Satd. Flow (prot)	1696	0	1880	0	1789	1883
Flt Permitted	0.980				0.950	
Satd. Flow (perm)	1696	0	1880	0	1789	1883
Link Speed (k/h)	50		60			60
Link Distance (m)	269.3		400.2			478.9
Travel Time (s)	19.4		24.0			28.7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	51	77	864	10	114	596
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	0	874	0	114	596
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
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	0.99	0.99
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	51	77	864	10	114	596
Future Volume (Veh/h)	51	77	864	10	114	596
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)	51	77	864	10	114	596
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			400			
pX, platoon unblocked	0.73	0.73			0.73	
vC, conflicting volume	1693	869			874	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1764	636			642	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	9	78			83	
cM capacity (veh/h)	56	349			688	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	128	874	114	596
Volume Left	51	0	114	0
Volume Right	77	10	0	0
cSH	114	1700	688	1700
Volume to Capacity	1.13	0.51	0.17	0.35
Queue Length 95th (m)	63.1	0.0	4.7	0.0
Control Delay (s/veh)	195.5	0.0	11.3	0.0
Lane LOS	F		B	
Approach Delay (s/veh)	195.5	0.0	1.8	
Approach LOS	F			

Intersection Summary				
Average Delay		15.4		
Intersection Capacity Utilization		70.0%	ICU Level of Service	C
Analysis Period (min)		15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	0	29	11	0	45
Future Volume (vph)	7	0	29	11	0	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.963			
Flt Protected	0.950					
Satd. Flow (prot)	1789	0	1814	0	0	1883
Flt Permitted	0.950					
Satd. Flow (perm)	1789	0	1814	0	0	1883
Link Speed (k/h)	50		40			40
Link Distance (m)	313.5		412.3			235.5
Travel Time (s)	22.6		37.1			21.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	29	11	0	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	0	40	0	0	45
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	0	29	11	0	45
Future Volume (Veh/h)	7	0	29	11	0	45
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	7	0	29	11	0	45
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	80	35			40	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80	35			40	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	923	1039			1570	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	7	40	45
Volume Left	7	0	0
Volume Right	0	11	0
cSH	923	1700	1570
Volume to Capacity	0.01	0.02	0.00
Queue Length 95th (m)	0.2	0.0	0.0
Control Delay (s/veh)	8.9	0.0	0.0
Lane LOS	A		
Approach Delay (s/veh)	8.9	0.0	0.0
Approach LOS	A		

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		13.3%	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)	36	220	56	43	560	6	4	0	10	4	0	25
Future Volume (vph)	36	220	56	43	560	6	4	0	10	4	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Frt		0.970			0.998			0.904			0.884	
Flt Protected	0.950			0.950				0.986			0.993	
Satd. Flow (prot)	1789	1827	0	1789	1880	0	0	1679	0	0	1653	0
Flt Permitted	0.950			0.950				0.986			0.993	
Satd. Flow (perm)	1789	1827	0	1789	1880	0	0	1679	0	0	1653	0
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		228.4			304.5			187.8			203.8	
Travel Time (s)		20.6			27.4			13.5			14.7	
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
Adj. Flow (vph)	36	220	56	43	560	6	4	0	10	4	0	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	276	0	43	566	0	0	14	0	0	29	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)		3.7			3.7			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.7%	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)	36	220	56	43	560	6	4	0	10	4	0	25
Future Volume (Veh/h)	36	220	56	43	560	6	4	0	10	4	0	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	36	220	56	43	560	6	4	0	10	4	0	25
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	566			276			991	972	248	951	997	563
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	566			276			991	972	248	951	997	563
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			97			98	100	99	98	100	95
cM capacity (veh/h)	1006			1287			203	235	791	224	227	526

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	36	276	43	566	14	29
Volume Left	36	0	43	0	4	4
Volume Right	0	56	0	6	10	25
cSH	1006	1700	1287	1700	433	444
Volume to Capacity	0.04	0.16	0.03	0.33	0.03	0.07
Queue Length 95th (m)	0.9	0.0	0.8	0.0	0.8	1.7
Control Delay (s/veh)	8.7	0.0	7.9	0.0	13.6	13.7
Lane LOS	A		A		B	B
Approach Delay (s/veh)	1.0		0.6		13.6	13.7
Approach LOS					B	B

Intersection Summary					
Average Delay	1.3				
Intersection Capacity Utilization	45.7%	ICU Level of Service		A	
Analysis Period (min)	15				

FUTURE TOTAL 2041

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: Highway 50 & Emil Kolb Pkwy Future Total.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 1:30:25 PM

Summary of intersection performance

	AM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2041 Future Total						
Emil Kolb Pkwy	0.75	2.94	4.99	N/A	A	3.91	A
Highway 50 (North)	1.87	6.72	5.04	N/A	A		
Highway 50 (South)	0.39	1.91	1.60	N/A	A		
Street B	0.21	0.88	3.64	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D6 - 2041 Future Total, AM " model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 3:00 PM - 4:00 PM
"D11 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D12 - 2031 Future Total, PM" model duration: 3:00 PM - 4:00 PM
"D13 - 2051 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D14 - 2051 Future Total, PM" model duration: 3:00 PM - 4:00 PM

Run using Junctions 8.0.6.541 at 2026-02-21 1:30:25 PM

File summary

Title	Bolton North Hill
Location	Highway 50 & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1388668144	1067

(Default Analysis Set) - 2041 Future Total, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2041 Future Total, AM	2041 Future Total	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3,4		✓	3.91	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy	3	Emil Kolb Pkwy	
Highway 50 (North)	2	Highway 50 (North)	
Highway 50 (South)	4	Highway 50 (South)	
Street B	1	Street B	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	0.00	99999.00
Highway 50 (North)	0.00	99999.00
Highway 50 (South)	0.00	99999.00
Street B	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy	7.00	8.00	30.00	25.00	60.00	25.00	
Highway 50 (North)	7.00	8.00	30.00	35.00	60.00	25.00	
Highway 50 (South)	7.00	8.00	30.00	35.00	60.00	25.00	
Street B	7.00	8.00	30.00	35.00	60.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy	0.00	0.00
Highway 50 (North)	0.00	0.00
Highway 50 (South)	0.00	0.00
Street B	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy	Percentage	Opening day within 10 years		85.00
Highway 50 (North)	Percentage	Opening day within 10 years		85.00
Highway 50 (South)	Percentage	Opening day within 10 years		85.00
Street B	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy		(calculated)	(calculated)	1.489	2831.014
Highway 50 (North)		(calculated)	(calculated)	1.505	2853.857
Highway 50 (South)		(calculated)	(calculated)	1.505	2853.857
Street B		(calculated)	(calculated)	1.505	2853.857

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy	Evenly split	10.00
Highway 50 (North)	Evenly split	10.00
Highway 50 (South)	Evenly split	10.00
Street B	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	**1**	2		Infinity	0.00	99999.00
Emil Kolb Pkwy	**1**	3		Infinity	0.00	99999.00
Highway 50 (North)	**1**	1		Infinity	0.00	99999.00
Highway 50 (North)	**1**	2		Infinity	0.00	99999.00
Highway 50 (South)	**1**	3		Infinity	0.00	99999.00
Highway 50 (South)	**1**	4		Infinity	0.00	99999.00
Street B	**1**	3		Infinity	0.00	99999.00
Street B	**1**	4		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy	(calculated)	(calculated)	0.745	1415.507
Emil Kolb Pkwy	(calculated)	(calculated)	0.745	1415.507
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929

Street B	(calculated)	(calculated)	0.753	1426.929
Street B	(calculated)	(calculated)	0.753	1426.929

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
Highway 50 & Emil Kolb Pkwy	**Street B**	1	3		✓	✓	
Highway 50 & Emil Kolb Pkwy	**Street B**	1	4	✓		✓	✓
Highway 50 & Emil Kolb Pkwy	**Highway 50 (North)**	1	1			✓	✓
Highway 50 & Emil Kolb Pkwy	**Highway 50 (North)**	1	2	✓	✓		✓
Highway 50 & Emil Kolb Pkwy	**Emil Kolb Pkwy**	1	2	✓			✓
Highway 50 & Emil Kolb Pkwy	**Emil Kolb Pkwy**	1	3		✓	✓	
Highway 50 & Emil Kolb Pkwy	**Highway 50 (South)**	1	3	✓	✓		
Highway 50 & Emil Kolb Pkwy	**Highway 50 (South)**	1	4		✓	✓	✓

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy	PHF	✓	488.00	100.000
Highway 50 (North)	PHF	✓	1212.00	100.000
Highway 50 (South)	PHF	✓	805.00	100.000
Street B	PHF	✓	203.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy	488.00	0.96	SecondQuarter
Highway 50 (North)	1212.00	0.96	SecondQuarter
Highway 50 (South)	805.00	0.96	SecondQuarter
Street B	203.00	0.96	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	**Street B**	0.000	41.000	81.000	81.000
	Highway 50 (North)	21.000	0.000	461.000	730.000
	Emil Kolb Pkwy	42.000	217.000	0.000	229.000
	Highway 50 (South)	42.000	405.000	358.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	**Street B**	0.00	0.20	0.40	0.40
	Highway 50 (North)	0.02	0.00	0.38	0.60
	Emil Kolb Pkwy	0.09	0.44	0.00	0.47
	Highway 50 (South)	0.05	0.50	0.44	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	**Street B**	1.000	1.037	1.027	1.000
	Highway 50 (North)	1.008	1.000	1.053	1.000
	Emil Kolb Pkwy	1.057	1.277	1.000	1.000
	Highway 50 (South)	1.000	1.037	1.027	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	**Street B**	0.0	3.7	2.7	0.0
	Highway 50 (North)	0.8	0.0	5.3	0.0
	Emil Kolb Pkwy	5.7	27.7	0.0	0.0
	Highway 50 (South)	0.0	3.7	2.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy	4.99	0.75	2.94	A	490.08	490.08	38.44	4.71	0.64
Highway 50 (North)	5.04	1.87	6.72	A	1210.35	1210.35	90.16	4.47	1.50
Highway 50 (South)	1.60	0.39	1.91	A	804.73	804.73	20.56	1.53	0.34
Street B	3.64	0.21	0.88	A	204.33	204.33	11.01	3.23	0.18

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: Highway 50 & Emil Kolb Pkwy Future Total.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 1:33:06 PM

Summary of intersection performance

	PM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2041 Future Total						
Emil Kolb Pkwy	1.77	6.64	5.87	N/A	A	17.76	C
Highway 50 (North)	0.70	3.00	2.56	N/A	A		
Highway 50 (South)	3.35	11.33	8.79	N/A	A		
Street B	14.24	37.40	142.03	N/A	F		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM " model duration: 3:00 PM - 4:00 PM
"D11 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D12 - 2031 Future Total, PM" model duration: 3:00 PM - 4:00 PM
"D13 - 2051 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D14 - 2051 Future Total, PM" model duration: 3:00 PM - 4:00 PM

Run using Junctions 8.0.6.541 at 2026-02-21 1:33:06 PM

File summary

Title	Bolton North Hill
Location	Highway 50 & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	707288101	840

(Default Analysis Set) - 2041 Future Total, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2041 Future Total, PM	2041 Future Total	PM		PHF	15:00	16:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3,4		✓	17.76	C

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy	3	Emil Kolb Pkwy	
Highway 50 (North)	2	Highway 50 (North)	
Highway 50 (South)	4	Highway 50 (South)	
Street B	1	Street B	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	0.00	99999.00
Highway 50 (North)	0.00	99999.00
Highway 50 (South)	0.00	99999.00
Street B	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy	7.00	8.00	30.00	25.00	60.00	25.00	
Highway 50 (North)	7.00	8.00	30.00	35.00	60.00	25.00	
Highway 50 (South)	7.00	8.00	30.00	35.00	60.00	25.00	
Street B	7.00	8.00	30.00	35.00	60.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy	0.00	0.00
Highway 50 (North)	0.00	0.00
Highway 50 (South)	0.00	0.00
Street B	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy	Percentage	Opening day within 10 years		85.00
Highway 50 (North)	Percentage	Opening day within 10 years		85.00
Highway 50 (South)	Percentage	Opening day within 10 years		85.00
Street B	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy		(calculated)	(calculated)	1.489	2831.014
Highway 50 (North)		(calculated)	(calculated)	1.505	2853.857
Highway 50 (South)		(calculated)	(calculated)	1.505	2853.857
Street B		(calculated)	(calculated)	1.505	2853.857

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy	Evenly split	10.00
Highway 50 (North)	Evenly split	10.00
Highway 50 (South)	Evenly split	10.00
Street B	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy	1	3		Infinity	0.00	99999.00
Highway 50 (North)	1	1		Infinity	0.00	99999.00
Highway 50 (North)	1	2		Infinity	0.00	99999.00
Highway 50 (South)	1	3		Infinity	0.00	99999.00
Highway 50 (South)	1	4		Infinity	0.00	99999.00
Street B	1	3		Infinity	0.00	99999.00
Street B	1	4		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy	(calculated)	(calculated)	0.745	1415.507
Emil Kolb Pkwy	(calculated)	(calculated)	0.745	1415.507
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929
Street B	(calculated)	(calculated)	0.753	1426.929
Street B	(calculated)	(calculated)	0.753	1426.929

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
Highway 50 & Emil Kolb Pkwy	Street B	1	3		✓	✓	
Highway 50 & Emil Kolb Pkwy	Street B	1	4	✓		✓	✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	1			✓	✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	2	✓	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	2	✓			✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	3		✓	✓	
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	3	✓	✓		
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	4		✓	✓	✓

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy	PHF	✓	897.00	100.000
Highway 50 (North)	PHF	✓	784.00	100.000
Highway 50 (South)	PHF	✓	1202.00	100.000
Street B	PHF	✓	266.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy	897.00	0.91	SecondQuarter
Highway 50 (North)	784.00	0.91	SecondQuarter
Highway 50 (South)	1202.00	0.91	SecondQuarter
Street B	266.00	0.91	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	Street B	0.000	97.000	71.000	98.000
	Highway 50 (North)	49.000	0.000	283.000	452.000
	Emil Kolb Pkwy	97.000	491.000	0.000	309.000
	Highway 50 (South)	97.000	772.000	333.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

	To

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	Street B	0.00	0.36	0.27	0.37
	Highway 50 (North)	0.06	0.00	0.36	0.58
	Emil Kolb Pkwy	0.11	0.55	0.00	0.34
	Highway 50 (South)	0.08	0.64	0.28	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	Street B	1.000	1.000	1.000	1.000
	Highway 50 (North)	1.013	1.000	1.134	1.000
	Emil Kolb Pkwy	1.013	1.023	1.000	1.000
	Highway 50 (South)	1.000	1.013	1.000	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	Street B	0.0	0.0	0.0	0.0
	Highway 50 (North)	1.3	0.0	13.4	0.0
	Emil Kolb Pkwy	1.3	2.3	0.0	0.0
	Highway 50 (South)	0.0	1.3	0.0	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy	5.87	1.77	6.64	A	897.61	897.61	69.20	4.63	1.15
Highway 50 (North)	2.56	0.70	3.00	A	789.16	789.16	30.93	2.35	0.52
Highway 50 (South)	8.79	3.35	11.33	A	1206.38	1206.38	123.72	6.15	2.06
Street B	142.03	14.24	37.40	F	269.46	269.46	377.16	83.98	6.29

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: King Street & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 11:48:15 AM

Summary of intersection performance

	AM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2041 Future Total						
Emil Kolb Pkwy (North)	0.57	2.73	2.38	N/A	A	1.76	A
Emil Kolb Pkwy (South)	0.21	1.32	1.29	N/A	A		
King Street	0.30	1.61	1.35	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 8:00 AM - 9:00 AM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D5 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D6 - 2041 Future Total, AM " model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D8 - 2041 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D9 - 2031 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D11 - 2051 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D12 - 2051 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D13 - 2051 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D14 - 2051 Future Total, PM" model duration: 8:00 AM - 9:00 AM

Run using Junctions 8.0.6.541 at 2026-02-21 11:48:15 AM

File summary

Title	Bolton North Hill
Location	King Street & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units

m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1856534356	1523

(Default Analysis Set) - 2041 Future Total, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2041 Future Total, AM	2041 Future Total	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	1.76	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy (North)	2	Emil Kolb Pkwy (North)	
Emil Kolb Pkwy (South)	1	Emil Kolb Pkwy (South)	
King Street	3	King Street	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	0.00	99999.00
Emil Kolb Pkwy (South)	0.00	99999.00
King Street	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy (North)	7.00	8.00	30.00	25.00	55.00	25.00	
Emil Kolb Pkwy (South)	7.00	8.00	30.00	25.00	55.00	25.00	
King Street	7.00	8.00	30.00	25.00	55.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy (North)	0.00	0.00
Emil Kolb Pkwy (South)	0.00	0.00
King Street	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy (North)	Percentage	Opening day within 10 years		85.00
Emil Kolb Pkwy (South)	Percentage	Opening day within 10 years		85.00
King Street	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)		(calculated)	(calculated)	1.562	2831.014
Emil Kolb Pkwy (South)		(calculated)	(calculated)	1.562	2831.014
King Street		(calculated)	(calculated)	1.562	2831.014

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy (North)	Evenly split	10.00
Emil Kolb Pkwy (South)	Evenly split	10.00
King Street	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	**1**	1		Infinity	0.00	99999.00
Emil Kolb Pkwy (North)	**1**	2		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	**1**	3		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	**1**	4		Infinity	0.00	99999.00
King Street	**1**	2		Infinity	0.00	99999.00
King Street	**1**	3		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
Highway 50 & Emil Kolb Pkwy	**Emil Kolb Pkwy (South)**	**1**	**3**		✓	
Highway 50 & Emil Kolb Pkwy	**Emil Kolb Pkwy (South)**	**1**	**4**		✓	✓

Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	1	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	3	✓	✓	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy (North)	PHF	✓	797.00	100.000
Emil Kolb Pkwy (South)	PHF	✓	466.00	100.000
King Street	PHF	✓	697.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy (North)	797.00	0.95	SecondQuarter
Emil Kolb Pkwy (South)	466.00	0.95	SecondQuarter
King Street	697.00	0.95	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.000	239.000	227.000
	Emil Kolb Pkwy (North)	254.000	0.000	543.000
	King Street	440.000	257.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.00	0.51	0.49
	Emil Kolb Pkwy (North)	0.32	0.00	0.68
	King Street	0.63	0.37	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	1.000	1.310	1.075
	Emil Kolb Pkwy (North)	1.032	1.000	1.022
	King Street	1.061	1.097	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.0	31.0	7.5
	Emil Kolb Pkwy (North)	3.2	0.0	2.2
	King Street	6.1	9.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy (North)	2.38	0.57	2.73	A	791.62	791.62	28.91	2.19	0.48
Emil Kolb Pkwy (South)	1.29	0.21	1.32	A	467.26	467.26	10.56	1.36	0.18
King Street	1.35	0.30	1.61	A	698.65	698.65	15.66	1.35	0.26

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: King Street & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 11:53:08 AM

Summary of intersection performance

	PM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2041 Future Total						
Emil Kolb Pkwy (North)	0.56	2.61	3.30	N/A	A	5.64	A
Emil Kolb Pkwy (South)	3.55	11.68	8.79	N/A	A		
King Street	0.62	2.80	2.31	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 8:00 AM - 9:00 AM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D5 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D8 - 2041 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D9 - 2031 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM " model duration: 8:00 AM - 9:00 AM
"D11 - 2051 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D12 - 2051 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D13 - 2051 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D14 - 2051 Future Total, PM" model duration: 8:00 AM - 9:00 AM

Run using Junctions 8.0.6.541 at 2026-02-21 11:53:08 AM

File summary

Title	Bolton North Hill
Location	King Street & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1844711853	4941

(Default Analysis Set) - 2041 Future Total, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2041 Future Total, PM	2041 Future Total	PM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	5.64	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy (North)	2	Emil Kolb Pkwy (North)	
Emil Kolb Pkwy (South)	1	Emil Kolb Pkwy (South)	
King Street	3	King Street	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	0.00	99999.00
Emil Kolb Pkwy (South)	0.00	99999.00
King Street	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy (North)	7.00	8.00	30.00	25.00	55.00	25.00	
Emil Kolb Pkwy (South)	7.00	8.00	30.00	25.00	55.00	25.00	
King Street	7.00	8.00	30.00	25.00	55.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy (North)	0.00	0.00
Emil Kolb Pkwy (South)	0.00	0.00
King Street	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy (North)	Percentage	Opening day within 10 years		85.00
Emil Kolb Pkwy (South)	Percentage	Opening day within 10 years		85.00
King Street	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)		(calculated)	(calculated)	1.562	2831.014
Emil Kolb Pkwy (South)		(calculated)	(calculated)	1.562	2831.014
King Street		(calculated)	(calculated)	1.562	2831.014

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy (North)	Evenly split	10.00
Emil Kolb Pkwy (South)	Evenly split	10.00
King Street	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	1	1		Infinity	0.00	99999.00
Emil Kolb Pkwy (North)	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	3		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	4		Infinity	0.00	99999.00
King Street	1	2		Infinity	0.00	99999.00
King Street	1	3		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	4		✓	✓

Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	1	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	3	✓	✓	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy (North)	PHF	✓	569.00	100.000
Emil Kolb Pkwy (South)	PHF	✓	1388.00	100.000
King Street	PHF	✓	914.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy (North)	569.00	1.00	SecondQuarter
Emil Kolb Pkwy (South)	1388.00	1.00	SecondQuarter
King Street	914.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.000	748.000	640.000
	Emil Kolb Pkwy (North)	254.000	0.000	315.000
	King Street	369.000	545.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.00	0.54	0.46
	Emil Kolb Pkwy (North)	0.45	0.00	0.55
	King Street	0.40	0.60	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	1.000	1.021	1.067
	Emil Kolb Pkwy (North)	1.103	1.000	1.077

	King Street	1.047	1.015	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.0	2.1	6.7
	Emil Kolb Pkwy (North)	10.3	0.0	7.7
	King Street	4.7	1.5	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy (North)	3.30	0.56	2.61	A	569.71	569.71	32.58	3.43	0.54
Emil Kolb Pkwy (South)	8.79	3.55	11.68	A	1391.45	1391.45	203.51	8.78	3.39
King Street	2.31	0.62	2.80	A	913.23	913.23	35.35	2.32	0.59

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	10	311	3	201	3	391	173	243	829	3
Future Volume (vph)	4	0	10	311	3	201	3	391	173	243	829	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	140.0		30.0	125.0		30.0
Storage Lanes	0		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.901			0.852			0.954				0.850
Flt Protected		0.987		0.950			0.950			0.950		
Satd. Flow (prot)	0	952	0	1750	1584	0	892	3346	0	1700	1883	1591
Flt Permitted				0.889			0.195			0.307		
Satd. Flow (perm)	0	964	0	1638	1584	0	183	3346	0	549	1883	1591
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		85			218			84				48
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		127.3			237.9			633.3			400.2	
Travel Time (s)		9.2			21.4			38.0			24.0	
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 (%)	100%	0%	72%	2%	100%	2%	100%	5%	2%	5%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	4	0	11	338	3	218	3	425	188	264	901	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	338	221	0	3	613	0	264	901	3
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												
Headway Factor	0.99	0.99	0.99	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left						Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	12.0		8.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	-3.0		-2.0	-2.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	-3.0		-2.0	-2.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	15.0		10.0	10.0		2.0	0.6		2.0	0.6	2.0
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												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		3	8		2	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		20.0	20.0		7.0	20.0	20.0
Minimum Split (s)	23.0	23.0		11.0	23.0		28.0	28.0		11.0	28.0	28.0
Total Split (s)	23.0	23.0		18.0	41.0		34.0	34.0		15.0	49.0	49.0
Total Split (%)	25.6%	25.6%		20.0%	45.6%		37.8%	37.8%		16.7%	54.4%	54.4%
Maximum Green (s)	19.0	19.0		15.0	37.0		30.0	30.0		12.0	45.0	45.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		0.0	1.0		1.0	1.0		0.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.0		3.0	4.0		4.0	4.0		3.0	4.0	4.0
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)	8.0	8.0			8.0		8.0	8.0			8.0	8.0
Flash Don't Walk (s)	11.0	11.0			11.0		16.0	16.0			16.0	16.0
Pedestrian Calls (#/hr)	0	0			0		0	0			0	0
Act Effct Green (s)		10.3		16.2	15.1		25.0	25.0		38.6	37.5	37.5
Actuated g/C Ratio		0.17		0.27	0.25		0.41	0.41		0.63	0.62	0.62
v/c Ratio		0.06		0.73	0.40		0.04	0.43		0.50	0.78	0.00
Control Delay (s/veh)		0.5		31.3	5.6		15.7	13.0		9.4	16.2	0.0
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)		0.5		31.3	5.6		15.7	13.0		9.4	16.2	0.0
LOS		A		C	A		B	B		A	B	A
Approach Delay (s/veh)		0.5			21.1			13.0			14.6	
Approach LOS		A			C			B			B	
Queue Length 50th (m)		0.0		35.4	0.3		0.2	20.8		10.4	61.6	0.0
Queue Length 95th (m)		0.0		68.8	14.6		2.3	48.5		33.5	#200.0	0.0
Internal Link Dist (m)		103.3			213.9			609.3			376.2	
Turn Bay Length (m)							140.0			125.0		30.0
Base Capacity (vph)		367		500	1072		92	1739		581	1433	1222
Starvation Cap Reductn		0		0	0		0	0		0	0	0
Spillback Cap Reductn		0		0	0		0	0		0	0	0
Storage Cap Reductn		0		0	0		0	0		0	0	0
Reduced v/c Ratio		0.04		0.68	0.21		0.03	0.35		0.45	0.63	0.00

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 60.9			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay (s/veh): 15.7		Intersection LOS: B	
Intersection Capacity Utilization 94.2%		ICU Level of Service F	

Analysis Period (min) 15

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

Splits and Phases: 3: Highway 50 & Columbia Way



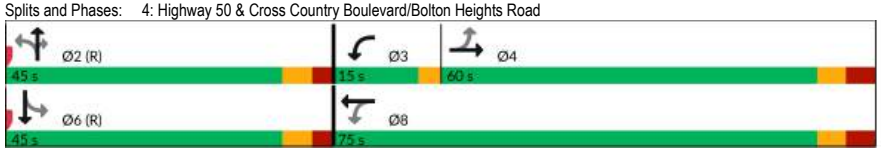
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	29	28	134	15	59	13	478	63	55	1060	8
Future Volume (vph)	16	29	28	134	15	59	13	478	63	55	1060	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	30.0		0.0	85.0		0.0	90.0		75.0	65.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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	0.99				0.98						1.00	
Frt		0.926			0.880				0.850		0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	1711	0	1785	1628	0	1623	3476	1591	1785	3574	0
Flt Permitted	0.699			0.585			0.158			0.422		
Satd. Flow (perm)	1295	1711	0	1099	1628	0	270	3476	1591	793	3574	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34			71				76		1	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		112.1			201.9			771.8			633.3	
Travel Time (s)		10.1			18.2			46.3			38.0	
Confl. Peds. (#/hr)	17					17	8					8
Confl. Bikes (#/hr)					2							
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	4%	4%	0%	0%	2%	10%	5%	0%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	19	35	34	161	18	71	16	576	76	66	1277	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	69	0	161	89	0	16	576	76	66	1287	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												
Headway Factor	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02	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	
Detector Template							Left	Thru	Right	Left	Thru	
Leading Detector (m)	12.0	12.0		12.0	12.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	15.0	15.0		15.0	15.0		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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	47.1	47.1		8.0	47.1		34.7	34.7	34.7	34.7	34.7	
Total Split (s)	60.0	60.0		15.0	75.0		45.0	45.0	45.0	45.0	45.0	
Total Split (%)	50.0%	50.0%		12.5%	62.5%		37.5%	37.5%	37.5%	37.5%	37.5%	
Maximum Green (s)	51.9	51.9		12.0	66.9		38.3	38.3	38.3	38.3	38.3	
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	4.1	4.1		0.0	4.1		2.7	2.7	2.7	2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	8.1	8.1		3.0	8.1		6.7	6.7	6.7	6.7	6.7	
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	3.0	3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
Walk Time (s)	10.0	10.0			10.0		10.0	10.0	10.0	10.0	10.0	
Flash Don't Walk (s)	29.0	29.0			29.0		18.0	18.0	18.0	18.0	18.0	
Pedestrian Calls (#/hr)	4	4			4		2	2	2	2	2	
Act Effct Green (s)	15.8	15.8		32.9	27.8		77.4	77.4	77.4	77.4	77.4	
Actuated g/C Ratio	0.13	0.13		0.27	0.23		0.65	0.65	0.65	0.65	0.65	
v/c Ratio	0.11	0.27		0.43	0.21		0.09	0.26	0.07	0.13	0.56	
Control Delay (s/veh)	42.0	26.2		35.7	10.1		16.1	11.9	3.9	13.6	16.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	42.0	26.2		35.7	10.1		16.1	11.9	3.9	13.6	16.0	
LOS	D	C		D	B		B	B	A	B	B	
Approach Delay (s/veh)		29.6			26.6			11.1			15.9	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	4.5	8.3		33.0	3.6		1.3	27.3	0.0	5.4	79.5	
Queue Length 95th (m)	8.3	15.1		31.9	10.2		7.1	59.5	7.7	18.8	156.7	
Internal Link Dist (m)		88.1			177.9			747.8			609.3	
Turn Bay Length (m)	30.0			85.0			90.0		75.0	65.0		
Base Capacity (vph)	560	759		373	939		174	2242	1053	511	2305	
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	0.03	0.09		0.43	0.09		0.09	0.26	0.07	0.13	0.56	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 39 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay (s/veh): 16.2	Intersection LOS: B
Intersection Capacity Utilization 77.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Highway 50 & Cross Country Boulevard/Bolton Heights Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	237	86	307	232	63	55	497	124	62	1124	25
Future Volume (vph)	27	237	86	307	232	63	55	497	124	62	1124	25
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	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	30.0		35.0	30.0		0.0	55.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Ped Bike Factor									0.97	1.00	1.00	
Frt			0.850		0.968				0.850		0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1606	1695	1437	1591	1635	0	1579	1695	1363	1643	1699	0
Flt Permitted	0.570			0.255			0.050			0.337		
Satd. Flow (perm)	964	1695	1437	427	1635	0	83	1695	1324	581	1699	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95		8				132		1	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		535.7			353.4			517.9			32.8	
Travel Time (s)		48.2			31.8			31.1			2.0	
Confl. Peds. (#/hr)							2		3	3		2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	0%	1%	3%	0%	4%	2%	5%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	1	0
Adj. Flow (vph)	29	252	91	327	247	67	59	529	132	66	1196	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	252	91	327	314	0	59	529	132	66	1223	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			3.7			3.7	
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												
Headway Factor	1.16	1.13	1.16	1.16	1.13	1.13	1.13	1.13	1.17	1.13	1.13	1.16
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	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	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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Detector Phase	3	8	8	7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	8.0	31.9	31.9	8.0	31.9		8.0	32.0	32.0	8.0	32.0	
Total Split (s)	20.0	31.9	31.9	24.1	36.0		8.0	86.0	86.0	8.0	86.0	
Total Split (%)	13.3%	21.3%	21.3%	16.1%	24.0%		5.3%	57.3%	57.3%	5.3%	57.3%	
Maximum Green (s)	17.0	25.0	25.0	21.1	29.1		5.0	79.0	79.0	5.0	79.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.9	2.9	0.0	2.9		0.0	3.0	3.0	0.0	3.0	
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	6.9	6.9	3.0	6.9		3.0	7.0	7.0	3.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	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	None	None	None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)		10.0	10.0		10.0			10.0	10.0		10.0	
Flash Don't Walk (s)		15.0	15.0		15.0			15.0	15.0		15.0	
Pedestrian Calls (#/hr)		4	4		4			8	8		8	
Act Effct Green (s)	35.4	24.2	24.2	52.2	41.6		89.4	81.4	81.4	89.4	81.4	
Actuated g/C Ratio	0.24	0.16	0.16	0.35	0.28		0.60	0.54	0.54	0.60	0.54	
v/c Ratio	0.11	0.92	0.29	1.05	0.68		0.58	0.58	0.17	0.17	1.33	
Control Delay (s/veh)	34.0	99.0	11.5	104.4	56.8		40.2	26.6	3.2	13.2	185.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	34.0	99.0	11.5	104.4	56.8		40.2	26.6	3.2	13.2	185.1	
LOS	C	F	B	F	E		D	C	A	B	F	
Approach Delay (s/veh)		72.5			81.1			23.4			176.3	
Approach LOS		E			F			C			F	
Queue Length 50th (m)	6.0	78.3	0.0	~88.1	88.4		7.2	111.2	0.0	8.1	~506.0	
Queue Length 95th (m)	13.7	#130.3	15.4	#143.9	#130.5		#23.5	149.5	10.9	15.0	#592.9	
Internal Link Dist (m)		511.7			329.4			493.9			8.8	
Turn Bay Length (m)	30.0		35.0	30.0			55.0			20.0		
Base Capacity (vph)	362	282	318	312	459		101	919	778	383	922	
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	0.08	0.89	0.29	1.05	0.68		0.58	0.58	0.17	0.17	1.33	

Intersection Summary
Area Type: CBD
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.33
Intersection Signal Delay (s/veh): 106.9 Intersection LOS: F
Intersection Capacity Utilization 115.1% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 50 & King Street West/King Street East

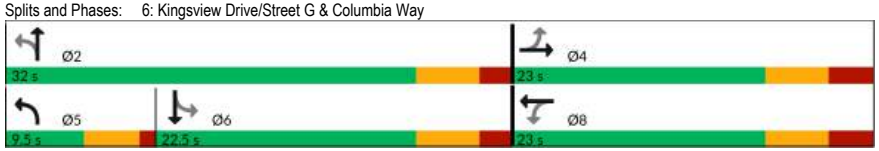


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	338	30	110	312	26	39	4	54	49	9	154
Future Volume (vph)	60	338	30	110	312	26	39	4	54	49	9	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.99			1.00	
Frt		0.990			0.991			0.925			0.902	
Flt Protected		0.993			0.988			0.980			0.989	
Satd. Flow (prot)	0	3572	0	0	3472	0	0	1723	0	0	1680	0
Flt Permitted		0.792			0.732			0.830			0.886	
Satd. Flow (perm)	0	2849	0	0	2570	0	0	1459	0	0	1504	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			11			65			186	
Link Speed (k/h)		40			40			40			50	
Link Distance (m)		237.9			417.0			131.8			93.0	
Travel Time (s)		21.4			37.5			11.9			6.7	
Confl. Peds. (#/hr)			3	3					5	5		
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	2%	0%	0%	3%	3%	2%	0%	2%	0%	2%	2%	2%
Adj. Flow (vph)	72	407	36	133	376	31	47	5	65	59	11	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	515	0	0	540	0	0	117	0	0	256	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		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	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	8.0		8.0	8.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		9.5	21.0		21.0	21.0	
Total Split (s)	23.0	23.0		23.0	23.0		9.5	32.0		22.5	22.5	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		17.3%	58.2%		40.9%	40.9%	
Maximum Green (s)	16.1	16.1		16.1	16.1		5.0	26.0		16.5	16.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	2.9	2.9		2.9	2.9		1.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.9			6.9			6.0			6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0			8.0		8.0	8.0	
Flash Don't Walk (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		3	3	
Act Effct Green (s)		15.8			15.8			10.3			10.3	
Actuated g/C Ratio		0.49			0.49			0.32			0.32	
v/c Ratio		0.36			0.42			0.23			0.42	
Control Delay (s/veh)		9.1			9.9			7.2			6.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay (s/veh)		9.1			9.9			7.2			6.5	
LOS		A			A			A			A	
Approach Delay (s/veh)		9.1			9.9			7.2			6.5	
Approach LOS		A			A			A			A	
Queue Length 50th (m)		10.5			11.5			2.3			3.1	
Queue Length 95th (m)		23.5			25.8			9.6			13.5	
Internal Link Dist (m)		213.9			393.0			107.8			69.0	
Turn Bay Length (m)												
Base Capacity (vph)		1605			1447			1157			937	
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			0.37			0.10			0.27	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 32.1			
Natural Cycle: 55			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay (s/veh): 8.8		Intersection LOS: A	
Intersection Capacity Utilization 55.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Kingsview Drive/Street G & Columbia Way



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	335	47	32	298	66	42
Future Volume (vph)	335	47	32	298	66	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.981				0.947	
Flt Protected				0.995	0.970	
Satd. Flow (prot)	3581	0	0	3523	1711	0
Flt Permitted				0.995	0.970	
Satd. Flow (perm)	3581	0	0	3523	1711	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	500.8			180.3	104.8	
Travel Time (s)	30.0			10.8	9.4	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	4%	3%	2%	5%
Adj. Flow (vph)	419	59	40	373	83	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	478	0	0	413	136	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	335	47	32	298	66	42
Future Volume (Veh/h)	335	47	32	298	66	42
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	419	59	40	372	82	52
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			478		715	239
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			478		715	239
tC, single (s)			4.2		6.8	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			96		77	93
cM capacity (veh/h)			1067		352	753

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	279	199	164	248	134
Volume Left	0	0	40	0	82
Volume Right	0	59	0	0	52
cSH	1700	1700	1067	1700	444
Volume to Capacity	0.16	0.12	0.04	0.15	0.30
Queue Length 95th (m)	0.0	0.0	0.9	0.0	10.1
Control Delay (s/veh)	0.0	0.0	2.3	0.0	16.6
Lane LOS			A		C
Approach Delay (s/veh)	0.0		0.9		16.6
Approach LOS					C

Intersection Summary				
Average Delay			2.5	
Intersection Capacity Utilization			36.2%	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	424	13	4	237	26	32	6	14	156	5	82
Future Volume (vph)	93	424	13	4	237	26	32	6	14	156	5	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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												
Frt		0.995			0.985			0.964			0.954	
Flt Protected	0.950			0.950				0.970			0.969	
Satd. Flow (prot)	1825	3464	0	1825	3451	0	0	1749	0	0	1758	0
Flt Permitted	0.950			0.950				0.970			0.969	
Satd. Flow (perm)	1825	3464	0	1825	3451	0	0	1749	0	0	1758	0
Link Speed (k/h)		60			60			40			60	
Link Distance (m)		116.8			228.4			249.8			405.8	
Travel Time (s)		7.0			13.7			22.5			24.3	
Confl. Peds. (#/hr)	1					1	1		2	2		1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	5%	0%	0%	3%	15%	0%	0%	10%	0%	0%	3%
Adj. Flow (vph)	113	517	16	5	289	32	39	7	17	190	6	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	113	533	0	5	321	0	0	63	0	0	296	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)		3.7			3.7			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	42.4%		ICU Level of Service A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	424	13	4	237	26	32	6	14	156	5	82
Future Volume (Veh/h)	93	424	13	4	237	26	32	6	14	156	5	82
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	113	517	16	5	289	32	39	7	17	190	6	100
Pedestrians		1			2						1	
Lane Width (m)		3.7			3.7						3.7	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	322			533			1010	1083	269	823	1075	163
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	322			533			1010	1083	269	823	1075	163
tC, single (s)	4.1			4.1			7.5	6.5	7.1	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	91			100			75	96	98	20	97	88
cM capacity (veh/h)	1248			1045			157	198	705	236	200	849

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	113	345	188	5	193	128	63	296
Volume Left	113	0	0	5	0	0	39	190
Volume Right	0	0	16	0	0	32	17	100
cSH	1248	1700	1700	1045	1700	1700	205	311
Volume to Capacity	0.09	0.20	0.11	0.00	0.11	0.08	0.31	0.95
Queue Length 95th (m)	2.4	0.0	0.0	0.1	0.0	0.0	9.9	77.1
Control Delay (s/veh)	8.2	0.0	0.0	8.5	0.0	0.0	30.2	77.0
Lane LOS	A			A			D	F
Approach Delay (s/veh)	1.4			0.1			30.2	77.0
Approach LOS							D	F

Intersection Summary				
Average Delay	19.3			
Intersection Capacity Utilization	42.4%	ICU Level of Service	A	
Analysis Period (min)	15			

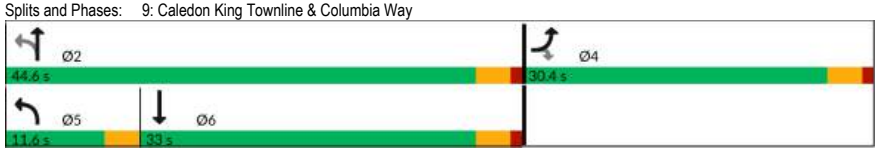
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	627	135	125	562	23
Future Volume (vph)	39	627	135	125	562	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.995	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1659	1601	1659	1830	1893	0
Flt Permitted	0.950		0.155			
Satd. Flow (perm)	1659	1601	271	1830	1893	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		359			3	
Link Speed (k/h)	60			80	80	
Link Distance (m)	190.9			1113.3	133.7	
Travel Time (s)	11.5			50.1	6.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	10%	2%	10%	5%	1%	0%
Adj. Flow (vph)	41	667	144	133	598	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	667	144	133	622	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	10.0	10.0	7.0	20.0	18.0	
Minimum Split (s)	22.0	22.0	10.0	24.0	22.0	
Total Split (s)	30.4	30.4	11.6	44.6	33.0	
Total Split (%)	40.5%	40.5%	15.5%	59.5%	44.0%	
Maximum Green (s)	26.4	26.4	8.6	40.6	29.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0	0.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Don't Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	20.4	20.4	36.1	35.1	26.6	
Actuated g/C Ratio	0.32	0.32	0.56	0.55	0.42	
v/c Ratio	0.08	0.88	0.42	0.13	0.79	
Control Delay (s/veh)	16.7	25.5	11.7	8.5	28.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	16.7	25.5	11.7	8.5	28.3	
LOS	B	C	B	A	C	
Approach Delay (s/veh)	25.0			10.1	28.3	
Approach LOS	C			B	C	
Queue Length 50th (m)	4.0	41.9	8.9	8.4	77.6	
Queue Length 95th (m)	10.4	#109.3	18.2	17.3	#141.9	
Internal Link Dist (m)	166.9			1089.3	109.7	
Turn Bay Length (m)						
Base Capacity (vph)	732	907	352	1218	920	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.06	0.74	0.41	0.11	0.68	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 64			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay (s/veh): 23.7		Intersection LOS: C	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 9: Caledon King Townline & Columbia Way

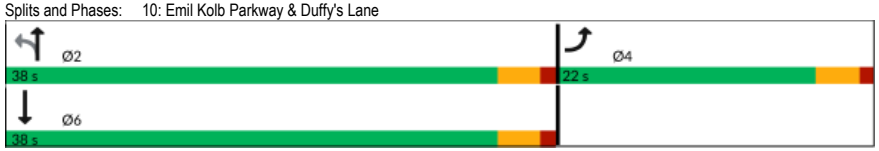


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	83	120	47	432	1057	32
Future Volume (vph)	83	120	47	432	1057	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	115.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt	0.920				0.996	
Flt Protected	0.980		0.950			
Satd. Flow (prot)	1702	0	1534	3042	3533	0
Flt Permitted	0.980		0.188			
Satd. Flow (perm)	1702	0	304	3042	3533	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	69				8	
Link Speed (k/h)	50			70	50	
Link Distance (m)	426.7			2029.6	656.7	
Travel Time (s)	30.7			104.4	47.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	19%	20%	3%	0%
Adj. Flow (vph)	92	133	52	480	1174	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	225	0	52	480	1210	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	
Detector Template	Left		Left	Thru	Thru	
Leading Detector (m)	2.0		2.0	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)	2.0		2.0	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	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases			2			
Detector Phase	4		2	2	6	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	
Minimum Split (s)	22.0		22.0	22.0	22.0	
Total Split (s)	22.0		38.0	38.0	38.0	
Total Split (%)	36.7%		63.3%	63.3%	63.3%	
Maximum Green (s)	18.0		34.0	34.0	34.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	None	None	
Walk Time (s)	7.0		7.0	7.0	7.0	
Flash Don't Walk (s)	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	12.6		23.1	23.1	23.1	
Actuated g/C Ratio	0.34		0.62	0.62	0.62	
v/c Ratio	0.36		0.28	0.25	0.55	
Control Delay (s/veh)	11.6		10.6	5.5	7.4	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay (s/veh)	11.6		10.6	5.5	7.4	
LOS	B		B	A	A	
Approach Delay (s/veh)	11.6			6.0	7.4	
Approach LOS	B			A	A	
Queue Length 50th (m)	8.1		1.7	8.0	25.6	
Queue Length 95th (m)	28.5		9.3	18.3	53.3	
Internal Link Dist (m)	402.7			2005.6	632.7	
Turn Bay Length (m)			115.0			
Base Capacity (vph)	971		263	2633	3059	
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	0.23		0.20	0.18	0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 37.1			
Natural Cycle: 55			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay (s/veh): 7.5		Intersection LOS: A	
Intersection Capacity Utilization 57.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 10: Emil Kolb Parkway & Duffy's Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	20	62	62	7	0	22	11	22	0	31	0
Future Volume (vph)	0	20	62	62	7	0	22	11	22	0	31	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.898						0.946				
Flt Protected					0.957			0.980				
Satd. Flow (prot)	0	1691	0	0	1802	0	0	1746	0	0	1883	0
Flt Permitted					0.957			0.980				
Satd. Flow (perm)	0	1691	0	0	1802	0	0	1746	0	0	1883	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		148.8			786.6			426.7			131.0	
Travel Time (s)		10.7			56.6			30.7			9.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	20	62	62	7	0	22	11	22	0	31	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	82	0	0	69	0	0	55	0	0	31	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
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 26.9%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	20	62	62	7	0	22	11	22	0	31	0
Future Volume (Veh/h)	0	20	62	62	7	0	22	11	22	0	31	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	0	20	62	62	7	0	22	11	22	0	31	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	101	108	31	169	97	22	31			33		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	101	108	31	169	97	22	31			33		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	97	94	91	99	100	99			100		
cM capacity (veh/h)	865	771	1043	725	782	1055	1582			1579		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	82	69	55	31
Volume Left	0	62	22	0
Volume Right	62	0	22	0
cSH	961	730	1582	1579
Volume to Capacity	0.09	0.09	0.01	0.00
Queue Length 95th (m)	2.2	2.5	0.3	0.0
Control Delay (s/veh)	9.1	10.4	3.0	0.0
Lane LOS	A	B	A	
Approach Delay (s/veh)	9.1	10.4	3.0	0.0
Approach LOS	A	B		

Intersection Summary					
Average Delay			6.9		
Intersection Capacity Utilization			26.9%	ICU Level of Service	A
Analysis Period (min)			15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	76	438	989	21	50	99
Future Volume (vph)	76	438	989	21	50	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.997		0.910	
Flt Protected	0.950				0.983	
Satd. Flow (prot)	1789	3579	3568	0	1685	0
Flt Permitted	0.950				0.983	
Satd. Flow (perm)	1789	3579	3568	0	1685	0
Link Speed (k/h)		70	50		50	
Link Distance (m)		656.7	298.1		132.1	
Travel Time (s)		33.8	21.5		9.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	76	438	989	21	50	99
Shared Lane Traffic (%)						
Lane Group Flow (vph)	76	438	1010	0	149	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	51.1%		ICU Level of Service	A
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	76	438	989	21	50	99
Future Volume (Veh/h)	76	438	989	21	50	99
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	76	438	989	21	50	99
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1010				1371	505
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1010				1371	505
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	89				59	81
cM capacity (veh/h)	682				122	512

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	76	219	219	659	351	149
Volume Left	76	0	0	0	0	50
Volume Right	0	0	0	0	21	99
cSH	682	1700	1700	1700	1700	247
Volume to Capacity	0.11	0.13	0.13	0.39	0.21	0.60
Queue Length 95th (m)	3.0	0.0	0.0	0.0	0.0	28.3
Control Delay (s/veh)	10.9	0.0	0.0	0.0	0.0	39.5
Lane LOS	B					E
Approach Delay (s/veh)	1.6			0.0		39.5
Approach LOS						E

Intersection Summary				
Average Delay		4.0		
Intersection Capacity Utilization		51.1%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	487	907	26	0	104
Future Volume (vph)	0	487	907	26	0	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0			0.0	0.0	0.0
Storage Lanes	0			0	0	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.996		0.850	
Flt Protected						
Satd. Flow (prot)	0	3579	3564	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	3579	3564	0	0	0
Link Speed (k/h)		70	50		50	
Link Distance (m)		298.1	352.6		122.8	
Travel Time (s)		15.3	25.4		8.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	487	907	26	0	104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	487	933	0	104	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	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	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	487	907	26	0	104
Future Volume (Veh/h)	0	487	907	26	0	104
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	487	907	26	0	104
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	933				1164	467
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	933				1164	467
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	81
cM capacity (veh/h)	729				188	543

Direction, Lane #	EB 1	EB 2	WB 1	WB 2
Volume Total	244	244	605	328
Volume Left	0	0	0	0
Volume Right	0	0	0	26
cSH	1700	1700	1700	1700
Volume to Capacity	0.14	0.14	0.36	0.19
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s/veh)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s/veh)	0.0		0.0	
Approach LOS				

Intersection Summary				
Average Delay			Err	
Intersection Capacity Utilization			Err%	ICU Level of Service H
Analysis Period (min)			15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	0	165	151	0	38	44	530	52	13	894	36
Future Volume (vph)	128	0	165	151	0	38	44	530	52	13	894	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	50.0		0.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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	0.95
Frt		0.850			0.850			0.987			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1601	0	1789	1601	0	1789	3532	0	1789	3557	0
Flt Permitted	0.732			0.653			0.267			0.433		
Satd. Flow (perm)	1379	1601	0	1230	1601	0	503	3532	0	816	3557	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		92			259			28			11	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		531.2			178.5			146.2			128.1	
Travel Time (s)		38.2			12.9			8.8			7.7	
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
Adj. Flow (vph)	128	0	165	151	0	38	44	530	52	13	894	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	165	0	151	38	0	44	582	0	13	930	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)		3.7			3.7			3.7			3.7	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		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		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	22.0	22.0		22.0	22.0		28.0	28.0		28.0	28.0	
Total Split (%)	44.0%	44.0%		44.0%	44.0%		56.0%	56.0%		56.0%	56.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Don't Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	14.7	14.7		14.7	14.7		17.8	17.8		17.8	17.8	
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.56	0.56		0.56	0.56	
v/c Ratio	0.20	0.21		0.27	0.04		0.16	0.29		0.03	0.47	
Control Delay (s/veh)	11.0	6.2		11.9	0.1		8.1	6.2		6.1	7.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	11.0	6.2		11.9	0.1		8.1	6.2		6.1	7.6	
LOS	B	A		B	A		A	A		A	A	
Approach Delay (s/veh)		8.3			9.5			6.4			7.6	
Approach LOS		A			A			A			A	
Queue Length 50th (m)	5.0	2.7		6.0	0.0		1.3	9.2		0.4	17.3	
Queue Length 95th (m)	17.9	14.4		21.4	0.0		6.7	22.0		2.5	39.1	
Internal Link Dist (m)		507.2			154.5			122.2			104.1	
Turn Bay Length (m)	25.0			50.0			20.0			20.0		
Base Capacity (vph)	838	1009		747	1075		374	2634		607	2648	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.15	0.16		0.20	0.04		0.12	0.22		0.02	0.35	

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 31.9			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay (s/veh): 7.5		Intersection LOS: A	
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: Highway 50 & Street A



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	119	688	28	41	991
Future Volume (vph)	0	119	688	28	41	991
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0		0.0	40.0	
Storage Lanes	0	1		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.865	0.994			
Flt Protected					0.950	
Satd. Flow (prot)	0	1629	3557	0	1789	1883
Flt Permitted					0.950	
Satd. Flow (perm)	0	1629	3557	0	1789	1883
Link Speed (k/h)	50		60			60
Link Distance (m)	264.3		467.7			284.2
Travel Time (s)	19.0		28.1			17.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	119	688	28	41	991
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	119	716	0	41	991
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		3.7			3.7
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	0.99	0.99
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	119	688	28	41	991
Future Volume (Veh/h)	0	119	688	28	41	991
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	119	688	28	41	991
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1775	358			716	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1775	358			716	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	81			95	
cM capacity (veh/h)	70	638			880	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	119	459	257	41	991
Volume Left	0	0	0	41	0
Volume Right	119	0	28	0	0
cSH	638	1700	1700	880	1700
Volume to Capacity	0.19	0.27	0.15	0.05	0.58
Queue Length 95th (m)	5.4	0.0	0.0	1.2	0.0
Control Delay (s/veh)	11.9	0.0	0.0	9.3	0.0
Lane LOS	B			A	
Approach Delay (s/veh)	11.9	0.0		0.4	
Approach LOS	B				

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization	55.5%	ICU Level of Service		B
Analysis Period (min)	15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	91	138	534	4	48	944
Future Volume (vph)	91	138	534	4	48	944
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	55.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.919		0.999			
Flt Protected	0.981				0.950	
Satd. Flow (prot)	1698	0	3575	0	1789	1883
Flt Permitted	0.981				0.950	
Satd. Flow (perm)	1698	0	3575	0	1789	1883
Link Speed (k/h)	50		60			60
Link Distance (m)	269.3		400.2			467.7
Travel Time (s)	19.4		24.0			28.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	91	138	534	4	48	944
Shared Lane Traffic (%)						
Lane Group Flow (vph)	229	0	538	0	48	944
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
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	0.99	0.99
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	91	138	534	4	48	944
Future Volume (Veh/h)	91	138	534	4	48	944
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)	91	138	534	4	48	944
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			400			
pX, platoon unblocked						
vC, conflicting volume	1576	269			538	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1576	269			538	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	5	81			95	
cM capacity (veh/h)	96	729			1026	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	229	356	182	48	944
Volume Left	91	0	0	48	0
Volume Right	138	0	4	0	0
cSH	201	1700	1700	1026	1700
Volume to Capacity	1.14	0.21	0.11	0.05	0.56
Queue Length 95th (m)	89.5	0.0	0.0	1.2	0.0
Control Delay (s/veh)	155.4	0.0	0.0	8.7	0.0
Lane LOS	F			A	
Approach Delay (s/veh)	155.4	0.0		0.4	
Approach LOS	F				

Intersection Summary					
Average Delay		20.5			
Intersection Capacity Utilization		69.9%	ICU Level of Service		C
Analysis Period (min)		15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	13	0	35	5	0	66
Future Volume (vph)	13	0	35	5	0	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.983			
Flt Protected	0.950					
Satd. Flow (prot)	1789	0	1851	0	0	1883
Flt Permitted	0.950					
Satd. Flow (perm)	1789	0	1851	0	0	1883
Link Speed (k/h)	50		50			50
Link Distance (m)	354.8		405.8			130.9
Travel Time (s)	25.5		29.2			9.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	13	0	35	5	0	66
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	0	40	0	0	66
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	0	35	5	0	66
Future Volume (Veh/h)	13	0	35	5	0	66
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)	13	0	35	5	0	66
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	104	38			40	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	104	38			40	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	895	1035			1570	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	13	40	66
Volume Left	13	0	0
Volume Right	0	5	0
cSH	895	1700	1570
Volume to Capacity	0.01	0.02	0.00
Queue Length 95th (m)	0.4	0.0	0.0
Control Delay (s/veh)	9.1	0.0	0.0
Lane LOS	A		
Approach Delay (s/veh)	9.1	0.0	0.0
Approach LOS	A		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		13.5%	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)	15	577	3	4	152	3	70	0	83	7	0	44
Future Volume (vph)	15	577	3	4	152	3	70	0	83	7	0	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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
Frt		0.999			0.997			0.927			0.884	
Flt Protected	0.950			0.950				0.978			0.993	
Satd. Flow (prot)	1789	3575	0	1789	3568	0	0	1708	0	0	1653	0
Flt Permitted	0.950			0.950				0.978			0.993	
Satd. Flow (perm)	1789	3575	0	1789	3568	0	0	1708	0	0	1653	0
Link Speed (k/h)		50			60			50			50	
Link Distance (m)		228.4			304.5			187.8			197.0	
Travel Time (s)		16.4			18.3			13.5			14.2	
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
Adj. Flow (vph)	15	577	3	4	152	3	70	0	83	7	0	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	580	0	4	155	0	0	153	0	0	51	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)		3.7			3.7			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	577	3	4	152	3	70	0	83	7	0	44
Future Volume (Veh/h)	15	577	3	4	152	3	70	0	83	7	0	44
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	15	577	3	4	152	3	70	0	83	7	0	44
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	155			580			737	772	290	563	772	78
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	155			580			737	772	290	563	772	78
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			76	100	88	98	100	95
cM capacity (veh/h)	1423			990			290	324	707	357	324	968

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	15	385	195	4	101	54	153	51
Volume Left	15	0	0	4	0	0	70	7
Volume Right	0	0	3	0	0	3	83	44
cSH	1423	1700	1700	990	1700	1700	426	784
Volume to Capacity	0.01	0.23	0.11	0.00	0.06	0.03	0.36	0.07
Queue Length 95th (m)	0.3	0.0	0.0	0.1	0.0	0.0	12.8	1.7
Control Delay (s/veh)	7.6	0.0	0.0	8.7	0.0	0.0	18.1	9.9
Lane LOS	A			A			C	A
Approach Delay (s/veh)	0.2			0.2			18.1	9.9
Approach LOS							C	A

Intersection Summary				
Average Delay	3.6			
Intersection Capacity Utilization	38.3%	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)	0	0	3	237	0	226	0	917	318	248	489	3
Future Volume (vph)	0	0	3	237	0	226	0	917	318	248	489	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	140.0		30.0	125.0		30.0
Storage Lanes	0		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.865			0.850			0.961				0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1662	0	1750	1555	0	1879	3456	0	1785	1883	795
Flt Permitted				0.870						0.120		
Satd. Flow (perm)	0	1662	0	1603	1555	0	1879	3456	0	225	1883	795
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		344			328			57				48
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		127.3			237.9			633.3			400.2	
Travel Time (s)		9.2			21.4			38.0			24.0	
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
Heavy Vehicles (%)	100%	0%	0%	2%	0%	5%	0%	2%	0%	0%	2%	100%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	0	0	3	247	0	235	0	955	331	258	509	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	247	235	0	0	1286	0	258	509	3
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												
Headway Factor	0.99	0.99	0.99	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left						Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	12.0		8.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	-3.0		-2.0	-2.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	-3.0		-2.0	-2.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	15.0		10.0	10.0		2.0	0.6		2.0	0.6	2.0
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												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA		pm+pt	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		3	8		2	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		6.5	10.0		20.0	20.0		6.5	20.0	20.0
Minimum Split (s)	23.0	23.0		11.0	23.0		28.0	28.0		11.0	28.0	28.0
Total Split (s)	23.0	23.0		18.0	41.0		34.0	34.0		15.0	49.0	49.0
Total Split (%)	25.6%	25.6%		20.0%	45.6%		37.8%	37.8%		16.7%	54.4%	54.4%
Maximum Green (s)	19.0	19.0		15.0	37.0		30.0	30.0		12.0	45.0	45.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		0.0	1.0		1.0	1.0		0.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.0		3.0	4.0		4.0	4.0		3.0	4.0	4.0
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)	8.0	8.0			8.0		8.0	8.0			8.0	8.0
Flash Don't Walk (s)	11.0	11.0			11.0		16.0	16.0			16.0	16.0
Pedestrian Calls (#/hr)	0	0			0		0	0			0	0
Act Effct Green (s)		10.1		15.7	14.7			30.4		44.6	43.6	43.6
Actuated g/C Ratio		0.15		0.24	0.22			0.46		0.67	0.66	0.66
v/c Ratio		0.01		0.61	0.39			0.80		0.66	0.41	0.01
Control Delay (s/veh)		0.0		29.0	2.5			21.5		20.3	7.8	0.0
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay (s/veh)		0.0		29.0	2.5			21.5		20.3	7.8	0.0
LOS		A		C	A			C		C	A	A
Approach Delay (s/veh)					16.1			21.5			11.9	
Approach LOS					B			C			B	
Queue Length 50th (m)		0.0		28.5	0.0			64.8		12.3	23.3	0.0
Queue Length 95th (m)		0.0		49.1	3.8			#151.2		#55.7	71.1	0.0
Internal Link Dist (m)		103.3			213.9			609.3			376.2	
Turn Bay Length (m)										125.0		30.0
Base Capacity (vph)		726		456	1020			1612		436	1292	560
Starvation Cap Reductn		0		0	0			0		0	0	0
Spillback Cap Reductn		0		0	0			0		0	0	0
Storage Cap Reductn		0		0	0			0		0	0	0
Reduced v/c Ratio		0.00		0.54	0.23			0.80		0.59	0.39	0.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 66.4			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay (s/veh): 17.6		Intersection LOS: B	
Intersection Capacity Utilization 79.0%		ICU Level of Service D	

Analysis Period (min) 15

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

Splits and Phases: 3: Highway 50 & Columbia Way



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	8	13	42	10	19	86	1244	100	30	633	22
Future Volume (vph)	9	8	13	42	10	19	86	1244	100	30	633	22
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	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	30.0		0.0	85.0		0.0	90.0		75.0	65.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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		0.870			0.902				0.850		0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	1671	0	1785	1733	0	1785	3614	1559	1785	3563	0
Flt Permitted	0.738			0.718			0.402			0.198		
Satd. Flow (perm)	1387	1671	0	1349	1733	0	755	3614	1522	372	3563	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			19				400		4	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		112.1			201.9			771.8			633.3	
Travel Time (s)		10.1			18.2			46.3			38.0	
Confl. Peds. (#/hr)									2			
Confl. Bikes (#/hr)					2							
Peak Hour Factor	1.00	1.00	0.25	1.00	1.00	1.00	1.00	1.00	0.25	0.25	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	2%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	9	8	52	42	10	19	86	1244	400	120	633	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	60	0	42	29	0	86	1244	400	120	655	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												
Headway Factor	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02	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	
Detector Template							Left	Thru	Right	Left	Thru	
Leading Detector (m)	12.0	12.0		12.0	12.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	15.0	15.0		15.0	15.0		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	

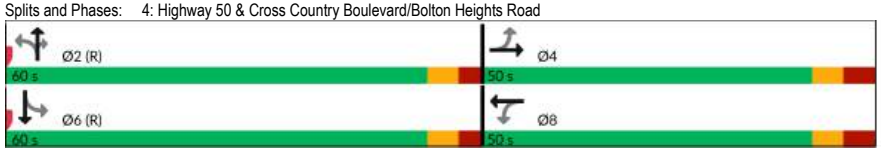
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	47.1	47.1		47.1	47.1		34.7	34.7	34.7	34.7	34.7	
Total Split (s)	50.0	50.0		50.0	50.0		60.0	60.0	60.0	60.0	60.0	
Total Split (%)	45.5%	45.5%		45.5%	45.5%		54.5%	54.5%	54.5%	54.5%	54.5%	
Maximum Green (s)	41.9	41.9		41.9	41.9		53.3	53.3	53.3	53.3	53.3	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	4.1	4.1		4.1	4.1		2.7	2.7	2.7	2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	8.1	8.1		8.1	8.1		6.7	6.7	6.7	6.7	6.7	
Lead/Lag												
Lead-Lag Optimize?												
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		C-Max	C-Max	C-Max	C-Max	C-Max	
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Flash Don't Walk (s)	29.0	29.0		29.0	29.0		18.0	18.0	18.0	18.0	18.0	
Pedestrian Calls (#/hr)	4	4		4	4		2	2	2	2	2	
Act Effct Green (s)	15.9	15.9		15.9	15.9		84.2	84.2	84.2	84.2	84.2	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.77	0.77	0.77	0.77	0.77	
v/c Ratio	0.05	0.21		0.22	0.11		0.15	0.45	0.32	0.42	0.24	
Control Delay (s/veh)	34.1	12.8		40.1	18.9		8.4	8.6	1.9	16.7	6.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	34.1	12.8		40.1	18.9		8.4	8.6	1.9	16.7	6.7	
LOS	C	B		D	B		A	A	A	B	A	
Approach Delay (s/veh)		15.5			31.4			7.0			8.2	
Approach LOS		B			C			A			A	
Queue Length 50th (m)	1.9	1.7		9.1	2.1		4.1	41.8	0.0	7.4	17.5	
Queue Length 95th (m)	4.9	10.2		14.4	7.9		20.9	130.6	0.0	7.0	57.9	
Internal Link Dist (m)		88.1			177.9			747.8			609.3	
Turn Bay Length (m)	30.0			85.0			90.0		75.0	65.0		
Base Capacity (vph)	528	668		513	671		578	2767	1259	285	2729	
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	0.02	0.09		0.08	0.04		0.15	0.45	0.32	0.42	0.24	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 96 (87%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.45
Intersection Signal Delay (s/veh): 8.3 Intersection LOS: A
Intersection Capacity Utilization 69.6% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 4: Highway 50 & Cross Country Boulevard/Bolton Heights Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	272	106	237	304	48	89	1284	466	37	679	25
Future Volume (vph)	63	272	106	237	304	48	89	1284	466	37	679	25
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	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	30.0		35.0	30.0		0.0	55.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Ped Bike Factor	0.99		0.96	0.99	0.99				0.96		1.00	
Frt			0.850		0.980				0.850		0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1575	1712	1409	1591	1668	0	1579	1695	1432	1643	1694	0
Flt Permitted	0.353			0.211			0.181			0.051		
Satd. Flow (perm)	578	1712	1356	351	1668	0	301	1695	1369	88	1694	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95		5				202		2	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		535.7			353.4			517.9			32.8	
Travel Time (s)		48.2			31.8			31.1			2.0	
Confl. Peds. (#/hr)	11		6	6		11	10		8	8		10
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%	1%	2%	1%	1%	0%	4%	2%	0%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	1	0
Adj. Flow (vph)	65	280	109	244	313	49	92	1324	480	38	700	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	280	109	244	362	0	92	1324	480	38	726	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			3.7			3.7	
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												
Headway Factor	1.16	1.13	1.16	1.16	1.13	1.13	1.13	1.13	1.17	1.13	1.13	1.16
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	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	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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Detector Phase	3	8	8	7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	8.0	31.9	31.9	8.0	31.9		8.0	32.0	32.0	8.0	32.0	
Total Split (s)	20.1	31.9	31.9	24.1	35.9		8.0	86.0	86.0	8.0	86.0	
Total Split (%)	13.4%	21.3%	21.3%	16.1%	23.9%		5.3%	57.3%	57.3%	5.3%	57.3%	
Maximum Green (s)	17.1	25.0	25.0	21.1	29.0		5.0	79.0	79.0	5.0	79.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.9	2.9	0.0	2.9		0.0	3.0	3.0	0.0	3.0	
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	6.9	6.9	3.0	6.9		3.0	7.0	7.0	3.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	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	None	None	None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)		10.0	10.0		10.0			10.0	10.0		10.0	
Flash Don't Walk (s)		15.0	15.0		15.0			15.0	15.0		15.0	
Pedestrian Calls (#/hr)		4	4		4			8	8		8	
Act Effct Green (s)	39.4	25.8	25.8	53.0	38.3		88.6	80.6	80.6	88.0	79.0	
Actuated g/C Ratio	0.26	0.17	0.17	0.35	0.26		0.59	0.54	0.54	0.59	0.53	
v/c Ratio	0.30	0.95	0.35	0.84	0.84		0.42	1.45	0.58	0.37	0.81	
Control Delay (s/veh)	37.3	102.0	16.6	62.3	71.2		18.6	240.0	16.1	22.0	38.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	37.3	102.0	16.6	62.3	71.2		18.6	240.0	16.1	22.0	38.3	
LOS	D	F	B	E	E		B	F	B	C	D	
Approach Delay (s/veh)		72.2			67.6			172.5			37.5	
Approach LOS		E			E			F			D	
Queue Length 50th (m)	13.7	88.5	3.8	58.3	108.9		11.5	~569.7	57.8	4.6	183.1	
Queue Length 95th (m)	25.6	#150.2	22.5	#94.4	#180.7		19.8	#654.7	94.3	9.8	245.2	
Internal Link Dist (m)		511.7			329.4			493.9			8.8	
Turn Bay Length (m)	30.0		35.0	30.0			55.0			20.0		
Base Capacity (vph)	293	295	312	298	429		220	910	828	103	893	
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	0.22	0.95	0.35	0.82	0.84		0.42	1.45	0.58	0.37	0.81	

Intersection Summary	
Area Type:	CBD
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	

Maximum v/c Ratio: 1.45	
Intersection Signal Delay (s/veh): 115.5	Intersection LOS: F
Intersection Capacity Utilization 128.5%	ICU Level of Service H
Analysis Period (min) 15	

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

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

Splits and Phases: 5: Highway 50 & King Street West/King Street East

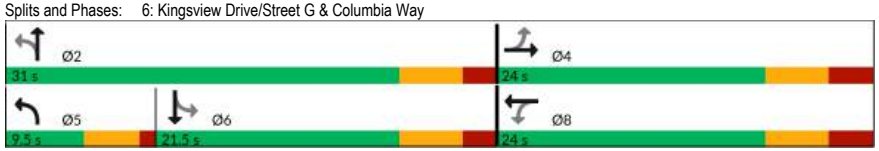


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	357	70	62	330	60	24	8	37	34	5	98
Future Volume (vph)	144	357	70	62	330	60	24	8	37	34	5	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00				
Frt		0.982			0.943			0.889			0.903	
Flt Protected		0.988			0.995			0.993			0.988	
Satd. Flow (prot)	0	3524	0	0	3364	0	0	1683	0	0	1680	0
Flt Permitted		0.698			0.830			0.927			0.859	
Satd. Flow (perm)	0	2489	0	0	2806	0	0	1571	0	0	1461	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			240			148			98	
Link Speed (k/h)		40			40			40			50	
Link Distance (m)		237.9			417.0			131.8			93.0	
Travel Time (s)		21.4			37.5			11.9			6.7	
Confl. Peds. (#/hr)							5					
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	0.25	1.00	1.00	0.25	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	0%	2%	2%	5%	2%	0%	2%	2%	2%
Adj. Flow (vph)	144	357	70	62	330	240	24	8	148	34	5	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	571	0	0	632	0	0	180	0	0	137	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		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	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	8.0		8.0	8.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		9.5	21.0		21.0	21.0	
Total Split (s)	24.0	24.0		24.0	24.0		9.5	31.0		21.5	21.5	
Total Split (%)	43.6%	43.6%		43.6%	43.6%		17.3%	56.4%		39.1%	39.1%	
Maximum Green (s)	17.1	17.1		17.1	17.1		5.0	25.0		15.5	15.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	2.9	2.9		2.9	2.9		1.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.9			6.9			6.0			6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0			8.0		8.0	8.0	
Flash Don't Walk (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		3	3	
Act Effct Green (s)		16.6			16.6			10.2			10.2	
Actuated g/C Ratio		0.51			0.51			0.31			0.31	
v/c Ratio		0.45			0.41			0.30			0.26	
Control Delay (s/veh)		9.5			6.1			5.4			6.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay (s/veh)		9.5			6.1			5.4			6.4	
LOS		A			A			A			A	
Approach Delay (s/veh)		9.5			6.1			5.4			6.4	
Approach LOS		A			A			A			A	
Queue Length 50th (m)		12.1			7.9			1.5			1.8	
Queue Length 95th (m)		30.5			22.6			11.6			11.0	
Internal Link Dist (m)		213.9			393.0			107.8			69.0	
Turn Bay Length (m)												
Base Capacity (vph)		1444			1716			1213			834	
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			0.37			0.15			0.16	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 32.6			
Natural Cycle: 55			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay (s/veh): 7.3		Intersection LOS: A	
Intersection Capacity Utilization 55.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Kingsview Drive/Street G & Columbia Way



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	251	94	42	302	40	23
Future Volume (vph)	251	94	42	302	40	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.959				0.950	
Flt Protected				0.994	0.969	
Satd. Flow (prot)	3381	0	0	3566	1743	0
Flt Permitted				0.994	0.969	
Satd. Flow (perm)	3381	0	0	3566	1743	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	500.8			180.3	104.8	
Travel Time (s)	30.0			10.8	9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	0%	2%	0%	4%
Adj. Flow (vph)	273	102	46	328	43	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	375	0	0	374	68	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	251	94	42	302	40	23
Future Volume (Veh/h)	251	94	42	302	40	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	273	102	46	328	43	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			375		580	188
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			375		580	188
tC, single (s)			4.1		6.8	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		90	97
cM capacity (veh/h)			1195		433	816

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	182	193	155	219	68
Volume Left	0	0	46	0	43
Volume Right	0	102	0	0	25
cSH	1700	1700	1195	1700	523
Volume to Capacity	0.11	0.11	0.04	0.13	0.13
Queue Length 95th (m)	0.0	0.0	1.0	0.0	3.6
Control Delay (s/veh)	0.0	0.0	2.6	0.0	12.9
Lane LOS			A		B
Approach Delay (s/veh)	0.0		1.1		12.9
Approach LOS					B

Intersection Summary				
Average Delay		1.6		
Intersection Capacity Utilization		33.1%	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)	57	278	34	20	480	148	18	6	10	45	9	47
Future Volume (vph)	57	278	34	20	480	148	18	6	10	45	9	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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
Frt		0.984			0.965			0.959			0.937	
Flt Protected	0.950			0.950				0.974			0.978	
Satd. Flow (prot)	1706	3469	0	1460	3469	0	0	1794	0	0	1714	0
Flt Permitted	0.950			0.950				0.974			0.978	
Satd. Flow (perm)	1706	3469	0	1460	3469	0	0	1794	0	0	1714	0
Link Speed (k/h)		60			60			40			60	
Link Distance (m)		116.8			228.4			249.8			405.8	
Travel Time (s)		7.0			13.7			22.5			24.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	3%	8%	25%	2%	0%	0%	0%	0%	6%	0%	0%
Adj. Flow (vph)	60	293	36	21	505	156	19	6	11	47	9	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	60	329	0	21	661	0	0	36	0	0	105	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)		3.7			3.7			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.2%	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)	57	278	34	20	480	148	18	6	10	45	9	47
Future Volume (Veh/h)	57	278	34	20	480	148	18	6	10	45	9	47
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	60	293	36	21	505	156	19	6	11	47	9	49
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	661			329			779	1134	165	906	1074	331
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	661			329			779	1134	165	906	1074	331
tC, single (s)	4.2			4.6			7.5	6.5	6.9	7.6	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.3			2.4			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	93			98			92	97	99	77	96	93
cM capacity (veh/h)	890			1077			242	187	857	203	203	671

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	60	195	134	21	337	324	36	105
Volume Left	60	0	0	21	0	0	19	47
Volume Right	0	0	36	0	0	156	11	49
cSH	890	1700	1700	1077	1700	1700	292	301
Volume to Capacity	0.07	0.11	0.08	0.02	0.20	0.19	0.12	0.35
Queue Length 95th (m)	1.7	0.0	0.0	0.5	0.0	0.0	3.3	12.1
Control Delay (s/veh)	9.3	0.0	0.0	8.4	0.0	0.0	19.1	23.3
Lane LOS	A			A			C	C
Approach Delay (s/veh)	1.4			0.3			19.1	23.3
Approach LOS							C	C

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	38.2%	ICU Level of Service		A
Analysis Period (min)	15			

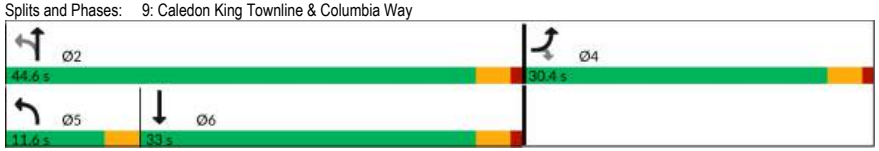
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	87	162	309	522	226	362
Future Volume (vph)	87	162	309	522	226	362
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.917	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1825	1617	1807	1902	1748	0
Flt Permitted	0.950		0.211			
Satd. Flow (perm)	1825	1617	401	1902	1748	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		167			125	
Link Speed (k/h)	60			80	80	
Link Distance (m)	190.9			1113.3	133.7	
Travel Time (s)	11.5			50.1	6.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	1%	1%	2%	0%
Adj. Flow (vph)	90	167	319	538	233	373
Shared Lane Traffic (%)						
Lane Group Flow (vph)	90	167	319	538	606	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	10.0	10.0	7.0	20.0	18.0	
Minimum Split (s)	22.0	22.0	10.0	24.0	22.0	
Total Split (s)	30.4	30.4	11.6	44.6	33.0	
Total Split (%)	40.5%	40.5%	15.5%	59.5%	44.0%	
Maximum Green (s)	26.4	26.4	8.6	40.6	29.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0	0.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Don't Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	10.5	10.5	35.1	35.2	22.0	
Actuated g/C Ratio	0.22	0.22	0.72	0.72	0.45	
v/c Ratio	0.23	0.35	0.59	0.39	0.71	
Control Delay (s/veh)	20.8	6.8	9.6	5.0	14.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	20.8	6.8	9.6	5.0	14.6	
LOS	C	A	A	A	B	
Approach Delay (s/veh)	11.7			6.7	14.6	
Approach LOS	B			A	B	
Queue Length 50th (m)	7.1	0.0	9.5	20.0	36.2	
Queue Length 95th (m)	20.1	13.6	#28.6	35.4	69.4	
Internal Link Dist (m)	166.9			1089.3	109.7	
Turn Bay Length (m)						
Base Capacity (vph)	1024	980	545	1562	1125	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.09	0.17	0.59	0.34	0.54	

Intersection Summary		
Area Type:	Other	
Cycle Length: 75		
Actuated Cycle Length: 48.8		
Natural Cycle: 60		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 0.71		
Intersection Signal Delay (s/veh): 10.2		Intersection LOS: B
Intersection Capacity Utilization 69.5%		ICU Level of Service C
Analysis Period (min) 15		

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

Splits and Phases: 9: Caledon King Townline & Columbia Way

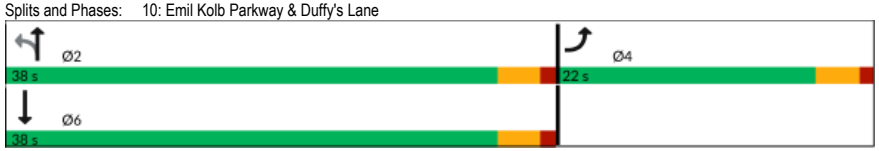


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	49	63	137	1081	542	71
Future Volume (vph)	49	63	137	1081	542	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	115.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt	0.924				0.983	
Flt Protected	0.979		0.950			
Satd. Flow (prot)	1704	0	1789	3544	3263	0
Flt Permitted	0.979		0.373			
Satd. Flow (perm)	1704	0	703	3544	3263	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	75				39	
Link Speed (k/h)	50			70	50	
Link Distance (m)	426.7			2029.6	656.7	
Travel Time (s)	30.7			104.4	47.3	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	2%	2%	2%	3%	11%	2%
Adj. Flow (vph)	58	75	163	1287	645	85
Shared Lane Traffic (%)						
Lane Group Flow (vph)	133	0	163	1287	730	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	
Detector Template	Left		Left	Thru	Thru	
Leading Detector (m)	2.0		2.0	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)	2.0		2.0	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	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases			2			
Detector Phase	4		2	2	6	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	
Minimum Split (s)	22.0		22.0	22.0	22.0	
Total Split (s)	22.0		38.0	38.0	38.0	
Total Split (%)	36.7%		63.3%	63.3%	63.3%	
Maximum Green (s)	18.0		34.0	34.0	34.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	None	None	
Walk Time (s)	7.0		7.0	7.0	7.0	
Flash Don't Walk (s)	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	14.4		23.5	23.5	23.5	
Actuated g/C Ratio	0.40		0.65	0.65	0.65	
v/c Ratio	0.18		0.36	0.56	0.34	
Control Delay (s/veh)	8.7		7.9	6.7	4.8	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay (s/veh)	8.7		7.9	6.7	4.8	
LOS	A		A	A	A	
Approach Delay (s/veh)	8.7			6.8	4.8	
Approach LOS	A			A	A	
Queue Length 50th (m)	3.1		5.7	28.3	12.3	
Queue Length 95th (m)	14.1		13.7	38.9	18.3	
Internal Link Dist (m)	402.7			2005.6	632.7	
Turn Bay Length (m)			115.0			
Base Capacity (vph)	969		604	3046	2810	
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	0.14		0.27	0.42	0.26	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 36.2			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay (s/veh): 6.3		Intersection LOS: A	
Intersection Capacity Utilization 44.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Emil Kolb Parkway & Duffy's Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	11	35	35	17	0	52	26	52	0	18	0
Future Volume (vph)	0	11	35	35	17	0	52	26	52	0	18	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.897						0.946				
Flt Protected					0.967			0.980				
Satd. Flow (prot)	0	1689	0	0	1821	0	0	1746	0	0	1883	0
Flt Permitted					0.967			0.980				
Satd. Flow (perm)	0	1689	0	0	1821	0	0	1746	0	0	1883	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		148.8			786.6			426.7			131.0	
Travel Time (s)		10.7			56.6			30.7			9.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	11	35	35	17	0	52	26	52	0	18	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	46	0	0	52	0	0	130	0	0	18	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
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	30.3%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	11	35	35	17	0	52	26	52	0	18	0
Future Volume (Veh/h)	0	11	35	35	17	0	52	26	52	0	18	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	0	11	35	35	17	0	52	26	52	0	18	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	183	200	18	215	174	52	18			78		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	183	200	18	215	174	52	18			78		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	98	97	95	98	100	97			100		
cM capacity (veh/h)	745	673	1061	691	696	1016	1599			1520		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	46	52	130	18
Volume Left	0	35	52	0
Volume Right	35	0	52	0
cSH	932	693	1599	1520
Volume to Capacity	0.05	0.08	0.03	0.00
Queue Length 95th (m)	1.2	1.9	0.8	0.0
Control Delay (s/veh)	9.1	10.6	3.1	0.0
Lane LOS	A	B	A	
Approach Delay (s/veh)	9.1	10.6	3.1	0.0
Approach LOS	A	B		

Intersection Summary				
Average Delay		5.6		
Intersection Capacity Utilization		30.3%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	260	868	613	102	15	0
Future Volume (vph)	260	868	613	102	15	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.979			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1789	3579	3503	0	1789	0
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1789	3579	3503	0	1789	0
Link Speed (k/h)		70	50		50	
Link Distance (m)		656.7	298.1		132.1	
Travel Time (s)		33.8	21.5		9.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	260	868	613	102	15	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	260	868	715	0	15	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	260	868	613	102	15	0
Future Volume (Veh/h)	260	868	613	102	15	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	260	868	613	102	15	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	715				1618	358
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	715				1618	358
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	70				77	100
cM capacity (veh/h)	881				66	639

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	260	434	434	409	306	15
Volume Left	260	0	0	0	0	15
Volume Right	0	0	0	0	102	0
cSH	881	1700	1700	1700	1700	66
Volume to Capacity	0.30	0.26	0.26	0.24	0.18	0.23
Queue Length 95th (m)	9.9	0.0	0.0	0.0	0.0	6.2
Control Delay (s/veh)	10.8	0.0	0.0	0.0	0.0	74.4
Lane LOS	B					F
Approach Delay (s/veh)	2.5			0.0		74.4
Approach LOS						F

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	47.9%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	882	625	74	0	91
Future Volume (vph)	0	882	625	74	0	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0			0.0	0.0	0.0
Storage Lanes	0			0	0	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.984		0.850	
Flt Protected						
Satd. Flow (prot)	0	3579	3521	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	3579	3521	0	0	0
Link Speed (k/h)		70	50		50	
Link Distance (m)		298.1	352.6		122.8	
Travel Time (s)		15.3	25.4		8.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	882	625	74	0	91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	882	699	0	91	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	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	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	882	625	74	0	91
Future Volume (Veh/h)	0	882	625	74	0	91
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	882	625	74	0	91
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	699				1103	350
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	699				1103	350
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	86
cM capacity (veh/h)	893				206	647

Direction, Lane #	EB 1	EB 2	WB 1	WB 2
Volume Total	441	441	417	282
Volume Left	0	0	0	0
Volume Right	0	0	0	74
cSH	1700	1700	1700	1700
Volume to Capacity	0.26	0.26	0.25	0.17
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s/veh)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s/veh)	0.0		0.0	
Approach LOS				

Intersection Summary				
Average Delay		Err		
Intersection Capacity Utilization		Err%	ICU Level of Service	H
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	0	74	85	0	22	145	1037	125	32	610	108
Future Volume (vph)	59	0	74	85	0	22	145	1037	125	32	610	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	50.0		0.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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	0.95
Frt		0.850			0.850			0.984			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1601	0	1789	1601	0	1789	3521	0	1789	3496	0
Flt Permitted	0.870			0.870			0.379			0.223		
Satd. Flow (perm)	1639	1601	0	1639	1601	0	714	3521	0	420	3496	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		207			61			36			55	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		531.2			178.5			146.2			128.1	
Travel Time (s)		38.2			12.9			8.8			7.7	
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
Adj. Flow (vph)	59	0	74	85	0	22	145	1037	125	32	610	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	74	0	85	22	0	145	1162	0	32	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)		3.7			3.7			3.7			3.7	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		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		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	22.0	22.0		22.0	22.0		28.0	28.0		28.0	28.0	
Total Split (%)	44.0%	44.0%		44.0%	44.0%		56.0%	56.0%		56.0%	56.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Don't Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	14.6	14.6		14.6	14.6		21.2	21.2		21.2	21.2	
Actuated g/C Ratio	0.50	0.50		0.50	0.50		0.72	0.72		0.72	0.72	
v/c Ratio	0.07	0.08		0.10	0.03		0.28	0.46		0.11	0.28	
Control Delay (s/veh)	11.4	0.2		11.5	1.4		6.9	5.3		5.8	4.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	11.4	0.2		11.5	1.4		6.9	5.3		5.8	4.1	
LOS	B	A		B	A		A	A		A	A	
Approach Delay (s/veh)		5.2			9.4			5.5			4.2	
Approach LOS		A			A			A			A	
Queue Length 50th (m)	2.8	0.0		4.0	0.0		4.8	23.2		0.9	11.5	
Queue Length 95th (m)	10.1	0.0		13.3	1.4		14.4	38.7		4.1	19.8	
Internal Link Dist (m)		507.2			154.5			122.2			104.1	
Turn Bay Length (m)	25.0			50.0			20.0			20.0		
Base Capacity (vph)	1106	1147		1106	1100		547	2707		322	2692	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.05	0.06		0.08	0.02		0.27	0.43		0.10	0.27	

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 29.4			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay (s/veh): 5.2		Intersection LOS: A	
Intersection Capacity Utilization 62.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 14: Highway 50 & Street A



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	67	1122	66	98	748
Future Volume (vph)	0	67	1122	66	98	748
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0		0.0	40.0	
Storage Lanes	0	1		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.865	0.992			
Flt Protected					0.950	
Satd. Flow (prot)	0	1629	3550	0	1789	1883
Flt Permitted					0.950	
Satd. Flow (perm)	0	1629	3550	0	1789	1883
Link Speed (k/h)	50		60			60
Link Distance (m)	264.3		467.7			284.2
Travel Time (s)	19.0		28.1			17.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	67	1122	66	98	748
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	67	1188	0	98	748
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		3.7			3.7
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	0.99	0.99
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	67	1122	66	98	748
Future Volume (Veh/h)	0	67	1122	66	98	748
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	67	1122	66	98	748
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	2099	594			1188	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2099	594			1188	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	85			83	
cM capacity (veh/h)	37	448			583	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	67	748	440	98	748
Volume Left	0	0	0	98	0
Volume Right	67	0	66	0	0
cSH	448	1700	1700	583	1700
Volume to Capacity	0.15	0.44	0.26	0.17	0.44
Queue Length 95th (m)	4.2	0.0	0.0	4.8	0.0
Control Delay (s/veh)	14.4	0.0	0.0	12.4	0.0
Lane LOS	B			B	
Approach Delay (s/veh)	14.4	0.0		1.4	
Approach LOS	B				

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		45.2%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	51	77	1085	10	114	634
Future Volume (vph)	51	77	1085	10	114	634
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	55.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.919		0.999			
Flt Protected	0.980				0.950	
Satd. Flow (prot)	1696	0	3575	0	1789	1883
Flt Permitted	0.980				0.950	
Satd. Flow (perm)	1696	0	3575	0	1789	1883
Link Speed (k/h)	50		60			60
Link Distance (m)	269.3		400.2			467.7
Travel Time (s)	19.4		24.0			28.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	51	77	1085	10	114	634
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	0	1095	0	114	634
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
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	0.99	0.99
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	51	77	1085	10	114	634
Future Volume (Veh/h)	51	77	1085	10	114	634
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)	51	77	1085	10	114	634
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			400			
pX, platoon unblocked	0.83	0.83			0.83	
vC, conflicting volume	1952	548			1095	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1730	28			691	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	8	91			85	
cM capacity (veh/h)	55	859			742	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	128	723	372	114	634
Volume Left	51	0	0	114	0
Volume Right	77	0	10	0	0
cSH	127	1700	1700	742	1700
Volume to Capacity	1.01	0.43	0.22	0.15	0.37
Queue Length 95th (m)	56.1	0.0	0.0	4.3	0.0
Control Delay (s/veh)	149.7	0.0	0.0	10.7	0.0
Lane LOS	F			B	
Approach Delay (s/veh)	149.7	0.0		1.6	
Approach LOS	F				

Intersection Summary			
Average Delay	10.3		
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	0	29	11	0	45
Future Volume (vph)	7	0	29	11	0	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.963			
Flt Protected	0.950					
Satd. Flow (prot)	1789	0	1814	0	0	1883
Flt Permitted	0.950					
Satd. Flow (perm)	1789	0	1814	0	0	1883
Link Speed (k/h)	50		50			50
Link Distance (m)	354.8		405.8			130.9
Travel Time (s)	25.5		29.2			9.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	29	11	0	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	0	40	0	0	45
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	0	29	11	0	45
Future Volume (Veh/h)	7	0	29	11	0	45
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	7	0	29	11	0	45
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	80	35			40	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80	35			40	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	923	1039			1570	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	7	40	45
Volume Left	7	0	0
Volume Right	0	11	0
cSH	923	1700	1570
Volume to Capacity	0.01	0.02	0.00
Queue Length 95th (m)	0.2	0.0	0.0
Control Delay (s/veh)	8.9	0.0	0.0
Lane LOS	A		
Approach Delay (s/veh)	8.9	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization		13.3%	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)	36	233	62	47	620	6	4	0	11	4	0	25
Future Volume (vph)	36	233	62	47	620	6	4	0	11	4	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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
Frt		0.968			0.999			0.901			0.884	
Flt Protected	0.950			0.950				0.987			0.993	
Satd. Flow (prot)	1789	3464	0	1789	3575	0	0	1675	0	0	1653	0
Flt Permitted	0.950			0.950				0.987			0.993	
Satd. Flow (perm)	1789	3464	0	1789	3575	0	0	1675	0	0	1653	0
Link Speed (k/h)		50			60			50			50	
Link Distance (m)		228.4			304.5			187.8			197.0	
Travel Time (s)		16.4			18.3			13.5			14.2	
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
Adj. Flow (vph)	36	233	62	47	620	6	4	0	11	4	0	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	295	0	47	626	0	0	15	0	0	29	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)		3.7			3.7			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.0%		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)	36	233	62	47	620	6	4	0	11	4	0	25
Future Volume (Veh/h)	36	233	62	47	620	6	4	0	11	4	0	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	36	233	62	47	620	6	4	0	11	4	0	25
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	626			295			765	1056	148	917	1084	313
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	626			295			765	1056	148	917	1084	313
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			96			98	100	99	98	100	96
cM capacity (veh/h)	952			1263			266	207	873	212	200	683

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	36	155	140	47	413	213	15	29
Volume Left	36	0	0	47	0	0	4	4
Volume Right	0	0	62	0	0	6	11	25
cSH	952	1700	1700	1263	1700	1700	543	522
Volume to Capacity	0.04	0.09	0.08	0.04	0.24	0.13	0.03	0.06
Queue Length 95th (m)	0.9	0.0	0.0	0.9	0.0	0.0	0.7	1.4
Control Delay (s/veh)	8.9	0.0	0.0	8.0	0.0	0.0	11.8	12.3
Lane LOS	A			A			B	B
Approach Delay (s/veh)	1.0			0.6			11.8	12.3
Approach LOS							B	B

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	34.0%	ICU Level of Service	A	
Analysis Period (min)	15			

FUTURE TOTAL 2051

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: Highway 50 & Emil Kolb Pkwy Future Total.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 1:42:58 PM

Summary of intersection performance

	AM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2051 Future Total						
Emil Kolb Pkwy	1.26	4.79	7.10	N/A	A	4.91	A
Highway 50 (North)	2.15	7.51	5.75	N/A	A		
Highway 50 (South)	0.48	2.01	1.94	N/A	A		
Street B	0.31	1.35	5.06	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 3:00 PM - 4:00 PM
"D11 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D12 - 2031 Future Total, PM" model duration: 3:00 PM - 4:00 PM
"D13 - 2051 Future Total, AM " model duration: 8:00 AM - 9:00 AM
"D14 - 2051 Future Total, PM" model duration: 3:00 PM - 4:00 PM

Run using Junctions 8.0.6.541 at 2026-02-21 1:42:58 PM

File summary

Title	Bolton North Hill
Location	Highway 50 & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1308722258	1829

(Default Analysis Set) - 2051 Future Total, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2051 Future Total, AM	2051 Future Total	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3,4		✓	4.91	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy	3	Emil Kolb Pkwy	
Highway 50 (North)	2	Highway 50 (North)	
Highway 50 (South)	4	Highway 50 (South)	
Street B	1	Street B	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	0.00	99999.00
Highway 50 (North)	0.00	99999.00
Highway 50 (South)	0.00	99999.00
Street B	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy	7.00	8.00	30.00	25.00	60.00	25.00	
Highway 50 (North)	7.00	8.00	30.00	35.00	60.00	25.00	
Highway 50 (South)	7.00	8.00	30.00	35.00	60.00	25.00	
Street B	7.00	8.00	30.00	35.00	60.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy	0.00	0.00
Highway 50 (North)	0.00	0.00
Highway 50 (South)	0.00	0.00
Street B	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy	Percentage	Opening day within 10 years		85.00
Highway 50 (North)	Percentage	Opening day within 10 years		85.00
Highway 50 (South)	Percentage	Opening day within 10 years		85.00
Street B	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy		(calculated)	(calculated)	1.489	2831.014
Highway 50 (North)		(calculated)	(calculated)	1.505	2853.857
Highway 50 (South)		(calculated)	(calculated)	1.505	2853.857
Street B		(calculated)	(calculated)	1.505	2853.857

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy	Evenly split	10.00
Highway 50 (North)	Evenly split	10.00
Highway 50 (South)	Evenly split	10.00
Street B	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy	1	3		Infinity	0.00	99999.00
Highway 50 (North)	1	1		Infinity	0.00	99999.00
Highway 50 (North)	1	2		Infinity	0.00	99999.00
Highway 50 (South)	1	3		Infinity	0.00	99999.00
Highway 50 (South)	1	4		Infinity	0.00	99999.00
Street B	1	3		Infinity	0.00	99999.00
Street B	1	4		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy	(calculated)	(calculated)	0.745	1415.507
Emil Kolb Pkwy	(calculated)	(calculated)	0.745	1415.507
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929

Street B	(calculated)	(calculated)	0.753	1426.929
Street B	(calculated)	(calculated)	0.753	1426.929

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
Highway 50 & Emil Kolb Pkwy	Street B	1	3		✓	✓	
Highway 50 & Emil Kolb Pkwy	Street B	1	4	✓		✓	✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	1			✓	✓
Highway 50 & Emil Kolb Pkwy	Highway 50 (North)	1	2	✓	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	2	✓			✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy	1	3		✓	✓	
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	3	✓	✓		
Highway 50 & Emil Kolb Pkwy	Highway 50 (South)	1	4		✓	✓	✓

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy	PHF	✓	607.00	100.000
Highway 50 (North)	PHF	✓	1280.00	100.000
Highway 50 (South)	PHF	✓	819.00	100.000
Street B	PHF	✓	203.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy	607.00	0.96	SecondQuarter
Highway 50 (North)	1280.00	0.96	SecondQuarter
Highway 50 (South)	819.00	0.96	SecondQuarter
Street B	203.00	0.96	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	Street B	0.000	41.000	81.000	81.000
	Highway 50 (North)	21.000	0.000	486.000	773.000
	Emil Kolb Pkwy	42.000	298.000	0.000	267.000
	Highway 50 (South)	42.000	415.000	362.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

	To				

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	Street B	0.00	0.20	0.40	0.40
	Highway 50 (North)	0.02	0.00	0.38	0.60
	Emil Kolb Pkwy	0.07	0.49	0.00	0.44
	Highway 50 (South)	0.05	0.51	0.44	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	Street B	1.000	1.037	1.027	1.000
	Highway 50 (North)	1.008	1.000	1.053	1.000
	Emil Kolb Pkwy	1.057	1.277	1.000	1.000
	Highway 50 (South)	1.000	1.037	1.027	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	Street B	0.0	3.7	2.7	0.0
	Highway 50 (North)	0.8	0.0	5.3	0.0
	Emil Kolb Pkwy	5.7	27.7	0.0	0.0
	Highway 50 (South)	0.0	3.7	2.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy	7.10	1.26	4.79	A	607.64	607.64	66.24	6.54	1.10
Highway 50 (North)	5.75	2.15	7.51	A	1274.37	1274.37	108.56	5.11	1.81
Highway 50 (South)	1.94	0.48	2.01	A	816.53	816.53	25.30	1.86	0.42
Street B	5.06	0.31	1.35	A	204.88	204.88	15.00	4.39	0.25

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: Highway 50 & Emil Kolb Pkwy Future Total.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 1:48:38 PM

Summary of intersection performance

	PM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2051 Future Total						
Emil Kolb Pkwy	2.89	9.63	8.70	N/A	A	22.22	C
Highway 50 (North)	0.75	2.92	2.54	N/A	A		
Highway 50 (South)	3.92	14.51	10.68	N/A	B		
Street B	15.81	44.02	191.80	N/A	F		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 3:00 PM - 4:00 PM
"D11 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D12 - 2031 Future Total, PM" model duration: 3:00 PM - 4:00 PM
"D13 - 2051 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D14 - 2051 Future Total, PM " model duration: 3:00 PM - 4:00 PM

Run using Junctions 8.0.6.541 at 2026-02-21 1:48:38 PM

File summary

Title	Bolton North Hill
Location	Highway 50 & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	429480520	559

(Default Analysis Set) - 2051 Future Total, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2051 Future Total, PM	2051 Future Total	PM		PHF	15:00	16:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3,4		✓	22.22	C

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy	3	Emil Kolb Pkwy	
Highway 50 (North)	2	Highway 50 (North)	
Highway 50 (South)	4	Highway 50 (South)	
Street B	1	Street B	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	0.00	99999.00
Highway 50 (North)	0.00	99999.00
Highway 50 (South)	0.00	99999.00
Street B	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy	7.00	8.00	30.00	25.00	60.00	25.00	
Highway 50 (North)	7.00	8.00	30.00	35.00	60.00	25.00	
Highway 50 (South)	7.00	8.00	30.00	35.00	60.00	25.00	
Street B	7.00	8.00	30.00	35.00	60.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy	0.00	0.00
Highway 50 (North)	0.00	0.00
Highway 50 (South)	0.00	0.00
Street B	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy	Percentage	Opening day within 10 years		85.00
Highway 50 (North)	Percentage	Opening day within 10 years		85.00
Highway 50 (South)	Percentage	Opening day within 10 years		85.00
Street B	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy		(calculated)	(calculated)	1.489	2831.014
Highway 50 (North)		(calculated)	(calculated)	1.505	2853.857
Highway 50 (South)		(calculated)	(calculated)	1.505	2853.857
Street B		(calculated)	(calculated)	1.505	2853.857

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy	Evenly split	10.00
Highway 50 (North)	Evenly split	10.00
Highway 50 (South)	Evenly split	10.00
Street B	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy	**1**	2		Infinity	0.00	99999.00
Emil Kolb Pkwy	**1**	3		Infinity	0.00	99999.00
Highway 50 (North)	**1**	1		Infinity	0.00	99999.00
Highway 50 (North)	**1**	2		Infinity	0.00	99999.00
Highway 50 (South)	**1**	3		Infinity	0.00	99999.00
Highway 50 (South)	**1**	4		Infinity	0.00	99999.00
Street B	**1**	3		Infinity	0.00	99999.00
Street B	**1**	4		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy	(calculated)	(calculated)	0.745	1415.507
Emil Kolb Pkwy	(calculated)	(calculated)	0.745	1415.507
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (North)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929
Highway 50 (South)	(calculated)	(calculated)	0.753	1426.929

Street B	(calculated)	(calculated)	0.753	1426.929
Street B	(calculated)	(calculated)	0.753	1426.929

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
Highway 50 & Emil Kolb Pkwy	**Street B**	1	3		✓	✓	
Highway 50 & Emil Kolb Pkwy	**Street B**	1	4	✓		✓	✓
Highway 50 & Emil Kolb Pkwy	**Highway 50 (North)**	1	1			✓	✓
Highway 50 & Emil Kolb Pkwy	**Highway 50 (North)**	1	2	✓	✓		✓
Highway 50 & Emil Kolb Pkwy	**Emil Kolb Pkwy**	1	2	✓			✓
Highway 50 & Emil Kolb Pkwy	**Emil Kolb Pkwy**	1	3		✓	✓	
Highway 50 & Emil Kolb Pkwy	**Highway 50 (South)**	1	3	✓	✓		
Highway 50 & Emil Kolb Pkwy	**Highway 50 (South)**	1	4		✓	✓	✓

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy	PHF	✓	1018.00	100.000
Highway 50 (North)	PHF	✓	861.00	100.000
Highway 50 (South)	PHF	✓	1231.00	100.000
Street B	PHF	✓	266.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy	1018.00	0.96	SecondQuarter
Highway 50 (North)	861.00	0.96	SecondQuarter
Highway 50 (South)	1231.00	0.96	SecondQuarter
Street B	266.00	0.96	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	**Street B**	0.000	97.000	71.000	98.000
	Highway 50 (North)	49.000	0.000	305.000	507.000
	Emil Kolb Pkwy	97.000	579.000	0.000	342.000
	Highway 50 (South)	97.000	799.000	335.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	**Street B**	0.00	0.36	0.27	0.37
	Highway 50 (North)	0.06	0.00	0.35	0.59
	Emil Kolb Pkwy	0.10	0.57	0.00	0.34
	Highway 50 (South)	0.08	0.65	0.27	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	**Street B**	1.000	1.037	1.027	1.000
	Highway 50 (North)	1.008	1.000	1.053	1.000
	Emil Kolb Pkwy	1.057	1.277	1.000	1.000
	Highway 50 (South)	1.000	1.037	1.027	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To			
		Street B	Highway 50 (North)	Emil Kolb Pkwy	Highway 50 (South)
From	**Street B**	0.0	3.7	2.7	0.0
	Highway 50 (North)	0.8	0.0	5.3	0.0
	Emil Kolb Pkwy	5.7	27.7	0.0	0.0
	Highway 50 (South)	0.0	3.7	2.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy	8.70	2.89	9.63	A	1019.92	1019.92	141.77	8.34	2.36
Highway 50 (North)	2.54	0.75	2.92	A	866.57	866.57	35.15	2.43	0.59
Highway 50 (South)	10.68	3.92	14.51	B	1228.74	1228.74	181.65	8.87	3.03
Street B	191.80	15.81	44.02	F	265.38	265.38	606.15	137.04	10.10

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Filename: King Street & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 12:02:33 PM

Summary of intersection performance

	AM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2051 Future Total						
Emil Kolb Pkwy (North)	0.81	3.69	3.26	N/A	A	2.24	A
Emil Kolb Pkwy (South)	0.28	1.60	1.57	N/A	A		
King Street	0.40	1.99	1.52	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 8:00 AM - 9:00 AM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D5 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D8 - 2041 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D9 - 2031 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D11 - 2051 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D12 - 2051 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D13 - 2051 Future Total, AM " model duration: 8:00 AM - 9:00 AM
"D14 - 2051 Future Total, PM" model duration: 8:00 AM - 9:00 AM

Run using Junctions 8.0.6.541 at 2026-02-21 12:02:33 PM

File summary

Title	Bolton North Hill
Location	King Street & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	511985343	1938

(Default Analysis Set) - 2051 Future Total, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2051 Future Total, AM	2051 Future Total	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	2.24	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy (North)	2	Emil Kolb Pkwy (North)	
Emil Kolb Pkwy (South)	1	Emil Kolb Pkwy (South)	
King Street	3	King Street	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	0.00	99999.00
Emil Kolb Pkwy (South)	0.00	99999.00
King Street	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy (North)	7.00	8.00	30.00	25.00	55.00	25.00	
Emil Kolb Pkwy (South)	7.00	8.00	30.00	25.00	55.00	25.00	
King Street	7.00	8.00	30.00	25.00	55.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy (North)	0.00	0.00
Emil Kolb Pkwy (South)	0.00	0.00
King Street	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy (North)	Percentage	Opening day within 10 years		85.00
Emil Kolb Pkwy (South)	Percentage	Opening day within 10 years		85.00
King Street	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)		(calculated)	(calculated)	1.562	2831.014
Emil Kolb Pkwy (South)		(calculated)	(calculated)	1.562	2831.014
King Street		(calculated)	(calculated)	1.562	2831.014

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy (North)	Evenly split	10.00
Emil Kolb Pkwy (South)	Evenly split	10.00
King Street	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	1	1		Infinity	0.00	99999.00
Emil Kolb Pkwy (North)	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	3		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	4		Infinity	0.00	99999.00
King Street	1	2		Infinity	0.00	99999.00
King Street	1	3		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	4		✓	✓

Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	1	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	3	✓	✓	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy (North)	PHF	✓	885.00	100.000
Emil Kolb Pkwy (South)	PHF	✓	523.00	100.000
King Street	PHF	✓	775.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy (North)	885.00	0.95	SecondQuarter
Emil Kolb Pkwy (South)	523.00	0.95	SecondQuarter
King Street	775.00	0.95	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.000	275.000	248.000
	Emil Kolb Pkwy (North)	254.000	0.000	631.000
	King Street	476.000	299.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.00	0.53	0.47
	Emil Kolb Pkwy (North)	0.29	0.00	0.71
	King Street	0.61	0.39	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	1.000	1.310	1.075
	Emil Kolb Pkwy (North)	1.032	1.000	1.022

	King Street	1.061	1.097	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.0	31.0	7.5
	Emil Kolb Pkwy (North)	3.2	0.0	2.2
	King Street	6.1	9.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy (North)	3.26	0.81	3.69	A	883.24	883.24	43.30	2.94	0.72
Emil Kolb Pkwy (South)	1.57	0.28	1.60	A	524.02	524.02	13.98	1.60	0.23
King Street	1.52	0.40	1.99	A	772.24	772.24	19.64	1.53	0.33

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
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Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

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Filename: King Street & Emil Kolb Pkwy.arc8
Path: N:\700\708-Bolton NH Landowners Grp\3446-Bolton North Hill\Design\Traffic\2026_Analysis\Arcady
Report generation date: 2026-02-21 12:05:02 PM

Summary of intersection performance

	PM						
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	A1 [Entry Lane Simulation] - 2051 Future Total						
Emil Kolb Pkwy (North)	0.96	3.81	4.96	N/A	A	16.48	C
Emil Kolb Pkwy (South)	15.55	43.56	29.91	N/A	D		
King Street	1.14	4.46	3.46	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2024 Existing Traffic, AM" model duration: 8:00 AM - 9:00 AM
"D2 - 2024 Existing Traffic, PM" model duration: 8:00 AM - 9:00 AM
"D3 - 2031 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D4 - 2041 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D5 - 2031 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D6 - 2041 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D7 - 2031 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D8 - 2041 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D9 - 2031 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D10 - 2041 Future Total, PM" model duration: 8:00 AM - 9:00 AM
"D11 - 2051 Future Background, AM" model duration: 8:00 AM - 9:00 AM
"D12 - 2051 Future Background, PM" model duration: 8:00 AM - 9:00 AM
"D13 - 2051 Future Total, AM" model duration: 8:00 AM - 9:00 AM
"D14 - 2051 Future Total, PM " model duration: 8:00 AM - 9:00 AM

Run using Junctions 8.0.6.541 at 2026-02-21 12:05:02 PM

File summary

Title	Bolton North Hill
Location	King Street & Emil Kolb Parkway
Site Number	
Date	2020-07-15
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	Crozier Consulting Engineers
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units

m	kph	PCE	PCE	perHour	s	-Min	perMin

Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1553944510	2077

(Default Analysis Set) - 2051 Future Total, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	Entry Lane Simulation		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2051 Future Total, PM	2051 Future Total	PM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Highway 50 & Emil Kolb Pkwy	Roundabout	1,2,3		✓	16.48	C

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Emil Kolb Pkwy (North)	2	Emil Kolb Pkwy (North)	
Emil Kolb Pkwy (South)	1	Emil Kolb Pkwy (South)	
King Street	3	King Street	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	0.00	99999.00
Emil Kolb Pkwy (South)	0.00	99999.00
King Street	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Emil Kolb Pkwy (North)	7.00	8.00	30.00	25.00	55.00	25.00	
Emil Kolb Pkwy (South)	7.00	8.00	30.00	25.00	55.00	25.00	
King Street	7.00	8.00	30.00	25.00	55.00	25.00	

Large Roundabout Data

Name	Circulating flow (PCE/hr)	Entry-to-exit separation (m)
Emil Kolb Pkwy (North)	0.00	0.00
Emil Kolb Pkwy (South)	0.00	0.00
King Street	0.00	0.00

Slope / Intercept / Capacity

Leg Intercept Adjustments

Name	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
Emil Kolb Pkwy (North)	Percentage	Opening day within 10 years		85.00
Emil Kolb Pkwy (South)	Percentage	Opening day within 10 years		85.00
King Street	Percentage	Opening day within 10 years		85.00

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)		(calculated)	(calculated)	1.562	2831.014
Emil Kolb Pkwy (South)		(calculated)	(calculated)	1.562	2831.014
King Street		(calculated)	(calculated)	1.562	2831.014

The slope and intercept shown above include any corrections and adjustments.

Entry Lane Analysis: Leg options

Name	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
Emil Kolb Pkwy (North)	Evenly split	10.00
Emil Kolb Pkwy (South)	Evenly split	10.00
King Street	Evenly split	10.00

Lanes

Name	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Emil Kolb Pkwy (North)	1	1		Infinity	0.00	99999.00
Emil Kolb Pkwy (North)	1	2		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	3		Infinity	0.00	99999.00
Emil Kolb Pkwy (South)	1	4		Infinity	0.00	99999.00
King Street	1	2		Infinity	0.00	99999.00
King Street	1	3		Infinity	0.00	99999.00

Entry Lane slope and intercept

Name	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (North)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
Emil Kolb Pkwy (South)	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507
King Street	(calculated)	(calculated)	0.781	1415.507

Lane Movements

Intersection	Leg	Lane Level	Lane	Leg		
				Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	3		✓	
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (South)	1	4		✓	✓

Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	1	✓		✓
Highway 50 & Emil Kolb Pkwy	Emil Kolb Pkwy (North)	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	2	✓		
Highway 50 & Emil Kolb Pkwy	King Street	1	3	✓	✓	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Emil Kolb Pkwy (North)	PHF	✓	629.00	100.000
Emil Kolb Pkwy (South)	PHF	✓	1536.00	100.000
King Street	PHF	✓	1025.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Emil Kolb Pkwy (North)	629.00	0.95	SecondQuarter
Emil Kolb Pkwy (South)	1536.00	0.95	SecondQuarter
King Street	1025.00	0.95	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.000	839.000	697.000
	Emil Kolb Pkwy (North)	254.000	0.000	375.000
	King Street	401.000	624.000	0.000

Turning Proportions (PCE) - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.00	0.55	0.45
	Emil Kolb Pkwy (North)	0.40	0.00	0.60
	King Street	0.39	0.61	0.00

Vehicle Mix

Average PCE Per Vehicle - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	1.000	1.310	1.075
	Emil Kolb Pkwy (North)	1.032	1.000	1.022
	King Street	1.061	1.097	1.000

Truck Percentages - Highway 50 & Emil Kolb Pkwy (for whole period)

		To		
		Emil Kolb Pkwy (South)	Emil Kolb Pkwy (North)	King Street
From	Emil Kolb Pkwy (South)	0.0	31.0	7.5
	Emil Kolb Pkwy (North)	3.2	0.0	2.2
	King Street	6.1	9.7	0.0

Results

Results Summary for whole modelled period

Name	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)
Emil Kolb Pkwy (North)	4.96	0.96	3.81	A	628.35	628.35	46.94	4.48	0.78
Emil Kolb Pkwy (South)	29.91	15.55	43.56	D	1536.85	1536.85	587.40	22.93	9.79
King Street	3.46	1.14	4.46	A	1028.96	1028.96	55.77	3.25	0.93

file:///N:/700/708-Bolton%20NH%20Landowners%20Grp/3446-Bolton%20North%20Hi... 2026-02-21

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	11	322	3	224	3	443	177	280	950	3
Future Volume (vph)	4	0	11	322	3	224	3	443	177	280	950	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	140.0		30.0	125.0		30.0
Storage Lanes	0		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.899			0.852			0.957				0.850
Flt Protected		0.988		0.950			0.950			0.950		
Satd. Flow (prot)	0	953	0	1750	1586	0	892	3354	0	1700	1883	1591
Flt Permitted				0.851			0.127			0.292		
Satd. Flow (perm)	0	965	0	1568	1586	0	119	3354	0	523	1883	1591
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		85			243			71				48
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		127.3			237.9			633.3			400.2	
Travel Time (s)		9.2			21.4			38.0			24.0	
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 (%)	100%	0%	72%	2%	100%	2%	100%	5%	2%	5%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	4	0	12	350	3	243	3	482	192	304	1033	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	0	350	246	0	3	674	0	304	1033	3
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												
Headway Factor	0.99	0.99	0.99	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left						Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	12.0		8.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	-3.0		-2.0	-2.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	-3.0		-2.0	-2.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	15.0		10.0	10.0		2.0	0.6		2.0	0.6	2.0
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												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		3	8		2	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		20.0	20.0		7.0	20.0	20.0
Minimum Split (s)	23.0	23.0		11.0	23.0		28.0	28.0		11.0	28.0	28.0
Total Split (s)	23.0	23.0		18.0	41.0		34.0	34.0		15.0	49.0	49.0
Total Split (%)	25.6%	25.6%		20.0%	45.6%		37.8%	37.8%		16.7%	54.4%	54.4%
Maximum Green (s)	19.0	19.0		15.0	37.0		30.0	30.0		12.0	45.0	45.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		0.0	1.0		1.0	1.0		0.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.0		3.0	4.0		4.0	4.0		3.0	4.0	4.0
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)	8.0	8.0			8.0		8.0	8.0			8.0	8.0
Flash Don't Walk (s)	11.0	11.0			11.0		16.0	16.0			16.0	16.0
Pedestrian Calls (#/hr)	0	0			0		0	0			0	0
Act Effct Green (s)		10.1		16.9	15.9		31.6	31.6		46.3	45.3	45.3
Actuated g/C Ratio		0.15		0.24	0.23		0.46	0.46		0.67	0.65	0.65
v/c Ratio		0.08		0.83	0.45		0.06	0.43		0.57	0.84	0.00
Control Delay (s/veh)		0.7		42.5	6.0		17.3	13.5		10.3	19.3	0.0
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)		0.7		42.5	6.0		17.3	13.5		10.3	19.3	0.0
LOS		A		D	A		B	B		B	B	A
Approach Delay (s/veh)		0.7			27.4			13.5			17.2	
Approach LOS		A			C			B			B	
Queue Length 50th (m)		0.0		44.8	0.3		0.2	25.8		12.3	81.6	0.0
Queue Length 95th (m)		0.0		71.6	15.2		2.4	55.4		39.0	#247.9	0.0
Internal Link Dist (m)		103.3			213.9			609.3			376.2	
Turn Bay Length (m)							140.0			125.0		30.0
Base Capacity (vph)		328		435	965		54	1569		554	1231	1057
Starvation Cap Reductn		0		0	0		0	0		0	0	0
Spillback Cap Reductn		0		0	0		0	0		0	0	0
Storage Cap Reductn		0		0	0		0	0		0	0	0
Reduced v/c Ratio		0.05		0.80	0.25		0.06	0.43		0.55	0.84	0.00

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 69.3			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay (s/veh): 18.5		Intersection LOS: B	
Intersection Capacity Utilization 101.2%		ICU Level of Service G	

Analysis Period (min) 15

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

Splits and Phases: 3: Highway 50 & Columbia Way



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	29	28	134	15	59	14	531	66	58	1183	8
Future Volume (vph)	16	29	28	134	15	59	14	531	66	58	1183	8
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	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	30.0		0.0	85.0		0.0	90.0		75.0	65.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98				0.98						1.00	
Frt		0.926			0.880				0.850		0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	1711	0	1785	1623	0	1623	3476	1591	1785	1881	0
Flt Permitted	0.699			0.569			0.047			0.393		
Satd. Flow (perm)	1291	1711	0	1069	1623	0	80	3476	1591	738	1881	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34			71				80			
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		112.1			201.9			771.8			633.3	
Travel Time (s)		10.1			18.2			46.3			38.0	
Confl. Peds. (#/hr)	17					17	8					8
Confl. Bikes (#/hr)					2							
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	4%	4%	0%	0%	2%	10%	5%	0%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	19	35	34	161	18	71	17	640	80	70	1425	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	69	0	161	89	0	17	640	80	70	1435	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												
Headway Factor	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02	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	
Detector Template							Left	Thru	Right	Left	Thru	
Leading Detector (m)	12.0	12.0		12.0	12.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	15.0	15.0		15.0	15.0		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	

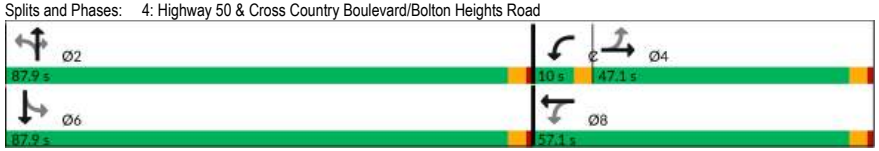
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	47.1	47.1		10.0	47.1		34.7	34.7	34.7	34.7	34.7	
Total Split (s)	47.1	47.1		10.0	57.1		87.9	87.9	87.9	87.9	87.9	
Total Split (%)	32.5%	32.5%		6.9%	39.4%		60.6%	60.6%	60.6%	60.6%	60.6%	
Maximum Green (s)	43.1	43.1		7.0	53.1		83.9	83.9	83.9	83.9	83.9	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		0.0	1.0		1.0	1.0	1.0	1.0	1.0	
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)	4.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
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	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)	10.0	10.0			10.0		10.0	10.0	10.0	10.0	10.0	
Flash Don't Walk (s)	29.0	29.0			29.0		18.0	18.0	18.0	18.0	18.0	
Pedestrian Calls (#/hr)	4	4			4		2	2	2	2	2	
Act Effct Green (s)	14.9	14.9		23.7	22.7		84.9	84.9	84.9	84.9	84.9	
Actuated g/C Ratio	0.13	0.13		0.20	0.20		0.73	0.73	0.73	0.73	0.73	
v/c Ratio	0.11	0.28		0.60	0.24		0.29	0.25	0.07	0.13	1.04	
Control Delay (s/veh)	44.6	28.0		48.8	12.9		27.0	6.9	2.1	8.0	53.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	44.6	28.0		48.8	12.9		27.0	6.9	2.1	8.0	53.5	
LOS	D	C		D	B		C	A	A	A	D	
Approach Delay (s/veh)		31.5			36.0			6.8			51.4	
Approach LOS		C			D			A			D	
Queue Length 50th (m)	4.1	7.6		33.4	3.5		1.1	20.2	0.0	3.8	~319.3	
Queue Length 95th (m)	10.2	18.1		47.9	13.6		10.0	52.8	5.6	15.6	#543.5	
Internal Link Dist (m)		88.1			177.9			747.8			609.3	
Turn Bay Length (m)	30.0			85.0			90.0		75.0	65.0		
Base Capacity (vph)	486	665		268	791		58	2550	1188	541	1380	
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	0.04	0.10		0.60	0.11		0.29	0.25	0.07	0.13	1.04	

Intersection Summary

Area Type: Other
Cycle Length: 145
Actuated Cycle Length: 115.7
Natural Cycle: 145
Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.04
Intersection Signal Delay (s/veh): 36.5 Intersection LOS: D
Intersection Capacity Utilization 91.5% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 50 & Cross Country Boulevard/Bolton Heights Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	262	95	339	256	70	58	551	131	65	1251	27
Future Volume (vph)	30	262	95	339	256	70	58	551	131	65	1251	27
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	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	30.0		35.0	30.0		0.0	55.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Ped Bike Factor									0.97		1.00	
Frt			0.850		0.968				0.850		0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1606	1695	1437	1591	1635	0	1579	1695	1363	1643	1699	0
Flt Permitted	0.495			0.209			0.051			0.289		
Satd. Flow (perm)	837	1695	1437	350	1635	0	85	1695	1324	500	1699	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95		8				132		1	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		535.7			353.4			517.9			32.8	
Travel Time (s)		48.2			31.8			31.1			2.0	
Confl. Peds. (#/hr)							2		3	3		2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	0%	1%	3%	0%	4%	2%	5%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	1	0
Adj. Flow (vph)	32	279	101	361	272	74	62	586	139	69	1331	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	279	101	361	346	0	62	586	139	69	1360	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			3.7			3.7	
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												
Headway Factor	1.16	1.13	1.16	1.16	1.13	1.13	1.13	1.13	1.17	1.13	1.13	1.16
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	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	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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Detector Phase	3	8	8	7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	8.0	31.9	31.9	8.0	31.9		8.0	32.0	32.0	8.0	32.0	
Total Split (s)	20.0	31.9	31.9	24.1	36.0		8.0	86.0	86.0	8.0	86.0	
Total Split (%)	13.3%	21.3%	21.3%	16.1%	24.0%		5.3%	57.3%	57.3%	5.3%	57.3%	
Maximum Green (s)	17.0	25.0	25.0	21.1	29.1		5.0	79.0	79.0	5.0	79.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.9	2.9	0.0	2.9		0.0	3.0	3.0	0.0	3.0	
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	6.9	6.9	3.0	6.9		3.0	7.0	7.0	3.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	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	None	None	None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)		10.0	10.0		10.0			10.0	10.0		10.0	
Flash Don't Walk (s)		15.0	15.0		15.0			15.0	15.0		15.0	
Pedestrian Calls (#/hr)		4	4		4			8	8		8	
Act Effct Green (s)	36.4	25.0	25.0	53.0	42.2		88.6	80.6	80.6	88.6	80.6	
Actuated g/C Ratio	0.24	0.17	0.17	0.35	0.28		0.59	0.54	0.54	0.59	0.54	
v/c Ratio	0.13	0.99	0.32	1.21	0.74		0.63	0.64	0.18	0.21	1.49	
Control Delay (s/veh)	34.3	112.3	14.1	157.7	59.8		43.9	29.1	3.7	13.7	255.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	34.3	112.3	14.1	157.7	59.8		43.9	29.1	3.7	13.7	255.0	
LOS	C	F	B	F	E		D	C	A	B	F	
Approach Delay (s/veh)		82.2			109.8			25.8			243.3	
Approach LOS		F			F			C			F	
Queue Length 50th (m)	6.6	88.3	1.6	~113.3	100.2		7.6	129.4	1.0	8.5	~596.1	
Queue Length 95th (m)	14.8	#150.4	19.2	#180.4	#157.1		#25.5	173.7	12.1	15.5	#682.3	
Internal Link Dist (m)		511.7			329.4			493.9			8.8	
Turn Bay Length (m)	30.0		35.0	30.0			55.0			20.0		
Base Capacity (vph)	343	282	318	298	465		99	910	772	333	913	
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	0.09	0.99	0.32	1.21	0.74		0.63	0.64	0.18	0.21	1.49	

Intersection Summary	
Area Type:	CBD
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	

Maximum v/c Ratio: 1.49	
Intersection Signal Delay (s/veh): 143.8	Intersection LOS: F
Intersection Capacity Utilization 126.1%	ICU Level of Service H
Analysis Period (min) 15	

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

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

Splits and Phases: 5: Highway 50 & King Street West/King Street East

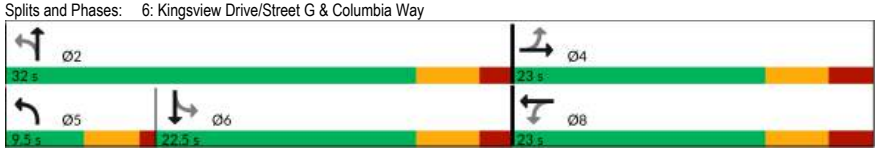


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	383	34	121	339	26	41	4	54	49	9	154
Future Volume (vph)	60	383	34	121	339	26	41	4	54	49	9	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.99			1.00	
Frt		0.989			0.992			0.926			0.902	
Flt Protected		0.994			0.988			0.980			0.989	
Satd. Flow (prot)	0	3573	0	0	3475	0	0	1725	0	0	1680	0
Flt Permitted		0.797			0.712			0.827			0.886	
Satd. Flow (perm)	0	2865	0	0	2503	0	0	1456	0	0	1504	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			10			65			186	
Link Speed (k/h)		40			40			40			50	
Link Distance (m)		237.9			417.0			131.8			93.0	
Travel Time (s)		21.4			37.5			11.9			6.7	
Confl. Peds. (#/hr)			3	3					5	5		
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	2%	0%	0%	3%	3%	2%	0%	2%	0%	2%	2%	2%
Adj. Flow (vph)	72	461	41	146	408	31	49	5	65	59	11	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	574	0	0	585	0	0	119	0	0	256	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		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	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	8.0		8.0	8.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		9.5	21.0		21.0	21.0	
Total Split (s)	23.0	23.0		23.0	23.0		9.5	32.0		22.5	22.5	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		17.3%	58.2%		40.9%	40.9%	
Maximum Green (s)	16.1	16.1		16.1	16.1		5.0	26.0		16.5	16.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	2.9	2.9		2.9	2.9		1.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.9			6.9			6.0			6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0			8.0		8.0	8.0	
Flash Don't Walk (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		3	3	
Act Effct Green (s)		16.9			16.9			10.2			10.2	
Actuated g/C Ratio		0.51			0.51			0.31			0.31	
v/c Ratio		0.39			0.46			0.24			0.43	
Control Delay (s/veh)		9.2			10.1			7.5			6.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay (s/veh)		9.2			10.1			7.5			6.8	
LOS		A			B			A			A	
Approach Delay (s/veh)		9.2			10.1			7.5			6.8	
Approach LOS		A			B			A			A	
Queue Length 50th (m)		12.1			13.0			2.6			3.4	
Queue Length 95th (m)		26.3			28.7			9.7			13.5	
Internal Link Dist (m)		213.9			393.0			107.8			69.0	
Turn Bay Length (m)												
Base Capacity (vph)		1558			1360			1127			917	
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		0.37			0.43			0.11			0.28	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 33.2			
Natural Cycle: 55			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay (s/veh): 9.0		Intersection LOS: A	
Intersection Capacity Utilization 57.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Kingsview Drive/Street G & Columbia Way



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	375	52	35	326	68	42
Future Volume (vph)	375	52	35	326	68	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.982				0.948	
Flt Protected				0.995	0.970	
Satd. Flow (prot)	3584	0	0	3523	1713	0
Flt Permitted				0.995	0.970	
Satd. Flow (perm)	3584	0	0	3523	1713	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	500.8			180.3	104.8	
Travel Time (s)	30.0			10.8	9.4	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	4%	3%	2%	5%
Adj. Flow (vph)	469	65	44	408	85	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	534	0	0	452	138	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	375	52	35	326	68	42
Future Volume (Veh/h)	375	52	35	326	68	42
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	469	65	44	408	85	52
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			534		794	267
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			534		794	267
tC, single (s)			4.2		6.8	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			96		73	93
cM capacity (veh/h)			1016		311	722

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	313	221	180	272	137
Volume Left	0	0	44	0	85
Volume Right	0	65	0	0	52
cSH	1700	1700	1016	1700	397
Volume to Capacity	0.18	0.13	0.04	0.16	0.34
Queue Length 95th (m)	0.0	0.0	1.1	0.0	12.1
Control Delay (s/veh)	0.0	0.0	2.4	0.0	18.8
Lane LOS			A		C
Approach Delay (s/veh)	0.0		1.0		18.8
Approach LOS					C

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	38.4%	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)	96	464	15	4	259	27	35	7	16	159	6	87
Future Volume (vph)	96	464	15	4	259	27	35	7	16	159	6	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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												
Frt		0.995			0.986			0.962			0.953	
Flt Protected	0.950			0.950				0.971			0.969	
Satd. Flow (prot)	1825	3464	0	1825	3456	0	0	1746	0	0	1756	0
Flt Permitted	0.950			0.950				0.971			0.969	
Satd. Flow (perm)	1825	3464	0	1825	3456	0	0	1746	0	0	1756	0
Link Speed (k/h)		60			60			40			60	
Link Distance (m)		116.8			228.4			249.8			405.8	
Travel Time (s)		7.0			13.7			22.5			24.3	
Confl. Peds. (#/hr)	1					1	1		2	2		1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	5%	0%	0%	3%	15%	0%	0%	10%	0%	0%	3%
Adj. Flow (vph)	117	566	18	5	316	33	43	9	20	194	7	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	584	0	5	349	0	0	72	0	0	307	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)		3.7			3.7			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	464	15	4	259	27	35	7	16	159	6	87
Future Volume (Veh/h)	96	464	15	4	259	27	35	7	16	159	6	87
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	117	566	18	5	316	33	43	9	20	194	7	106
Pedestrians		1			2						1	
Lane Width (m)		3.7			3.7						3.7	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	350			584			1088	1169	294	887	1162	177
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	350			584			1088	1169	294	887	1162	177
tC, single (s)	4.1			4.1			7.5	6.5	7.1	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	90			100			68	95	97	7	96	87
cM capacity (veh/h)	1219			1001			135	175	678	208	177	832

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	117	377	207	5	211	138	72	307
Volume Left	117	0	0	5	0	0	43	194
Volume Right	0	0	18	0	0	33	20	106
cSH	1219	1700	1700	1001	1700	1700	180	279
Volume to Capacity	0.10	0.22	0.12	0.00	0.12	0.08	0.40	1.10
Queue Length 95th (m)	2.5	0.0	0.0	0.1	0.0	0.0	14.1	101.1
Control Delay (s/veh)	8.3	0.0	0.0	8.6	0.0	0.0	37.7	123.9
Lane LOS	A			A			E	F
Approach Delay (s/veh)	1.4			0.1			37.7	123.9
Approach LOS							E	F

Intersection Summary				
Average Delay	29.1			
Intersection Capacity Utilization	44.3%	ICU Level of Service		A
Analysis Period (min)	15			

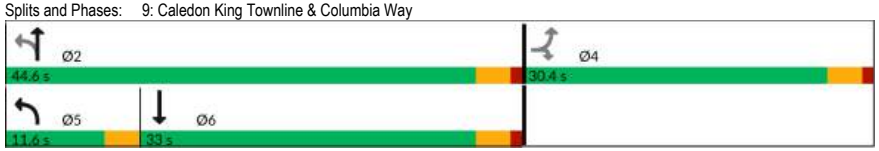
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	679	150	138	621	25
Future Volume (vph)	41	679	150	138	621	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.995	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1659	1601	1659	1830	1893	0
Flt Permitted	0.950		0.130			
Satd. Flow (perm)	1659	1601	227	1830	1893	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		337			3	
Link Speed (k/h)	60			80	80	
Link Distance (m)	190.9			1113.3	133.7	
Travel Time (s)	11.5			50.1	6.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	10%	2%	10%	5%	1%	0%
Adj. Flow (vph)	44	722	160	147	661	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	722	160	147	688	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	
Minimum Split (s)	22.0	22.0	10.0	24.0	24.0	
Total Split (s)	30.4	30.4	11.6	44.6	33.0	
Total Split (%)	40.5%	40.5%	15.5%	59.5%	44.0%	
Maximum Green (s)	26.4	26.4	8.6	40.6	29.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0	0.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Don't Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	24.3	24.3	40.1	39.1	27.7	
Actuated g/C Ratio	0.34	0.34	0.56	0.55	0.39	
v/c Ratio	0.08	0.94	0.54	0.15	0.94	
Control Delay (s/veh)	16.8	35.3	16.9	9.0	44.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	16.8	35.3	16.9	9.0	44.6	
LOS	B	D	B	A	D	
Approach Delay (s/veh)	34.3			13.1	44.6	
Approach LOS	C			B	D	
Queue Length 50th (m)	4.3	58.2	10.8	10.1	95.6	
Queue Length 95th (m)	10.9	#133.5	24.1	18.9	#165.6	
Internal Link Dist (m)	166.9			1089.3	109.7	
Turn Bay Length (m)						
Base Capacity (vph)	619	808	301	1051	778	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.07	0.89	0.53	0.14	0.88	

Intersection Summary		
Area Type:	Other	
Cycle Length: 75		
Actuated Cycle Length: 71.5		
Natural Cycle: 80		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 0.94		
Intersection Signal Delay (s/veh): 34.6		Intersection LOS: C
Intersection Capacity Utilization 82.9%		ICU Level of Service E
Analysis Period (min) 15		

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

Splits and Phases: 9: Caledon King Townline & Columbia Way

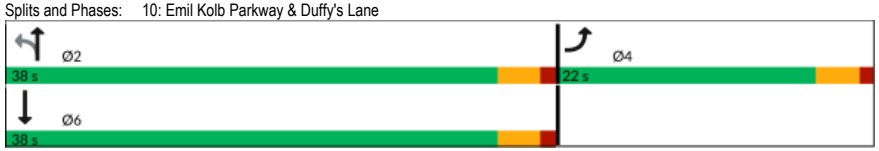


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	84	125	49	504	1239	33
Future Volume (vph)	84	125	49	504	1239	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	115.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt	0.919				0.996	
Flt Protected	0.980		0.950			
Satd. Flow (prot)	1700	0	1534	3042	3532	0
Flt Permitted	0.980		0.156			
Satd. Flow (perm)	1700	0	252	3042	3532	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	41				7	
Link Speed (k/h)	50			70	50	
Link Distance (m)	426.7			2029.6	656.7	
Travel Time (s)	30.7			104.4	47.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	19%	20%	3%	0%
Adj. Flow (vph)	93	139	54	560	1377	37
Shared Lane Traffic (%)						
Lane Group Flow (vph)	232	0	54	560	1414	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	
Detector Template	Left		Left	Thru	Thru	
Leading Detector (m)	2.0		2.0	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)	2.0		2.0	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	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases			2			
Detector Phase	4		2	2	6	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	
Minimum Split (s)	22.0		22.0	22.0	22.0	
Total Split (s)	22.0		38.0	38.0	38.0	
Total Split (%)	36.7%		63.3%	63.3%	63.3%	
Maximum Green (s)	18.0		34.0	34.0	34.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	None	None	
Walk Time (s)	7.0		7.0	7.0	7.0	
Flash Don't Walk (s)	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	13.1		27.3	27.3	27.3	
Actuated g/C Ratio	0.31		0.65	0.65	0.65	
v/c Ratio	0.42		0.33	0.28	0.62	
Control Delay (s/veh)	15.3		13.5	5.6	8.3	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay (s/veh)	15.3		13.5	5.6	8.3	
LOS	B		B	A	A	
Approach Delay (s/veh)	15.3			6.3	8.3	
Approach LOS	B			A	A	
Queue Length 50th (m)	12.4		1.9	10.0	34.3	
Queue Length 95th (m)	34.9		11.9	23.2	73.1	
Internal Link Dist (m)	402.7			2005.6	632.7	
Turn Bay Length (m)			115.0			
Base Capacity (vph)	857		199	2401	2789	
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		0.27	0.23	0.51	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 42			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay (s/veh): 8.5		Intersection LOS: A	
Intersection Capacity Utilization 59.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 10: Emil Kolb Parkway & Duffy's Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	42	62	62	26	5	22	11	22	6	31	0
Future Volume (vph)	0	42	62	62	26	5	22	11	22	6	31	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.920			0.993			0.946				
Flt Protected					0.968			0.980			0.992	
Satd. Flow (prot)	0	1733	0	0	1810	0	0	1746	0	0	1868	0
Flt Permitted					0.968			0.980			0.992	
Satd. Flow (perm)	0	1733	0	0	1810	0	0	1746	0	0	1868	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		148.8			786.6			426.7			131.0	
Travel Time (s)		10.7			56.6			30.7			9.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	42	62	62	26	5	22	11	22	6	31	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	104	0	0	93	0	0	55	0	0	37	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
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	25.0%	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)	0	42	62	62	26	5	22	11	22	6	31	0
Future Volume (Veh/h)	0	42	62	62	26	5	22	11	22	6	31	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	0	42	62	62	26	5	22	11	22	6	31	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	127	120	31	192	109	22	31			33		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	127	120	31	192	109	22	31			33		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	94	94	91	97	100	99			100		
cM capacity (veh/h)	810	757	1043	682	767	1055	1582			1579		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	104	93	55	37
Volume Left	0	62	22	6
Volume Right	62	5	22	0
cSH	905	718	1582	1579
Volume to Capacity	0.11	0.13	0.01	0.00
Queue Length 95th (m)	3.1	3.6	0.3	0.1
Control Delay (s/veh)	9.5	10.8	3.0	1.2
Lane LOS	A	B	A	A
Approach Delay (s/veh)	9.5	10.8	3.0	1.2
Approach LOS	A	B		

Intersection Summary				
Average Delay		7.6		
Intersection Capacity Utilization		25.0%	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)	76	470	41	7	1039	21	133	109	34	50	93	99
Future Volume (vph)	76	470	41	7	1039	21	133	109	34	50	93	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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
Frt		0.988			0.997			0.983			0.945	
Flt Protected	0.950			0.950				0.976			0.990	
Satd. Flow (prot)	1789	3536	0	1789	3568	0	0	1807	0	0	1762	0
Flt Permitted	0.213			0.464				0.759			0.906	
Satd. Flow (perm)	401	3536	0	874	3568	0	0	1405	0	0	1613	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			5			16			60	
Link Speed (k/h)		70			50			50			50	
Link Distance (m)		656.7			298.1			132.6			132.1	
Travel Time (s)		33.8			21.5			9.5			9.5	
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
Adj. Flow (vph)	76	470	41	7	1039	21	133	109	34	50	93	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	511	0	7	1060	0	0	276	0	0	242	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)		3.7			3.7			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		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		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	28.0	28.0		28.0	28.0		22.0	22.0		22.0	22.0	
Total Split (%)	56.0%	56.0%		56.0%	56.0%		44.0%	44.0%		44.0%	44.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Don't Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	20.7	20.7		20.7	20.7			14.4			14.4	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.40			0.40	
v/c Ratio	0.33	0.25		0.01	0.52			0.49			0.36	
Control Delay (s/veh)	13.3	6.6		6.7	8.8			14.2			10.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	13.3	6.6		6.7	8.8			14.2			10.1	
LOS	B	A		A	A			B			B	
Approach Delay (s/veh)		7.5			8.8			14.2			10.1	
Approach LOS		A			A			B			B	
Queue Length 50th (m)	3.0	9.3		0.2	24.8			13.8			8.9	
Queue Length 95th (m)	14.3	21.0		1.9	51.4			37.5			26.4	
Internal Link Dist (m)		632.7			274.1			108.6			108.1	
Turn Bay Length (m)	65.0			15.0								
Base Capacity (vph)	272	2410		593	2425			793			929	
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	0.21		0.01	0.44			0.35			0.26	

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 36.2			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay (s/veh): 9.3		Intersection LOS: A	
Intersection Capacity Utilization 78.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 12: Street E & Emil Kolb Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	539	14	0	963	26	0	0	67	0	0	104
Future Volume (vph)	0	539	14	0	963	26	0	0	67	0	0	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
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
Frt		0.996			0.996				0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3564	0	0	3564	0	0	0	1629	0	0	1629
Flt Permitted												
Satd. Flow (perm)	0	3564	0	0	3564	0	0	0	1629	0	0	1629
Link Speed (k/h)		70			50			50			50	
Link Distance (m)		298.1			352.6			203.5			122.8	
Travel Time (s)		15.3			25.4			14.7			8.8	
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
Adj. Flow (vph)	0	539	14	0	963	26	0	0	67	0	0	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	553	0	0	989	0	0	0	67	0	0	104
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.6%		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)	0	539	14	0	963	26	0	0	67	0	0	104
Future Volume (Veh/h)	0	539	14	0	963	26	0	0	67	0	0	104
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	0	539	14	0	963	26	0	0	67	0	0	104
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		298										
pX, platoon unblocked												
vC, conflicting volume	989			553			1132	1535	277	1313	1529	495
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	989			553			1132	1535	277	1313	1529	495
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	91	100	100	80
cM capacity (veh/h)	695			1013			126	115	721	105	116	521

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	359	194	642	347	67	104
Volume Left	0	0	0	0	0	0
Volume Right	0	14	0	26	67	104
cSH	1700	1700	1700	1700	721	521
Volume to Capacity	0.21	0.11	0.38	0.20	0.09	0.20
Queue Length 95th (m)	0.0	0.0	0.0	0.0	2.4	5.9
Control Delay (s/veh)	0.0	0.0	0.0	0.0	10.5	13.6
Lane LOS					B	B
Approach Delay (s/veh)	0.0		0.0		10.5	13.6
Approach LOS					B	B

Intersection Summary						
Average Delay	1.2					
Intersection Capacity Utilization	40.6%	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)	128	0	165	151	0	38	44	614	52	13	963	36
Future Volume (vph)	128	0	165	151	0	38	44	614	52	13	963	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	50.0		0.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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	0.95
Frt		0.850			0.850			0.988			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1601	0	1789	1601	0	1789	3536	0	1789	3561	0
Flt Permitted	0.732			0.653			0.241			0.399		
Satd. Flow (perm)	1379	1601	0	1230	1601	0	454	3536	0	751	3561	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		75			205			24			10	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		531.2			178.5			146.2			128.1	
Travel Time (s)		38.2			12.9			8.8			7.7	
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
Adj. Flow (vph)	128	0	165	151	0	38	44	614	52	13	963	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	165	0	151	38	0	44	666	0	13	999	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)		3.7			3.7			3.7			3.7	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		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		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	22.0	22.0		22.0	22.0		28.0	28.0		28.0	28.0	
Total Split (%)	44.0%	44.0%		44.0%	44.0%		56.0%	56.0%		56.0%	56.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Don't Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	14.8	14.8		14.8	14.8		18.8	18.8		18.8	18.8	
Actuated g/C Ratio	0.45	0.45		0.45	0.45		0.57	0.57		0.57	0.57	
v/c Ratio	0.21	0.22		0.27	0.05		0.17	0.33		0.03	0.49	
Control Delay (s/veh)	11.6	7.4		12.5	0.1		8.3	6.3		6.0	7.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	11.6	7.4		12.5	0.1		8.3	6.3		6.0	7.6	
LOS	B	A		B	A		A	A		A	A	
Approach Delay (s/veh)		9.2			10.0			6.5			7.6	
Approach LOS		A			B			A			A	
Queue Length 50th (m)	5.5	3.7		6.7	0.0		1.3	11.0		0.4	19.2	
Queue Length 95th (m)	18.5	16.2		22.2	0.0		6.9	25.6		2.5	42.8	
Internal Link Dist (m)		507.2			154.5			122.2			104.1	
Turn Bay Length (m)	25.0			50.0			20.0			20.0		
Base Capacity (vph)	819	981		731	1034		329	2573		545	2587	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.16	0.17		0.21	0.04		0.13	0.26		0.02	0.39	

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 32.8			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay (s/veh): 7.7		Intersection LOS: A	
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: Highway 50 & Street A



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	100	0	0	119	54	703	28	41	1049	21
Future Volume (vph)	0	0	100	0	0	119	54	703	28	41	1049	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	40.0		0.0	40.0		0.0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.865			0.865		0.994			0.997	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	1629	0	0	1629	1789	3557	0	1789	1878	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	1629	0	0	1629	1789	3557	0	1789	1878	0
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		127.4			264.3			467.7			284.2	
Travel Time (s)		9.2			19.0			28.1			17.1	
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
Adj. Flow (vph)	0	0	100	0	0	119	54	703	28	41	1049	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	100	0	0	119	54	731	0	41	1070	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)		0.0			0.0			3.7			3.7	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
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	69.3%	ICU Level of Service C	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	100	0	0	119	54	703	28	41	1049	21
Future Volume (Veh/h)	0	0	100	0	0	119	54	703	28	41	1049	21
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	0	0	100	0	0	119	54	703	28	41	1049	21
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1720	1981	1060	2056	1977	366	1070			731		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1720	1981	1060	2056	1977	366	1070			731		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	55	100	100	81	92			95		
cM capacity (veh/h)	42	53	220	16	53	631	647			869		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	100	119	54	469	262	41	1070
Volume Left	0	0	54	0	0	41	0
Volume Right	100	119	0	0	28	0	21
cSH	220	631	647	1700	1700	869	1700
Volume to Capacity	0.45	0.19	0.08	0.28	0.15	0.05	0.63
Queue Length 95th (m)	17.4	5.5	2.2	0.0	0.0	1.2	0.0
Control Delay (s/veh)	34.2	12.0	11.1	0.0	0.0	9.3	0.0
Lane LOS	D	B	B			A	
Approach Delay (s/veh)	34.2	12.0	0.8			0.3	
Approach LOS	D	B					

Intersection Summary				
Average Delay		2.8		
Intersection Capacity Utilization		69.3%	ICU Level of Service	C
Analysis Period (min)		15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	91	138	602	4	48	1102
Future Volume (vph)	91	138	602	4	48	1102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	55.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.919		0.999			
Flt Protected	0.981				0.950	
Satd. Flow (prot)	1698	0	3575	0	1789	1883
Flt Permitted	0.981				0.950	
Satd. Flow (perm)	1698	0	3575	0	1789	1883
Link Speed (k/h)	50		60			60
Link Distance (m)	269.3		400.2			467.7
Travel Time (s)	19.4		24.0			28.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	91	138	602	4	48	1102
Shared Lane Traffic (%)						
Lane Group Flow (vph)	229	0	606	0	48	1102
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
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	0.99	0.99
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	91	138	602	4	48	1102
Future Volume (Veh/h)	91	138	602	4	48	1102
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)	91	138	602	4	48	1102
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			400			
pX, platoon unblocked						
vC, conflicting volume	1802	303			606	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1802	303			606	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	80			95	
cM capacity (veh/h)	67	693			968	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	229	401	205	48	1102
Volume Left	91	0	0	48	0
Volume Right	138	0	4	0	0
cSH	148	1700	1700	968	1700
Volume to Capacity	1.55	0.24	0.12	0.05	0.65
Queue Length 95th (m)	125.1	0.0	0.0	1.3	0.0
Control Delay (s/veh)	332.7	0.0	0.0	8.9	0.0
Lane LOS	F			A	
Approach Delay (s/veh)	332.7	0.0		0.4	
Approach LOS	F				

Intersection Summary					
Average Delay		38.6			
Intersection Capacity Utilization		78.2%	ICU Level of Service		D
Analysis Period (min)		15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	13	0	35	5	0	66
Future Volume (vph)	13	0	35	5	0	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.983			
Flt Protected	0.950					
Satd. Flow (prot)	1789	0	1851	0	0	1883
Flt Permitted	0.950					
Satd. Flow (perm)	1789	0	1851	0	0	1883
Link Speed (k/h)	50		50			50
Link Distance (m)	354.8		405.8			130.9
Travel Time (s)	25.5		29.2			9.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	13	0	35	5	0	66
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	0	40	0	0	66
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	0	35	5	0	66
Future Volume (Veh/h)	13	0	35	5	0	66
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)	13	0	35	5	0	66
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	104	38			40	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	104	38			40	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	895	1035			1570	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	13	40	66
Volume Left	13	0	0
Volume Right	0	5	0
cSH	895	1700	1570
Volume to Capacity	0.01	0.02	0.00
Queue Length 95th (m)	0.4	0.0	0.0
Control Delay (s/veh)	9.1	0.0	0.0
Lane LOS	A		
Approach Delay (s/veh)	9.1	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	13.5%	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)	15	622	3	4	168	3	77	0	92	7	0	44
Future Volume (vph)	15	622	3	4	168	3	77	0	92	7	0	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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
Frt		0.999			0.997			0.927			0.884	
Flt Protected	0.950			0.950				0.978			0.993	
Satd. Flow (prot)	1789	3575	0	1789	3568	0	0	1708	0	0	1653	0
Flt Permitted	0.950			0.950				0.978			0.993	
Satd. Flow (perm)	1789	3575	0	1789	3568	0	0	1708	0	0	1653	0
Link Speed (k/h)		50			60			50			50	
Link Distance (m)		228.4			304.5			187.8			197.0	
Travel Time (s)		16.4			18.3			13.5			14.2	
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
Adj. Flow (vph)	15	622	3	4	168	3	77	0	92	7	0	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	625	0	4	171	0	0	169	0	0	51	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)		3.7			3.7			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	622	3	4	168	3	77	0	92	7	0	44
Future Volume (Veh/h)	15	622	3	4	168	3	77	0	92	7	0	44
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	15	622	3	4	168	3	77	0	92	7	0	44
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	171			625			790	833	313	611	833	86
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	171			625			790	833	313	611	833	86
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			71	100	87	98	100	95
cM capacity (veh/h)	1404			952			265	299	683	324	299	956

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	15	415	210	4	112	59	169	51
Volume Left	15	0	0	4	0	0	77	7
Volume Right	0	0	3	0	0	3	92	44
cSH	1404	1700	1700	952	1700	1700	397	754
Volume to Capacity	0.01	0.24	0.12	0.00	0.07	0.03	0.43	0.07
Queue Length 95th (m)	0.3	0.0	0.0	0.1	0.0	0.0	16.6	1.7
Control Delay (s/veh)	7.6	0.0	0.0	8.8	0.0	0.0	20.6	10.1
Lane LOS	A			A			C	B
Approach Delay (s/veh)	0.2			0.2			20.6	10.1
Approach LOS							C	B

Intersection Summary				
Average Delay	4.0			
Intersection Capacity Utilization	40.5%	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)	0	0	3	245	0	259	0	1023	327	278	567	3
Future Volume (vph)	0	0	3	245	0	259	0	1023	327	278	567	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	140.0		30.0	125.0		30.0
Storage Lanes	0		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.865			0.850			0.964				0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1662	0	1750	1555	0	1879	3466	0	1785	1883	795
Flt Permitted				0.851						0.120		
Satd. Flow (perm)	0	1662	0	1568	1555	0	1879	3466	0	225	1883	795
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		297			321			51				48
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		127.3			237.9			633.3			400.2	
Travel Time (s)		9.2			21.4			38.0			24.0	
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
Heavy Vehicles (%)	100%	0%	0%	2%	0%	5%	0%	2%	0%	0%	2%	100%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	0	0	3	255	0	270	0	1066	341	290	591	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	255	270	0	0	1407	0	290	591	3
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												
Headway Factor	0.99	0.99	0.99	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left						Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	12.0		8.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	-3.0		-2.0	-2.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	-3.0		-2.0	-2.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	15.0		10.0	10.0		2.0	0.6		2.0	0.6	2.0
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												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA		pm+pt	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		3	8		2	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		20.0	20.0		7.0	20.0	20.0
Minimum Split (s)	23.0	23.0		11.0	23.0		28.0	28.0		11.0	28.0	28.0
Total Split (s)	23.0	23.0		18.0	41.0		34.0	34.0		15.0	49.0	49.0
Total Split (%)	25.6%	25.6%		20.0%	45.6%		37.8%	37.8%		16.7%	54.4%	54.4%
Maximum Green (s)	19.0	19.0		15.0	37.0		30.0	30.0		12.0	45.0	45.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		0.0	1.0		1.0	1.0		0.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.0		3.0	4.0		4.0	4.0		3.0	4.0	4.0
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)	8.0	8.0			8.0		8.0	8.0			8.0	8.0
Flash Don't Walk (s)	11.0	11.0			11.0		16.0	16.0			16.0	16.0
Pedestrian Calls (#/hr)	0	0			0		0	0			0	0
Act Effct Green (s)		10.1		15.9	14.9			30.3		45.7	44.7	44.7
Actuated g/C Ratio		0.15		0.23	0.22			0.45		0.68	0.66	0.66
v/c Ratio		0.01		0.63	0.46			0.89		0.70	0.48	0.01
Control Delay (s/veh)		0.0		30.3	4.0			27.2		23.1	8.5	0.0
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay (s/veh)		0.0		30.3	4.0			27.2		23.1	8.5	0.0
LOS		A		C	A			C		C	A	A
Approach Delay (s/veh)					16.7			27.2			13.3	
Approach LOS					B			C			B	
Queue Length 50th (m)		0.0		30.5	0.0			81.0		17.1	29.7	0.0
Queue Length 95th (m)		0.0		50.8	9.3			#174.7		#69.1	87.4	0.0
Internal Link Dist (m)		103.3			213.9			609.3			376.2	
Turn Bay Length (m)										125.0		30.0
Base Capacity (vph)		684		445	1001			1578		431	1263	549
Starvation Cap Reductn		0		0	0			0		0	0	0
Spillback Cap Reductn		0		0	0			0		0	0	0
Storage Cap Reductn		0		0	0			0		0	0	0
Reduced v/c Ratio		0.00		0.57	0.27			0.89		0.67	0.47	0.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 67.7			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay (s/veh): 20.9		Intersection LOS: C	
Intersection Capacity Utilization 84.4%		ICU Level of Service E	

Analysis Period (min) 15

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

Splits and Phases: 3: Highway 50 & Columbia Way



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	8	13	42	10	19	90	1361	105	31	714	23
Future Volume (vph)	9	8	13	42	10	19	90	1361	105	31	714	23
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	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Storage Length (m)	30.0		0.0	85.0		0.0	90.0		75.0	65.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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			
Frt		0.870			0.902				0.850		0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1785	1671	0	1785	1733	0	1785	3614	1559	1785	3563	0
Flt Permitted	0.738			0.581			0.355			0.166		
Satd. Flow (perm)	1387	1671	0	1092	1733	0	667	3614	1520	312	3563	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			19				359		4	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		112.1			201.9			771.8			633.3	
Travel Time (s)		10.1			18.2			46.3			38.0	
Confl. Peds. (#/hr)									2			
Confl. Bikes (#/hr)					2							
Peak Hour Factor	1.00	1.00	0.25	1.00	1.00	1.00	1.00	1.00	0.25	0.25	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	2%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	0	1
Adj. Flow (vph)	9	8	52	42	10	19	90	1361	420	124	714	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	60	0	42	29	0	90	1361	420	124	737	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												
Headway Factor	1.01	0.99	0.99	1.01	0.99	0.99	1.01	0.99	1.02	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	
Detector Template							Left	Thru	Right	Left	Thru	
Leading Detector (m)	12.0	12.0		12.0	12.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	-3.0	-3.0		-3.0	-3.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	15.0	15.0		15.0	15.0		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	

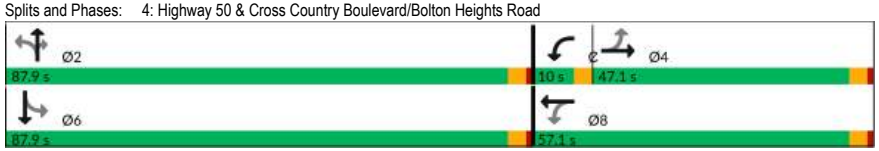
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	47.1	47.1		10.0	47.1		34.7	34.7	34.7	34.7	34.7	
Total Split (s)	47.1	47.1		10.0	57.1		87.9	87.9	87.9	87.9	87.9	
Total Split (%)	32.5%	32.5%		6.9%	39.4%		60.6%	60.6%	60.6%	60.6%	60.6%	
Maximum Green (s)	43.1	43.1		7.0	53.1		83.9	83.9	83.9	83.9	83.9	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		0.0	1.0		1.0	1.0	1.0	1.0	1.0	
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)	4.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
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	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	10.0	10.0			10.0		10.0	10.0	10.0	10.0	10.0	
Flash Don't Walk (s)	29.0	29.0			29.0		18.0	18.0	18.0	18.0	18.0	
Pedestrian Calls (#/hr)	4	4			4		2	2	2	2	2	
Act Effct Green (s)	14.9	14.9		22.9	22.8		90.7	90.7	90.7	90.7	90.7	
Actuated g/C Ratio	0.13	0.13		0.19	0.19		0.77	0.77	0.77	0.77	0.77	
v/c Ratio	0.05	0.23		0.17	0.08		0.17	0.49	0.33	0.52	0.27	
Control Delay (s/veh)	42.7	16.0		36.9	18.6		8.3	8.8	2.4	21.1	6.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	42.7	16.0		36.9	18.6		8.3	8.8	2.4	21.1	6.7	
LOS	D	B		D	B		A	A	A	C	A	
Approach Delay (s/veh)		19.5			29.4			7.4			8.8	
Approach LOS		B			C			A			A	
Queue Length 50th (m)	1.9	1.7		8.1	1.9		5.1	56.2	3.1	10.1	23.7	
Queue Length 95th (m)	6.8	13.3		17.1	9.4		22.3	153.1	0.0	7.4	68.0	
Internal Link Dist (m)		88.1			177.9			747.8			609.3	
Turn Bay Length (m)	30.0			85.0			90.0		75.0	65.0		
Base Capacity (vph)	514	652		254	802		515	2791	1255	240	2752	
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	0.02	0.09		0.17	0.04		0.17	0.49	0.33	0.52	0.27	

Intersection Summary

Area Type: Other
Cycle Length: 145
Actuated Cycle Length: 117.5
Natural Cycle: 145
Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.52
Intersection Signal Delay (s/veh): 8.6 Intersection LOS: A
Intersection Capacity Utilization 64.9% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 4: Highway 50 & Cross Country Boulevard/Bolton Heights Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	301	117	262	335	53	93	1403	490	39	761	27
Future Volume (vph)	70	301	117	262	335	53	93	1403	490	39	761	27
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	3.7	3.7	3.5	3.7	3.7	3.5
Storage Length (m)	30.0		35.0	30.0		0.0	55.0		0.0	20.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Ped Bike Factor	0.99		0.96	0.99	0.99				0.96		1.00	
Frt			0.850		0.979				0.850		0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1575	1712	1409	1591	1666	0	1579	1695	1432	1643	1694	0
Flt Permitted	0.218			0.143			0.123			0.051		
Satd. Flow (perm)	358	1712	1356	238	1666	0	204	1695	1369	88	1694	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95		5				195		2	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		535.7			353.4			517.9			32.8	
Travel Time (s)		48.2			31.8			31.1			2.0	
Confl. Peds. (#/hr)	11		6	6		11	10		8	8		10
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%	1%	2%	1%	1%	0%	4%	2%	0%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	1	0	1	0
Adj. Flow (vph)	72	310	121	270	345	55	96	1446	505	40	785	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	310	121	270	400	0	96	1446	505	40	813	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			3.7			3.7	
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												
Headway Factor	1.16	1.13	1.16	1.16	1.13	1.13	1.13	1.13	1.17	1.13	1.13	1.16
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	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	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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Detector Phase	3	8	8	7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	8.0	31.9	31.9	8.0	31.9		8.0	32.0	32.0	8.0	32.0	
Total Split (s)	20.1	31.9	31.9	24.1	35.9		8.0	86.0	86.0	8.0	86.0	
Total Split (%)	13.4%	21.3%	21.3%	16.1%	23.9%		5.3%	57.3%	57.3%	5.3%	57.3%	
Maximum Green (s)	17.1	25.0	25.0	21.1	29.0		5.0	79.0	79.0	5.0	79.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	0.0	2.9	2.9	0.0	2.9		0.0	3.0	3.0	0.0	3.0	
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	6.9	6.9	3.0	6.9		3.0	7.0	7.0	3.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	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	None	None	None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)		10.0	10.0		10.0			10.0	10.0		10.0	
Flash Don't Walk (s)		15.0	15.0		15.0			15.0	15.0		15.0	
Pedestrian Calls (#/hr)		4	4		4			8	8		8	
Act Effct Green (s)	39.0	25.0	25.0	53.0	36.0		88.6	80.6	80.6	88.0	79.0	
Actuated g/C Ratio	0.26	0.17	0.17	0.35	0.24		0.59	0.54	0.54	0.59	0.53	
v/c Ratio	0.41	1.09	0.40	0.99	0.99		0.58	1.59	0.61	0.39	0.91	
Control Delay (s/veh)	41.0	135.3	19.8	92.5	98.4		27.6	297.8	17.8	22.9	47.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	41.0	135.3	19.8	92.5	98.4		27.6	297.8	17.8	22.9	47.8	
LOS	D	F	B	F	F		C	F	B	C	D	
Approach Delay (s/veh)		94.0			96.0			216.1			46.7	
Approach LOS		F			F			F			D	
Queue Length 50th (m)	15.3	~108.6	7.0	68.5	124.6		12.1	~648.9	66.8	4.8	225.3	
Queue Length 95th (m)	27.7	#171.6	27.4	#129.8	#210.0		20.7	#733.9	106.3	10.2	#319.8	
Internal Link Dist (m)		511.7			329.4			493.9			8.8	
Turn Bay Length (m)	30.0		35.0	30.0			55.0			20.0		
Base Capacity (vph)	248	285	305	274	403		166	910	825	103	893	
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	0.29	1.09	0.40	0.99	0.99		0.58	1.59	0.61	0.39	0.91	

Intersection Summary	
Area Type:	CBD
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	

Maximum v/c Ratio: 1.59	
Intersection Signal Delay (s/veh): 145.8	Intersection LOS: F
Intersection Capacity Utilization 135.1%	ICU Level of Service H
Analysis Period (min) 15	

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

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

Splits and Phases: 5: Highway 50 & King Street West/King Street East

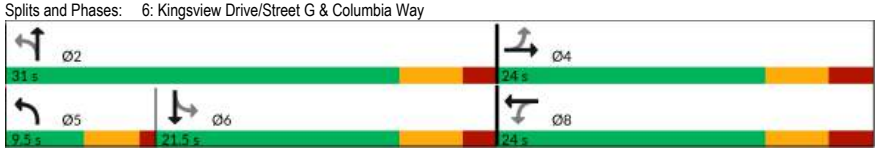


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	398	79	68	368	60	24	8	37	34	5	98
Future Volume (vph)	144	398	79	68	368	60	24	8	37	34	5	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00				
Frt		0.981			0.947			0.889			0.903	
Flt Protected		0.989			0.995			0.993			0.988	
Satd. Flow (prot)	0	3525	0	0	3379	0	0	1683	0	0	1680	0
Flt Permitted		0.695			0.817			0.927			0.859	
Satd. Flow (perm)	0	2477	0	0	2774	0	0	1571	0	0	1461	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30			197			148			98	
Link Speed (k/h)		40			40			40			50	
Link Distance (m)		237.9			417.0			131.8			93.0	
Travel Time (s)		21.4			37.5			11.9			6.7	
Confl. Peds. (#/hr)							5					
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	0.25	1.00	1.00	0.25	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	0%	2%	2%	5%	2%	0%	2%	2%	2%
Adj. Flow (vph)	144	398	79	68	368	240	24	8	148	34	5	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	621	0	0	676	0	0	180	0	0	137	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		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	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	8.0		8.0	8.0	
Minimum Split (s)	21.9	21.9		21.9	21.9		9.5	21.0		21.0	21.0	
Total Split (s)	24.0	24.0		24.0	24.0		9.5	31.0		21.5	21.5	
Total Split (%)	43.6%	43.6%		43.6%	43.6%		17.3%	56.4%		39.1%	39.1%	
Maximum Green (s)	17.1	17.1		17.1	17.1		5.0	25.0		15.5	15.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	2.9	2.9		2.9	2.9		1.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.9			6.9			6.0			6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0			8.0		8.0	8.0	
Flash Don't Walk (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		3	3	
Act Effct Green (s)		17.7			17.7			10.3			10.3	
Actuated g/C Ratio		0.53			0.53			0.31			0.31	
v/c Ratio		0.47			0.44			0.31			0.27	
Control Delay (s/veh)		9.7			6.9			5.6			6.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay (s/veh)		9.7			6.9			5.6			6.6	
LOS		A			A			A			A	
Approach Delay (s/veh)		9.7			6.9			5.6			6.6	
Approach LOS		A			A			A			A	
Queue Length 50th (m)		13.5			10.1			1.6			2.0	
Queue Length 95th (m)		34.0			27.4			11.6			11.0	
Internal Link Dist (m)		213.9			393.0			107.8			69.0	
Turn Bay Length (m)												
Base Capacity (vph)		1406			1646			1186			818	
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			0.41			0.15			0.17	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 33.6			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay (s/veh): 7.8		Intersection LOS: A	
Intersection Capacity Utilization 58.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Kingsview Drive/Street G & Columbia Way



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	284	106	47	340	40	23
Future Volume (vph)	284	106	47	340	40	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.959				0.950	
Flt Protected				0.994	0.969	
Satd. Flow (prot)	3381	0	0	3566	1743	0
Flt Permitted				0.994	0.969	
Satd. Flow (perm)	3381	0	0	3566	1743	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	500.8			180.3	104.8	
Travel Time (s)	30.0			10.8	9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	0%	2%	0%	4%
Adj. Flow (vph)	309	115	51	370	43	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	424	0	0	421	68	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	284	106	47	340	40	23
Future Volume (Veh/h)	284	106	47	340	40	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	309	115	51	370	43	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			424		654	212
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			424		654	212
tC, single (s)			4.1		6.8	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		89	97
cM capacity (veh/h)			1146		386	787

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	206	218	174	247	68
Volume Left	0	0	51	0	43
Volume Right	0	115	0	0	25
cSH	1700	1700	1146	1700	475
Volume to Capacity	0.12	0.13	0.04	0.15	0.14
Queue Length 95th (m)	0.0	0.0	1.1	0.0	4.0
Control Delay (s/veh)	0.0	0.0	2.7	0.0	13.8
Lane LOS			A		B
Approach Delay (s/veh)	0.0		1.1		13.8
Approach LOS					B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	35.6%	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)	59	309	38	22	517	149	20	7	11	46	9	50
Future Volume (vph)	59	309	38	22	517	149	20	7	11	46	9	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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
Frt		0.984			0.966			0.959			0.935	
Flt Protected	0.950			0.950				0.974			0.979	
Satd. Flow (prot)	1706	3469	0	1460	3472	0	0	1794	0	0	1714	0
Flt Permitted	0.950			0.950				0.974			0.979	
Satd. Flow (perm)	1706	3469	0	1460	3472	0	0	1794	0	0	1714	0
Link Speed (k/h)		60			60			40			60	
Link Distance (m)		116.8			228.4			249.8			405.8	
Travel Time (s)		7.0			13.7			22.5			24.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	3%	8%	25%	2%	0%	0%	0%	0%	6%	0%	0%
Adj. Flow (vph)	62	325	40	23	544	157	21	7	12	48	9	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	365	0	23	701	0	0	40	0	0	110	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)		3.7			3.7			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	309	38	22	517	149	20	7	11	46	9	50
Future Volume (Veh/h)	59	309	38	22	517	149	20	7	11	46	9	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	62	325	40	23	544	157	21	7	12	48	9	53
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	701			365			845	1216	183	971	1158	351
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	701			365			845	1216	183	971	1158	351
tC, single (s)	4.2			4.6			7.5	6.5	6.9	7.6	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.3			2.4			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	93			98			90	96	99	73	95	92
cM capacity (veh/h)	859			1041			213	166	835	179	180	652

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	62	217	148	23	363	338	40	110
Volume Left	62	0	0	23	0	0	21	48
Volume Right	0	0	40	0	0	157	12	53
cSH	859	1700	1700	1041	1700	1700	258	275
Volume to Capacity	0.07	0.13	0.09	0.02	0.21	0.20	0.16	0.40
Queue Length 95th (m)	1.9	0.0	0.0	0.5	0.0	0.0	4.3	14.7
Control Delay (s/veh)	9.5	0.0	0.0	8.5	0.0	0.0	21.5	26.5
Lane LOS	A			A			C	D
Approach Delay (s/veh)	1.4			0.3			21.5	26.5
Approach LOS							C	D

Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	39.5%	ICU Level of Service		A
Analysis Period (min)	15			

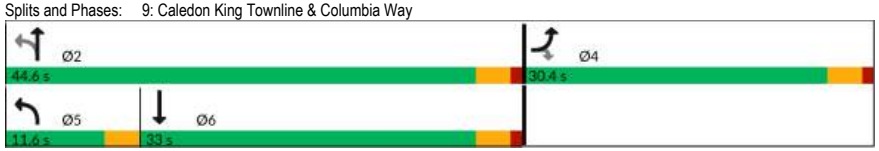
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	88	187	350	576	249	365
Future Volume (vph)	88	187	350	576	249	365
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.920	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1825	1617	1807	1902	1753	0
Flt Permitted	0.950		0.183			
Satd. Flow (perm)	1825	1617	348	1902	1753	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		193			114	
Link Speed (k/h)	60			80	80	
Link Distance (m)	190.9			1113.3	133.7	
Travel Time (s)	11.5			50.1	6.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	1%	1%	2%	0%
Adj. Flow (vph)	91	193	361	594	257	376
Shared Lane Traffic (%)						
Lane Group Flow (vph)	91	193	361	594	633	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	
Minimum Split (s)	22.0	22.0	10.0	24.0	24.0	
Total Split (s)	30.4	30.4	11.6	44.6	33.0	
Total Split (%)	40.5%	40.5%	15.5%	59.5%	44.0%	
Maximum Green (s)	26.4	26.4	8.6	40.6	29.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0	0.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Don't Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	10.2	10.2	36.3	35.3	23.6	
Actuated g/C Ratio	0.19	0.19	0.68	0.66	0.44	
v/c Ratio	0.26	0.42	0.77	0.47	0.76	
Control Delay (s/veh)	22.1	7.2	20.4	5.9	16.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	22.1	7.2	20.4	5.9	16.8	
LOS	C	A	C	A	B	
Approach Delay (s/veh)	12.0			11.4	16.8	
Approach LOS	B			B	B	
Queue Length 50th (m)	7.7	0.0	12.0	23.1	40.3	
Queue Length 95th (m)	20.3	14.6	#53.5	41.0	76.9	
Internal Link Dist (m)	166.9			1089.3	109.7	
Turn Bay Length (m)						
Base Capacity (vph)	904	898	471	1450	1006	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.10	0.21	0.77	0.41	0.63	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 53.5			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 13.3		Intersection LOS: B	
Intersection Capacity Utilization 73.2%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 9: Caledon King Townline & Columbia Way

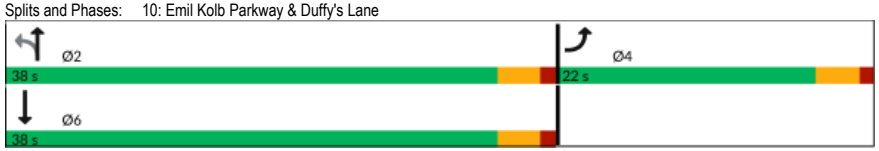


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	50	65	145	1243	652	72
Future Volume (vph)	50	65	145	1243	652	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	115.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt	0.924				0.985	
Flt Protected	0.979		0.950			
Satd. Flow (prot)	1704	0	1789	3544	3265	0
Flt Permitted	0.979		0.314			
Satd. Flow (perm)	1704	0	591	3544	3265	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	77				32	
Link Speed (k/h)	50			70	50	
Link Distance (m)	426.7			2029.6	656.7	
Travel Time (s)	30.7			104.4	47.3	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	2%	2%	2%	3%	11%	2%
Adj. Flow (vph)	60	77	173	1480	776	86
Shared Lane Traffic (%)						
Lane Group Flow (vph)	137	0	173	1480	862	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	
Detector Template	Left		Left	Thru	Thru	
Leading Detector (m)	2.0		2.0	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)	2.0		2.0	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	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases			2			
Detector Phase	4		2	2	6	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	
Minimum Split (s)	22.0		22.0	22.0	22.0	
Total Split (s)	22.0		38.0	38.0	38.0	
Total Split (%)	36.7%		63.3%	63.3%	63.3%	
Maximum Green (s)	18.0		34.0	34.0	34.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	None	None	
Walk Time (s)	7.0		7.0	7.0	7.0	
Flash Don't Walk (s)	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	12.5		27.0	27.0	27.0	
Actuated g/C Ratio	0.31		0.68	0.68	0.68	
v/c Ratio	0.23		0.43	0.61	0.39	
Control Delay (s/veh)	10.1		9.3	6.9	4.8	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay (s/veh)	10.1		9.3	6.9	4.8	
LOS	B		A	A	A	
Approach Delay (s/veh)	10.1			7.1	4.8	
Approach LOS	B			A	A	
Queue Length 50th (m)	3.8		6.6	35.8	15.6	
Queue Length 95th (m)	15.3		17.0	48.1	22.5	
Internal Link Dist (m)	402.7			2005.6	632.7	
Turn Bay Length (m)			115.0			
Base Capacity (vph)	918		472	2833	2616	
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	0.15		0.37	0.52	0.33	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 39.7			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay (s/veh): 6.5		Intersection LOS: A	
Intersection Capacity Utilization 49.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Emil Kolb Parkway & Duffy's Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	15	35	35	21	2	52	26	52	1	18	0
Future Volume (vph)	0	15	35	35	21	2	52	26	52	1	18	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.905			0.995			0.946				
Flt Protected					0.971			0.980			0.997	
Satd. Flow (prot)	0	1705	0	0	1820	0	0	1746	0	0	1878	0
Flt Permitted					0.971			0.980			0.997	
Satd. Flow (perm)	0	1705	0	0	1820	0	0	1746	0	0	1878	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		148.8			786.6			426.7			131.0	
Travel Time (s)		10.7			56.6			30.7			9.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	15	35	35	21	2	52	26	52	1	18	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	50	0	0	58	0	0	130	0	0	19	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)		0.0			0.0			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
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	30.6%	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)	0	15	35	35	21	2	52	26	52	1	18	0
Future Volume (Veh/h)	0	15	35	35	21	2	52	26	52	1	18	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	0	15	35	35	21	2	52	26	52	1	18	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	189	202	18	219	176	52	18			78		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	189	202	18	219	176	52	18			78		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	98	97	95	97	100	97			100		
cM capacity (veh/h)	733	671	1061	683	694	1016	1599			1520		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	50	58	130	19
Volume Left	0	35	52	1
Volume Right	35	2	52	0
cSH	903	695	1599	1520
Volume to Capacity	0.06	0.08	0.03	0.00
Queue Length 95th (m)	1.4	2.2	0.8	0.0
Control Delay (s/veh)	9.2	10.7	3.1	0.4
Lane LOS	A	B	A	A
Approach Delay (s/veh)	9.2	10.7	3.1	0.4
Approach LOS	A	B		

Intersection Summary				
Average Delay		5.8		
Intersection Capacity Utilization		30.6%	ICU Level of Service	A
Analysis Period (min)		15		

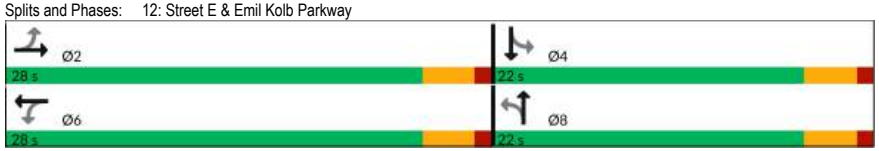
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	950	81	24	625	102	100	20	23	15	24	0
Future Volume (vph)	260	950	81	24	625	102	100	20	23	15	24	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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
Frt		0.988			0.979			0.978				
Flt Protected	0.950			0.950				0.966			0.981	
Satd. Flow (prot)	1789	3536	0	1789	3503	0	0	1779	0	0	1848	0
Flt Permitted	0.372			0.245				0.767			0.857	
Satd. Flow (perm)	701	3536	0	461	3503	0	0	1413	0	0	1614	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			50			22				
Link Speed (k/h)		70			50			50			50	
Link Distance (m)		656.7			298.1			132.6			132.1	
Travel Time (s)		33.8			21.5			9.5			9.5	
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
Adj. Flow (vph)	260	950	81	24	625	102	100	20	23	15	24	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	260	1031	0	24	727	0	0	143	0	0	39	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)		3.7			3.7			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		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		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	28.0	28.0		28.0	28.0		22.0	22.0		22.0	22.0	
Total Split (%)	56.0%	56.0%		56.0%	56.0%		44.0%	44.0%		44.0%	44.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Don't Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	24.6	24.6		24.6	24.6			11.7			11.7	
Actuated g/C Ratio	0.65	0.65		0.65	0.65			0.31			0.31	
v/c Ratio	0.57	0.45		0.08	0.32			0.32			0.08	
Control Delay (s/veh)	15.4	6.0		5.6	4.9			13.9			12.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	15.4	6.0		5.6	4.9			13.9			12.7	
LOS	B	A		A	A			B			B	
Approach Delay (s/veh)		7.9			4.9			13.9			12.7	
Approach LOS		A			A			B			B	
Queue Length 50th (m)	11.1	19.8		0.7	11.7			7.7			2.3	
Queue Length 95th (m)	#47.1	36.8		3.5	22.9			19.0			7.4	
Internal Link Dist (m)		632.7			274.1			108.6			108.1	
Turn Bay Length (m)	65.0			15.0								
Base Capacity (vph)	455	2305		299	2293			766			863	
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	0.57	0.45		0.08	0.32			0.19			0.05	

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 37.8			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay (s/veh): 7.3		Intersection LOS: A	
Intersection Capacity Utilization 61.1%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 12: Street E & Emil Kolb Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	945	42	0	661	74	0	0	83	0	0	91
Future Volume (vph)	0	945	42	0	661	74	0	0	83	0	0	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
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
Frt		0.994			0.985				0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3557	0	0	3525	0	0	0	1629	0	0	1629
Flt Permitted												
Satd. Flow (perm)	0	3557	0	0	3525	0	0	0	1629	0	0	1629
Link Speed (k/h)		70			50			50			50	
Link Distance (m)		298.1			352.6			203.5			122.8	
Travel Time (s)		15.3			25.4			14.7			8.8	
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
Adj. Flow (vph)	0	945	42	0	661	74	0	0	83	0	0	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	987	0	0	735	0	0	0	83	0	0	91
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	945	42	0	661	74	0	0	83	0	0	91
Future Volume (Veh/h)	0	945	42	0	661	74	0	0	83	0	0	91
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	0	945	42	0	661	74	0	0	83	0	0	91
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		298										
pX, platoon unblocked				0.90			0.90	0.90	0.90	0.90	0.90	
vC, conflicting volume	735			987			1388	1701	494	1254	1685	368
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	735			762			1207	1556	213	1058	1538	368
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	88	100	100	86
cM capacity (veh/h)	866			761			107	101	712	142	103	630

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	630	357	441	294	83	91
Volume Left	0	0	0	0	0	0
Volume Right	0	42	0	74	83	91
cSH	1700	1700	1700	1700	712	630
Volume to Capacity	0.37	0.21	0.26	0.17	0.12	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	3.1	4.0
Control Delay (s/veh)	0.0	0.0	0.0	0.0	10.7	11.7
Lane LOS					B	B
Approach Delay (s/veh)	0.0		0.0		10.7	11.7
Approach LOS					B	B

Intersection Summary					
Average Delay	1.0				
Intersection Capacity Utilization	39.3%	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)	59	0	74	85	0	22	145	1129	125	32	684	108
Future Volume (vph)	59	0	74	85	0	22	145	1129	125	32	684	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	50.0		0.0	20.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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	0.95
Frt		0.850			0.850			0.985			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1601	0	1789	1601	0	1789	3525	0	1789	3507	0
Flt Permitted	0.870			0.870			0.352			0.209		
Satd. Flow (perm)	1639	1601	0	1639	1601	0	663	3525	0	394	3507	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		168			46			32			48	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		531.2			178.5			146.2			128.1	
Travel Time (s)		38.2			12.9			8.8			7.7	
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
Adj. Flow (vph)	59	0	74	85	0	22	145	1129	125	32	684	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	74	0	85	22	0	145	1254	0	32	792	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)		3.7			3.7			3.7			3.7	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		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		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	22.0	22.0		22.0	22.0		28.0	28.0		28.0	28.0	
Total Split (%)	44.0%	44.0%		44.0%	44.0%		56.0%	56.0%		56.0%	56.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Don't Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	14.6	14.6		14.6	14.6		22.4	22.4		22.4	22.4	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.73	0.73		0.73	0.73	
v/c Ratio	0.08	0.09		0.11	0.03		0.30	0.48		0.11	0.31	
Control Delay (s/veh)	12.0	0.4		12.1	2.7		7.2	5.4		5.8	4.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	12.0	0.4		12.1	2.7		7.2	5.4		5.8	4.1	
LOS	B	A		B	A		A	A		A	A	
Approach Delay (s/veh)		5.6			10.2			5.6			4.2	
Approach LOS		A			B			A			A	
Queue Length 50th (m)	3.1	0.0		4.5	0.0		5.0	26.3		0.9	13.2	
Queue Length 95th (m)	10.1	0.9		13.3	2.3		15.2	43.7		4.2	22.6	
Internal Link Dist (m)		507.2			154.5			122.2			104.1	
Turn Bay Length (m)	25.0			50.0			20.0			20.0		
Base Capacity (vph)	1087	1118		1087	1077		498	2655		296	2646	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.05	0.07		0.08	0.02		0.29	0.47		0.11	0.30	

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 30.6			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay (s/veh): 5.3		Intersection LOS: A	
Intersection Capacity Utilization 64.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: Highway 50 & Street A



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	70	0	0	67	130	1129	66	98	786	43
Future Volume (vph)	0	0	70	0	0	67	130	1129	66	98	786	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	40.0		0.0	40.0		0.0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.865			0.865		0.992			0.992	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	1629	0	0	1629	1789	3550	0	1789	1868	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	1629	0	0	1629	1789	3550	0	1789	1868	0
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		127.4			264.3			467.7			284.2	
Travel Time (s)		9.2			19.0			28.1			17.1	
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
Adj. Flow (vph)	0	0	70	0	0	67	130	1129	66	98	786	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	70	0	0	67	130	1195	0	98	829	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)		0.0			0.0			3.7			3.7	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
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	57.8%	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)	0	0	70	0	0	67	130	1129	66	98	786	43
Future Volume (Veh/h)	0	0	70	0	0	67	130	1129	66	98	786	43
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	0	0	70	0	0	67	130	1129	66	98	786	43
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1895	2459	808	2474	2447	598	829			1195		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1895	2459	808	2474	2447	598	829			1195		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	78	100	100	85	84			83		
cM capacity (veh/h)	28	21	324	9	21	446	798			580		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	70	67	130	753	442	98	829
Volume Left	0	0	130	0	0	98	0
Volume Right	70	67	0	0	66	0	43
cSH	324	446	798	1700	1700	580	1700
Volume to Capacity	0.22	0.15	0.16	0.44	0.26	0.17	0.49
Queue Length 95th (m)	6.4	4.2	4.6	0.0	0.0	4.8	0.0
Control Delay (s/veh)	19.1	14.5	10.4	0.0	0.0	12.5	0.0
Lane LOS	C	B	B			B	
Approach Delay (s/veh)	19.1	14.5	1.0			1.3	
Approach LOS	C	B					

Intersection Summary					
Average Delay	2.0				
Intersection Capacity Utilization	57.8%	ICU Level of Service		B	
Analysis Period (min)	15				

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	51	77	1221	10	114	742
Future Volume (vph)	51	77	1221	10	114	742
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	55.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.919		0.999			
Flt Protected	0.980				0.950	
Satd. Flow (prot)	1696	0	3575	0	1789	1883
Flt Permitted	0.980				0.950	
Satd. Flow (perm)	1696	0	3575	0	1789	1883
Link Speed (k/h)	50		60			60
Link Distance (m)	269.3		400.2			467.7
Travel Time (s)	19.4		24.0			28.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	51	77	1221	10	114	742
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	0	1231	0	114	742
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7			3.7
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	0.99	0.99
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	51	77	1221	10	114	742
Future Volume (Veh/h)	51	77	1221	10	114	742
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)	51	77	1221	10	114	742
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			400			
pX, platoon unblocked	0.74	0.74			0.74	
vC, conflicting volume	2196	616			1231	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1919	0			622	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	90			84	
cM capacity (veh/h)	37	807			710	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	128	814	417	114	742
Volume Left	51	0	0	114	0
Volume Right	77	0	10	0	0
cSH	87	1700	1700	710	1700
Volume to Capacity	1.48	0.48	0.25	0.16	0.44
Queue Length 95th (m)	79.8	0.0	0.0	4.6	0.0
Control Delay (s/veh)	351.6	0.0	0.0	11.0	0.0
Lane LOS	F			B	
Approach Delay (s/veh)	351.6	0.0		1.5	
Approach LOS	F				

Intersection Summary				
Average Delay	20.9			
Intersection Capacity Utilization	57.9%	ICU Level of Service		B
Analysis Period (min)	15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	0	29	11	0	45
Future Volume (vph)	7	0	29	11	0	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.963			
Flt Protected	0.950					
Satd. Flow (prot)	1789	0	1814	0	0	1883
Flt Permitted	0.950					
Satd. Flow (perm)	1789	0	1814	0	0	1883
Link Speed (k/h)	50		50			50
Link Distance (m)	354.8		405.8			130.9
Travel Time (s)	25.5		29.2			9.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	29	11	0	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	0	40	0	0	45
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	0	29	11	0	45
Future Volume (Veh/h)	7	0	29	11	0	45
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	7	0	29	11	0	45
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	80	35			40	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80	35			40	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	923	1039			1570	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	7	40	45
Volume Left	7	0	0
Volume Right	0	11	0
cSH	923	1700	1570
Volume to Capacity	0.01	0.02	0.00
Queue Length 95th (m)	0.2	0.0	0.0
Control Delay (s/veh)	8.9	0.0	0.0
Lane LOS	A		
Approach Delay (s/veh)	8.9	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	13.3%	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)	36	260	68	52	659	6	4	0	12	4	0	25
Future Volume (vph)	36	260	68	52	659	6	4	0	12	4	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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
Frt		0.969			0.999			0.899			0.884	
Flt Protected	0.950			0.950				0.988			0.993	
Satd. Flow (prot)	1789	3468	0	1789	3575	0	0	1673	0	0	1653	0
Flt Permitted	0.950			0.950				0.988			0.993	
Satd. Flow (perm)	1789	3468	0	1789	3575	0	0	1673	0	0	1653	0
Link Speed (k/h)		50			60			50			50	
Link Distance (m)		228.4			304.5			187.8			197.0	
Travel Time (s)		16.4			18.3			13.5			14.2	
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
Adj. Flow (vph)	36	260	68	52	659	6	4	0	12	4	0	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	328	0	52	665	0	0	16	0	0	29	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)		3.7			3.7			0.0			0.0	
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												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	35.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	260	68	52	659	6	4	0	12	4	0	25
Future Volume (Veh/h)	36	260	68	52	659	6	4	0	12	4	0	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	36	260	68	52	659	6	4	0	12	4	0	25
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	665			328			825	1135	164	980	1166	333
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	665			328			825	1135	164	980	1166	333
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			96			98	100	99	98	100	96
cM capacity (veh/h)	920			1228			239	185	852	189	177	663

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	36	173	155	52	439	226	16	29
Volume Left	36	0	0	52	0	0	4	4
Volume Right	0	0	68	0	0	6	12	25
cSH	920	1700	1700	1228	1700	1700	520	493
Volume to Capacity	0.04	0.10	0.09	0.04	0.26	0.13	0.03	0.06
Queue Length 95th (m)	1.0	0.0	0.0	1.1	0.0	0.0	0.8	1.5
Control Delay (s/veh)	9.1	0.0	0.0	8.1	0.0	0.0	12.1	12.8
Lane LOS	A			A			B	B
Approach Delay (s/veh)	0.9			0.6			12.1	12.8
Approach LOS							B	B

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	35.1%	ICU Level of Service		A
Analysis Period (min)	15			

APPENDIX G

EMME Modelling and Development Mapping

Peel Region
working with you

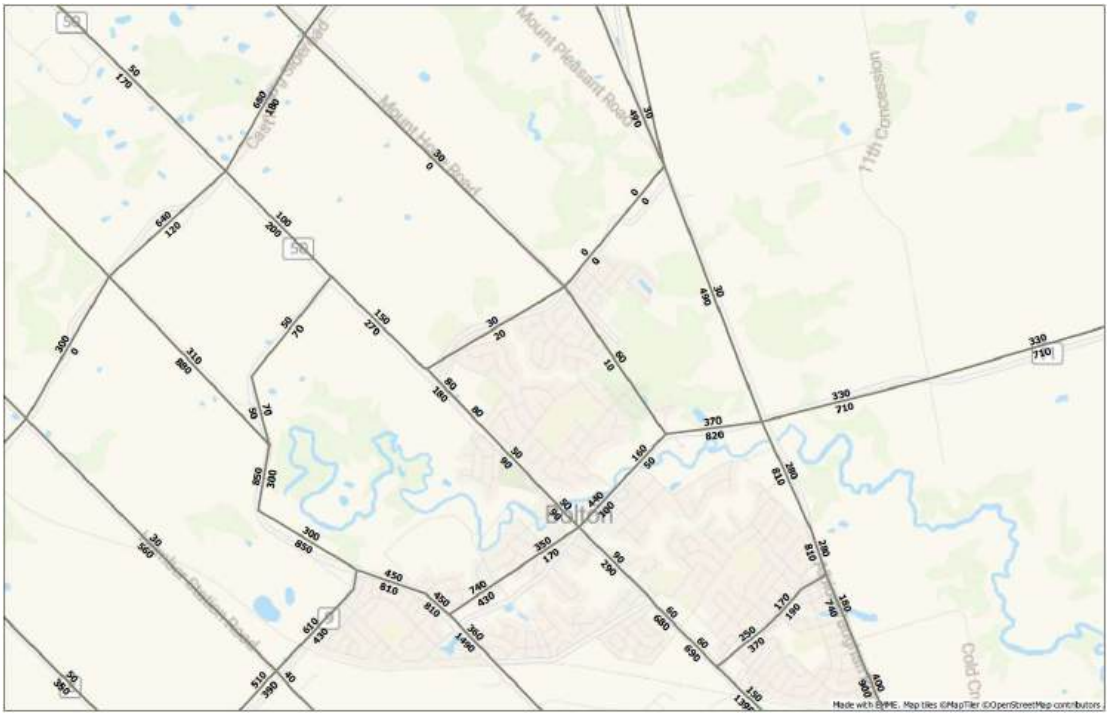
Public Works

Date: May 10, 2024
From: Kerianne Hagan, Crozier
Re: EMME Plots from TDM for Regional Road 50 and Regional Road 150

Kerianne,

As requested, attached are the two plots from the Region's Travel Demand Forecasting Models (TDM) for the AM peak hours in two horizon periods – 2031 and 2041, covering areas of interest from Regional Road 50 and Regional Road 150. Please note that these are forecasted model results based on the Region's 2011 base model. Kindly also note that these plots should be used as references only.

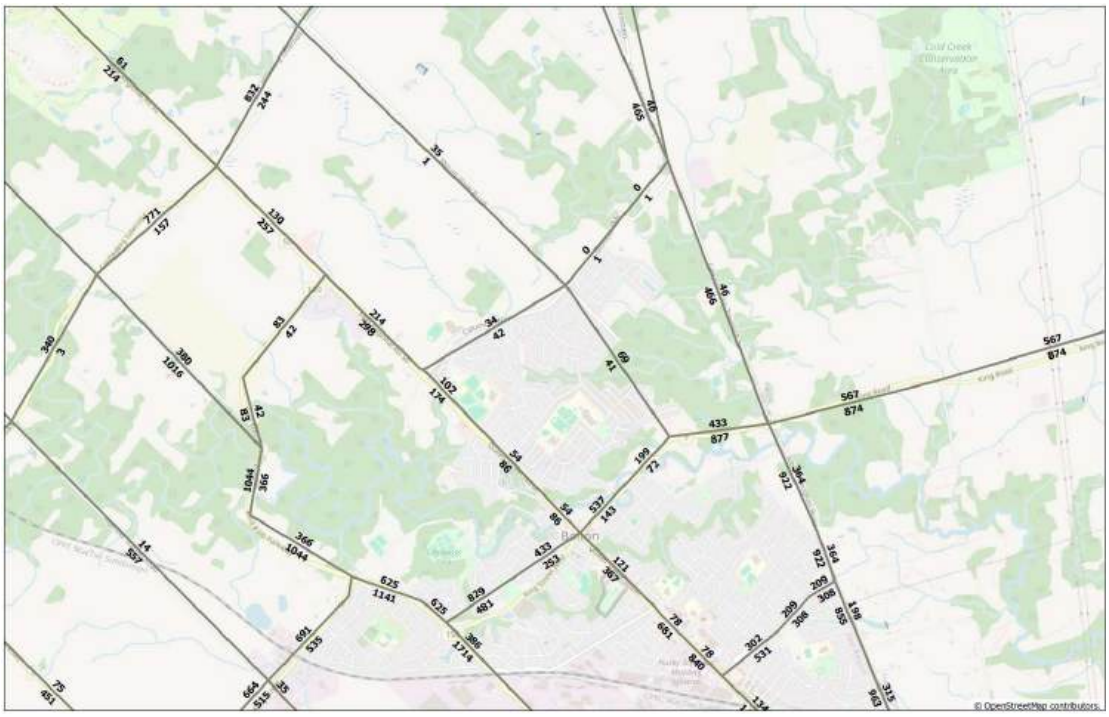
Traffic Volumes from the 2031 AM peak hour TDM



Peel Region
working with you

Public Works

Traffic Volumes from the 2041 AM peak hour TDM



If you require further assistance, please don't hesitate to contact me at karan.bedi@peelregion.ca.

Thanks,

Karan Bedi
Intermediate Planner, Transportation Planning
Transportation Division, Public Works
Region of Peel
10 Peel Centre Drive, Suite B, 4th Floor.
Brampton, ON L6T 4B9

Region of Peel
working with you

Date: May 16, 2024
Requestor: Kerianne Hagan, Crozier
Request Type: Growth Rate Data Request
Location: Emil Kolb Parkway at RR 50

Kerianne Hagan,

See below the forecasted compound annual growth rate values for Emil Kolb Parkway at RR 50.

2011 to 2021	2021 to 2031	2031 to 2041
1.0%	1.0%	1.0%

These growth rates are estimated using several sources including socioeconomic data and results from the Region of Peel's Travel Demand Forecasting Model. It is important to exercise professional judgment when using these values.

If you require further assistance, please contact me at transportationplanningdata@peelregion.ca

Regards,

Karan Bedi
Intermediate Planner, Transportation Planning
Transportation Division | Public Works | Region of Peel
10 Peel Centre Drive, Suite B, 4th Floor
Brampton, ON L6T 4B9

Date: May 16, 2024
Requestor: Kerianne Hagan, Crozier
Request Type: Growth Rate Data Request
Location: RR 50 at Emil Kolb Parkway

Kerianne Hagan,

See below the forecasted compound annual growth rate values for RR 50 at Emil Kolb Parkway.

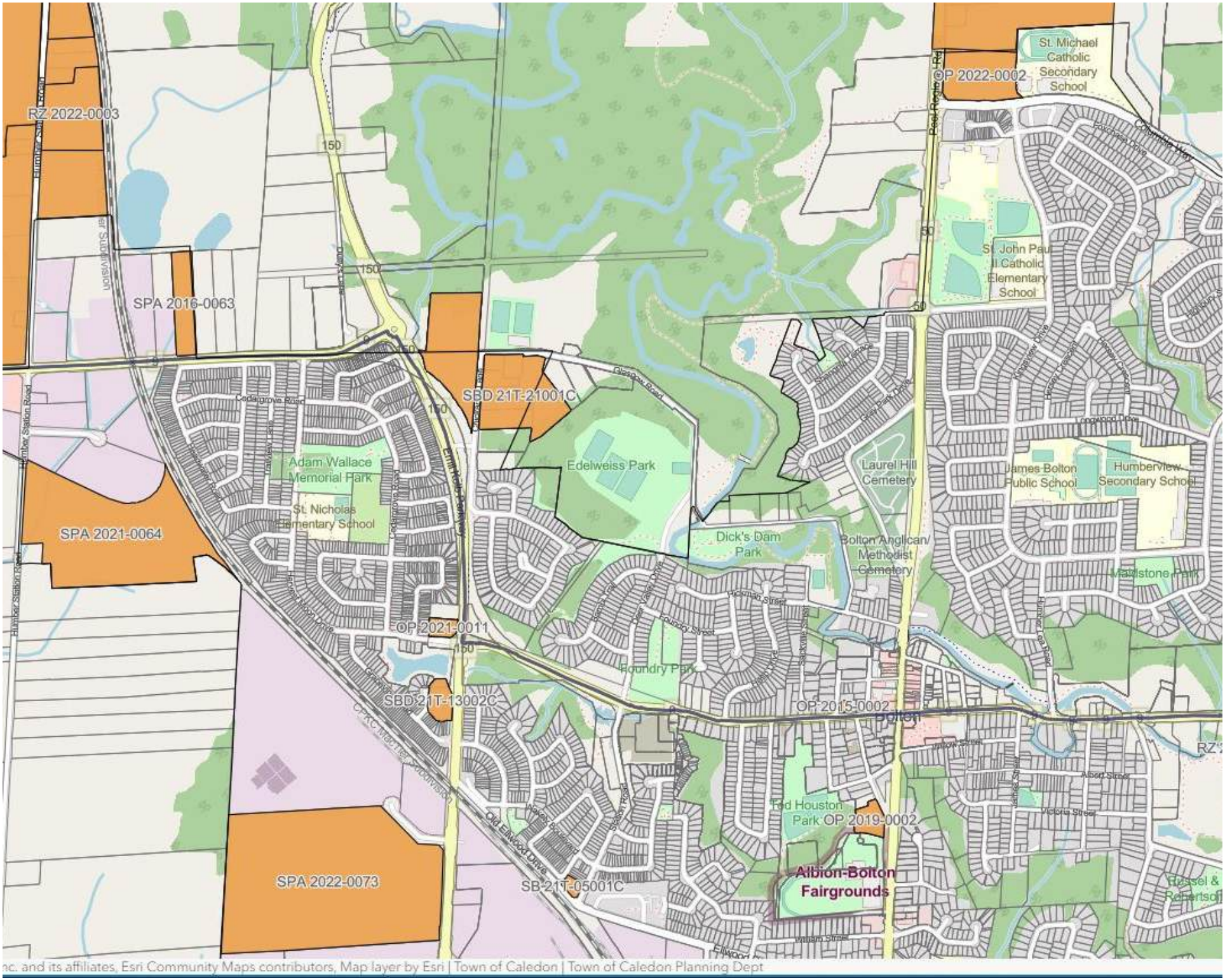
2011 to 2021	2021 to 2031	2031 to 2041
0.5%	0.5%	0.5%

These growth rates are estimated using several sources including socioeconomic data and results from the Region of Peel's Travel Demand Forecasting Model. It is important to exercise professional judgment when using these values.

If you require further assistance, please contact me at transportationplanningdata@peelregion.ca

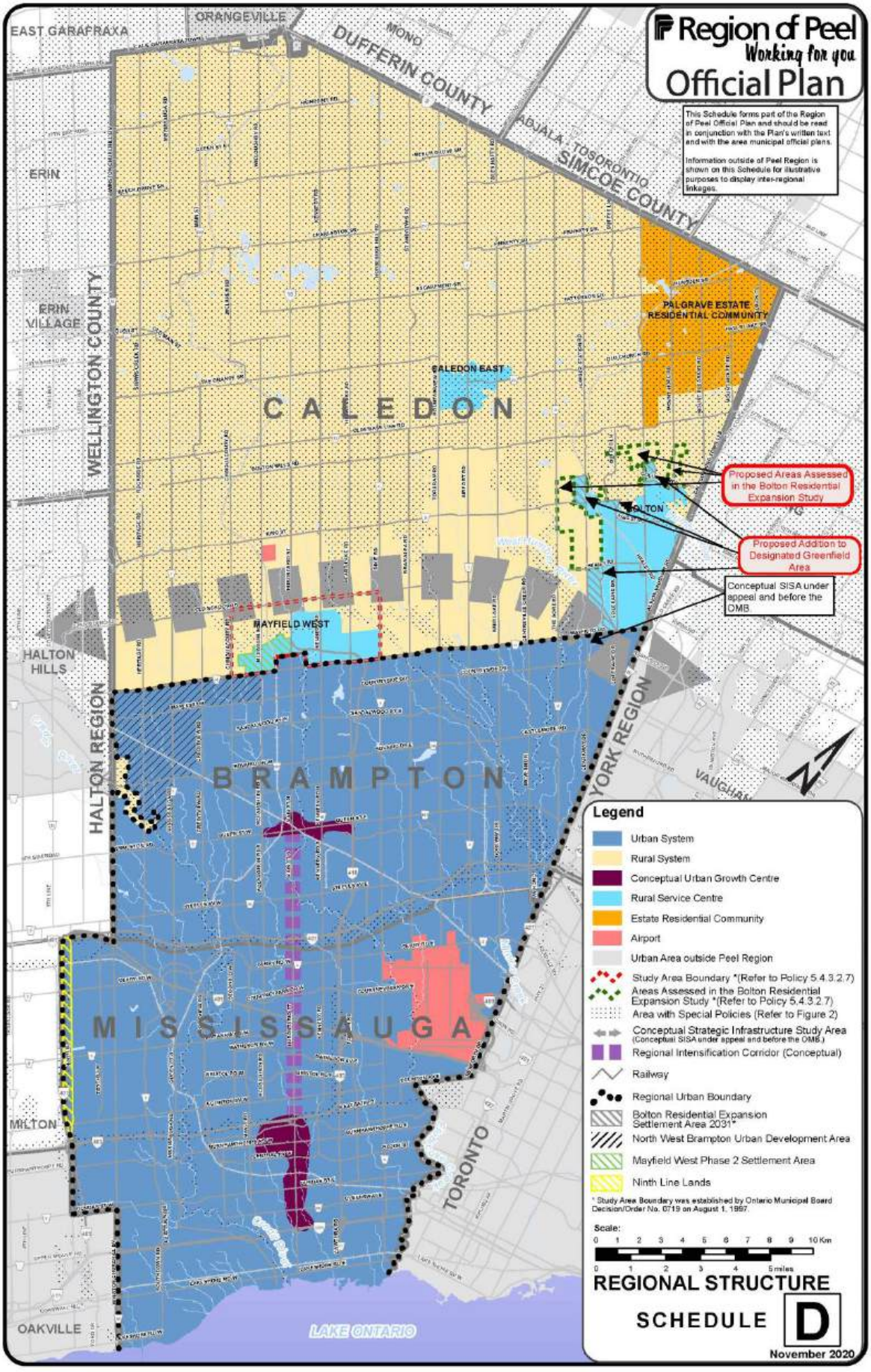
Regards,

Karan Bedi
Intermediate Planner, Transportation Planning
Transportation Division | Public Works | Region of Peel
10 Peel Centre Drive, Suite B, 4th Floor
Brampton, ON L6T 4B9

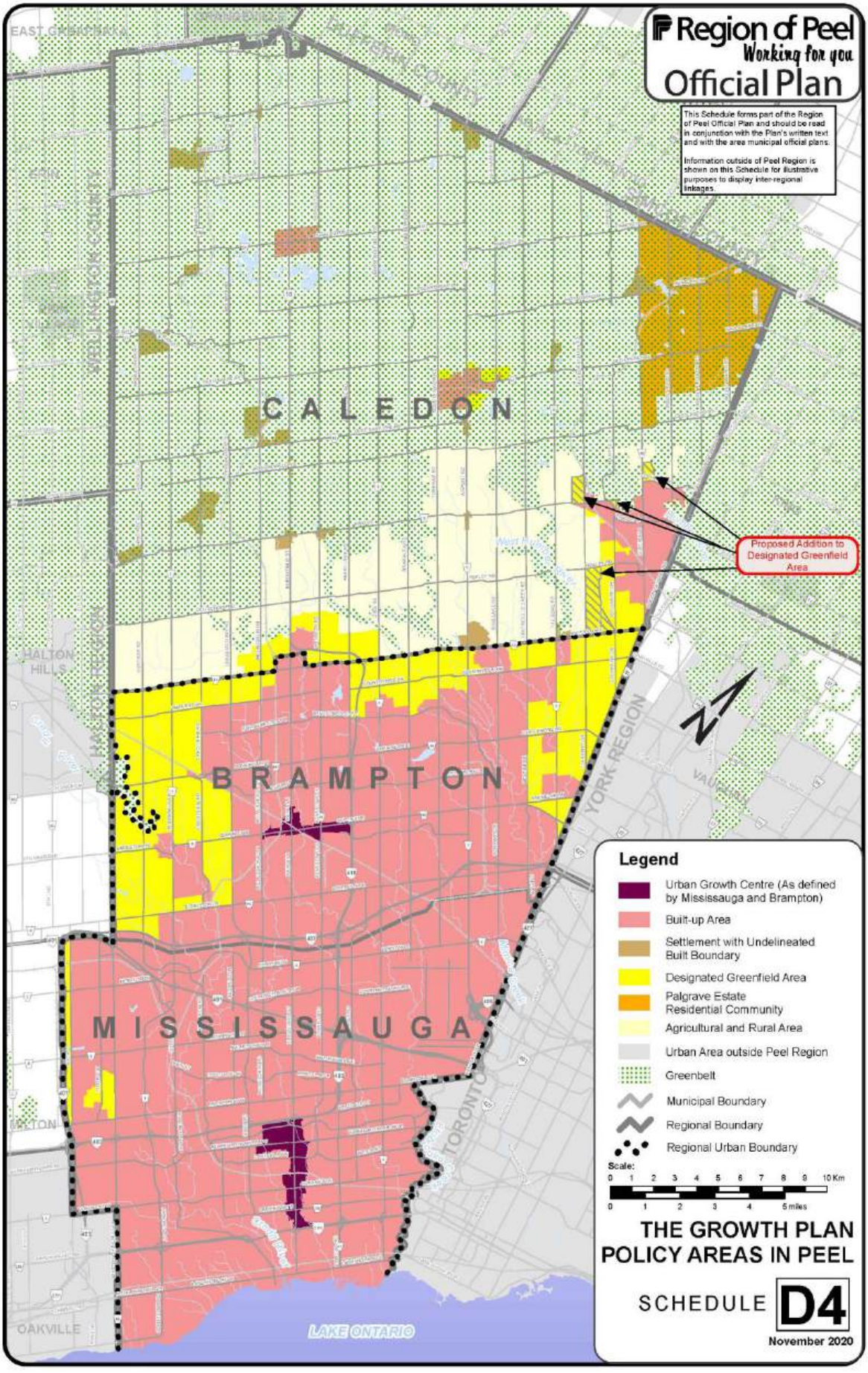


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Schedule A


Region of Peel
Working for you
Official Plan
This Schedule forms part of the Region of Peel Official Plan and should be read in conjunction with the Plan's written text and with the area municipal official plans.
Information outside of Peel Region is shown on this Schedule for illustrative purposes to display inter-regional linkages.
EAST GARAFRAXA
ORANGEVILLE
MONO
DUFFERIN COUNTY
ADJALA - TOSORONTIO
SIMCOE COUNTY
ERIN
ERIN VILLAGE
WELLINGTON COUNTY
PALGRAVE ESTATE RESIDENTIAL COMMUNITY
CALEDON EAST
CALEDON
BOLTON
MAYFIELD WEST
HALTON HILLS
HALTON REGION
BRAMPTON
YORK REGION
VAUGHAN
MISSISSAUGA
MILTON
TORONTO
OAKVILLE
LAKE ONTARIO
Proposed Areas Assessed in the Bolton Residential Expansion Study
Proposed Addition to Designated Greenfield Area
Conceptual SISA under appeal and before the OMB
Legend
Urban System
Rural System
Conceptual Urban Growth Centre
Rural Service Centre
Estate Residential Community
Airport
Urban Area outside Peel Region
Study Area Boundary *(Refer to Policy 5.4.3.2.7)
Areas Assessed in the Bolton Residential Expansion Study *(Refer to Policy 5.4.3.2.7)
Area with Special Policies (Refer to Figure 2)
Conceptual Strategic Infrastructure Study Area
(Conceptual SISA under appeal and before the OMB.)
Regional Intensification Corridor (Conceptual)
Railway
Regional Urban Boundary
Bolton Residential Expansion Settlement Area 2031*
North West Brampton Urban Development Area
Mayfield West Phase 2 Settlement Area
Ninth Line Lands
* Study Area Boundary was established by Ontario Municipal Board Decision/Order No. 0719 on August 1, 1997.
Scale:
0 1 2 3 4 5 6 7 8 9 10 Km
0 1 2 3 4 5 miles
REGIONAL STRUCTURE
SCHEDULE D
November 2020

Schedule A


Region of Peel
Working for you
Official Plan
This Schedule forms part of the Region of Peel Official Plan and should be read in conjunction with the Plan's written text and with the area municipal official plans.
Information outside of Peel Region is shown on this Schedule for illustrative purposes to display inter-regional linkages.
CALEDON
BRAMPTON
MISSISSAUGA
Proposed Addition to Designated Greenfield Area
HALTON HILLS
HALTON REGION
YORK REGION
TORONTO
OAKVILLE
LAKE ONTARIO
Legend
Urban Growth Centre (As defined by Mississauga and Brampton)
Built-up Area
Settlement with Undelineated Built Boundary
Designated Greenfield Area
Palgrave Estate Residential Community
Agricultural and Rural Area
Urban Area outside Peel Region
Greenbelt
Municipal Boundary
Regional Boundary
Regional Urban Boundary
Scale:
0 1 2 3 4 5 6 7 8 9 10 Km
0 1 2 3 4 5 miles
THE GROWTH PLAN POLICY AREAS IN PEEL
SCHEDULE D4
November 2020

APPENDIX H

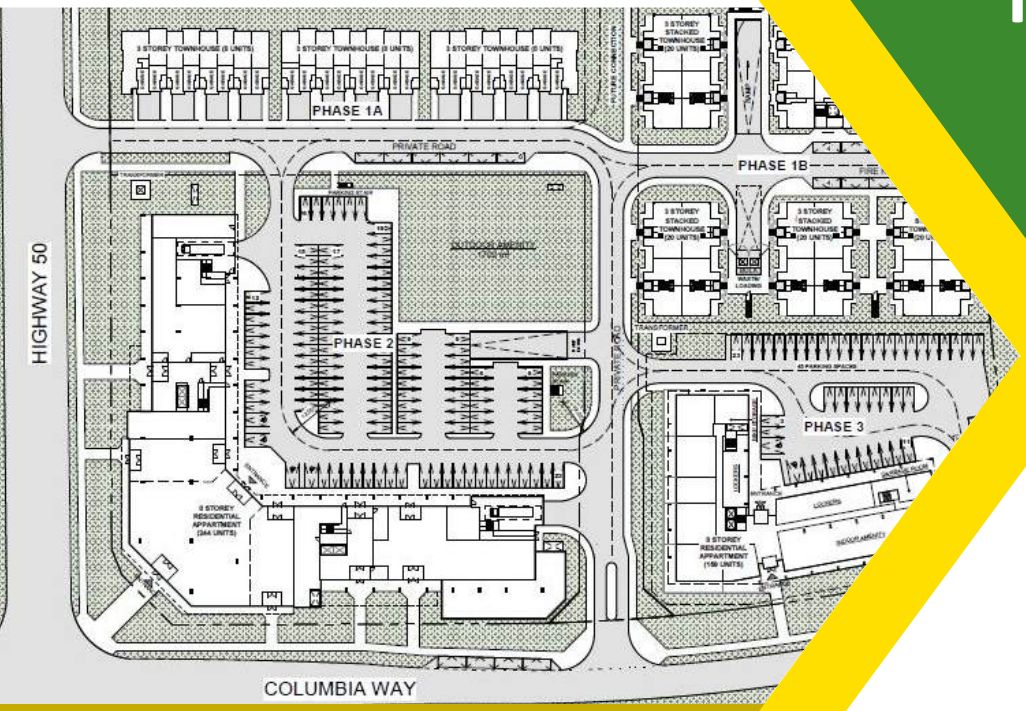
Background Development Excerpts

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PLANNING
RECEIVED
Jan. 31, 2022

Columbia Square Inc.

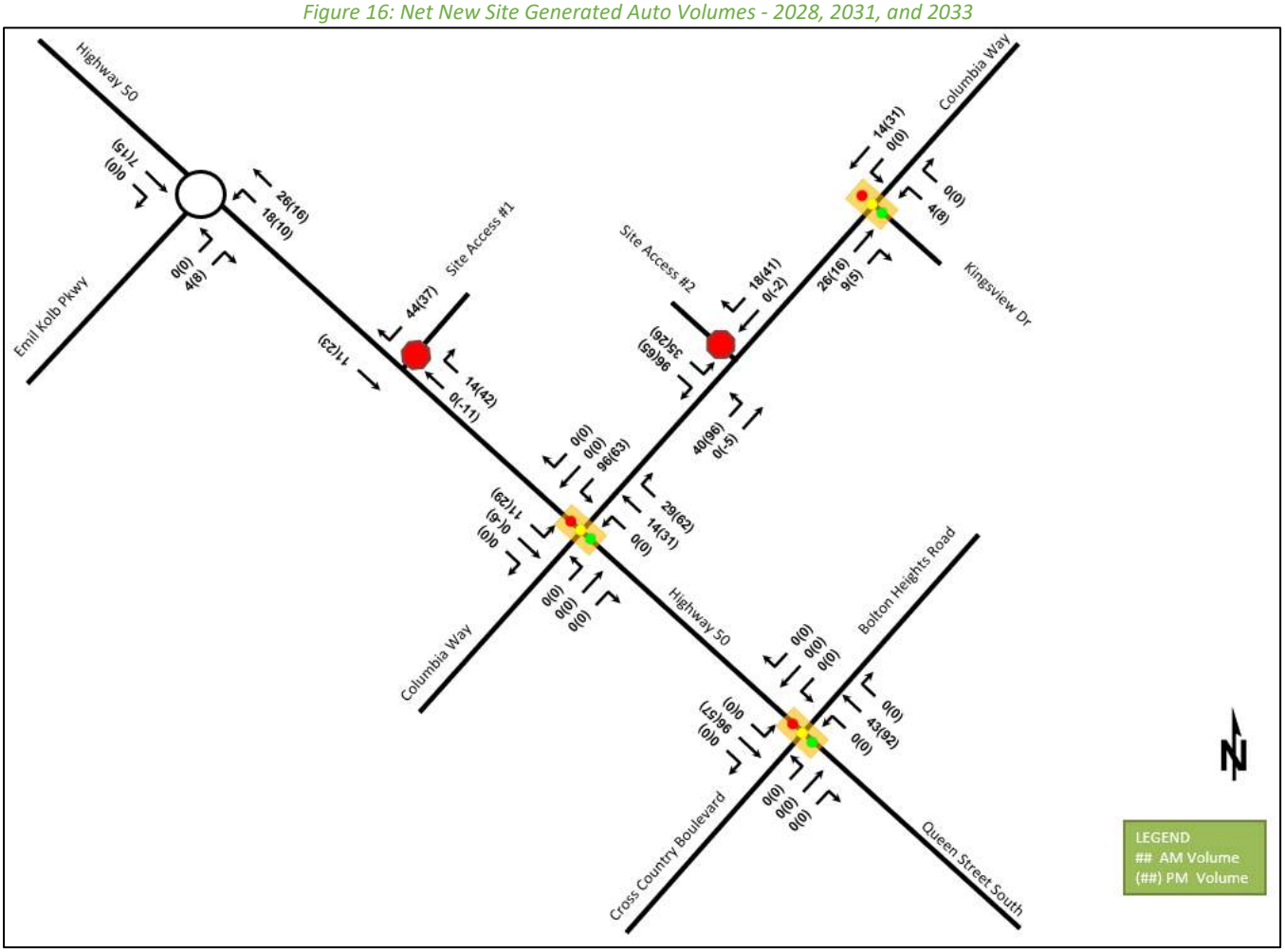
Columbia Square—14245 Highway 50

Transportation Impact Study



CGH TRANSPORTATION

Figure 16: Net New Site Generated Auto Volumes - 2028, 2031, and 2033



4.1.4 Future Total Travel Demands

The site generated traffic has been combined with the 2026, 2028, 2031, and 2033 future background traffic volumes to estimate the future total traffic volumes. The configuration of Site Access #1 is a right-in / right-out access with stop-control on the east leg, and Site Access #2 is a full movement access with stop-control on the north leg. Access configuration details are discussed further in Section 6.1. The 2026 future total traffic volumes are illustrated in Figure 17, the 2028 future total traffic volumes are illustrated in Figure 18, the 2031 future total traffic volumes are illustrated in Figure 19, and the 2033 future total traffic volumes are illustrated in Figure 20.

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Mount Hope West Secondary Plan Town of Caledon Proposed Residential Development Transportation Impact Study

Paradigm Transportation Solutions Limited

2025-02
230561

ptsl.com

Great Place To Work. Certified DEC 2024 - DEC 2025 CANADA

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Project Summary

Project Number
230561

Date: 2025-02-13

Version 1.0.0

Mount Hope West Secondary Plan, Town of Caledon, ON Transportation Impact Study

Client
United Holdings Inc.
122 Romina drive, Concord,
ON, L4K 4Z7

Client Contact
Mauro Peverini, Vice President,
Planning and Land Development

Consultant Project Team
Tom Willis, M.Math
Abanoub Gaber
Greg Lue, M.A.Sc., P.Eng.

<< Original Signed By >>
Greg Lue, M.A.Sc., P.Eng.

SEE SIGNED ORIGINAL

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Paradigm Transportation Solutions Limited
5A-150 Pinebush Road
Cambridge ON N1R 8J8
p: 519.896.3163
905.381.2229
416.479.9684
www.ptsl.com

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Executive Summary

Introduction

Paradigm Transportation Solutions Limited (Paradigm) was retained by Solmar Development Corp on behalf of United Holdings Inc. (the client) to conduct a Transportation Impact Study for a proposed residential subdivision development containing a commercial block, at the northwest quadrant of Columbia Way and Mount Hope Road in the Town of Caledon.

The Transportation Impact Study includes an assessment of the existing transportation network and analyzes existing and future traffic conditions (with and without the proposed development). This study provides a review of the proposed parking supply and a review of access and on-site circulation.

The findings, conclusions, and recommendations of this study are summarized below and outlined in further detail in the body of the report.

Development Concept

The subject site is located in the northwest quadrant of Columbia Way and Mount Hope Road in the Town of Caledon. It is currently undeveloped.

The property owner is proposing to create a residential subdivision with up to 1,016 dwelling units. This will include a mix of detached homes, townhouses, apartments, and block townhouses. The commercial land parcel spans approximately 1.72 hectares (17,200 m²). The land coverage was assumed to be 25% with a one-story building, resulting in a gross floor area of 4,200 m² (45,208.4 sq.ft.).

Vehicle access is proposed via a new access road on Columbia Way (Street A, opposite Westchester Boulevard), two new access roads on Mount Hope Road (Street B and Street C), and two new driveways onto Mount Hope Road (the north and south ends of Street L).

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Conclusions

Based on the investigations carried out, it is concluded that:

- **Existing Operations:** all study area intersections operate at acceptable levels of service and within capacity during the AM, and PM peak hour analysis time periods.
- **Site Generated Traffic:** The subject site is estimated to generate approximately 434 new AM peak hour trips and approximately 539 new PM peak hour trips.
- **2028 Background Traffic Operations:** Critical movements not observed in existing traffic conditions include:
  - Highway 50 [Peel Regional Road 50] & Columbia Way: The westbound left-turn queue length is forecast to exceed available storage by 29m during the AM peak hour.
- **2028 Total Traffic Operations:** the forecasting showed the following Critical movements that were not present under existing conditions:
  - Highway 50 [Peel Regional Road 50] & Columbia Way:
    - The westbound queue length is forecast to exceed available storage by 18m during the PM peak hour.
  - Columbia Way & Westchester Road/Proposed North-South Road:
    - The northbound approach, northbound through movement, southbound approach and southbound through movement are forecast to operate with an Operate with delays in the LOS F range during the AM peak hour with a v/c ratio greater than 1.00.
    - The northbound through and southbound through movements are forecast with an unacceptable Volume to Capacity (V/C) ratio during the AM peak hour.
- Mount Hope Road & Columbia Way:
  - The northbound approach, northbound through movement, southbound approach and southbound through movement are forecast to operate with an unacceptable LOS F during the AM peak hour.
  - The southbound through is also forecast to operate with an unacceptable V/C ratio during the AM peak hour
  - The overall intersection is forecast to operate with an unacceptable LOS F during the AM peak hour.

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- Caledon-King Townline South & Columbia Way:
  - The overall intersection is forecast to operate with an unacceptable LOS F during the AM peak hour;
  - The eastbound left is forecast to operate with an unacceptable LOS F during both peak hours with an unacceptable V/C ratio;
  - The eastbound approach is forecast to operate with an unacceptable LOS F during both peak hours.
- **2033 Background Traffic Operations:** the forecasting showed the following critical movements that were not present under the 2028 background operations include:
  - Highway 50 [Peel Regional Road 50] & Columbia Way:
    - The westbound queue length is forecast to exceed available storage by 2m during the PM peak hour.
  - Caledon-King Townline South & Columbia Way:
    - The eastbound left-turn is forecast to operate with an unacceptable LOS F during the AM peak hour.
    - The eastbound approach is forecast to operate with an unacceptable LOS F during the AM peak hour.
- **2033 Total Traffic Operations:** the forecasting showed the following critical movements that were not present under the 2028 background operations include:
  - Caledon-King Townline South & Columbia Way:
    - The eastbound left-turn is forecast to operate with an unacceptable LOS F during the PM peak hour with an unacceptable V/C ratio of 1.38.
- The following **mitigation measures** were considered:
  - The traffic signal warrant analyses indicate that the intersection volumes do not justify signalization under 2033 total traffic condition for the intersections of Columbia Way and Westchester Road, Columbia Way and Mount Hope Road, and Caledon-King Townline South and Columbia Way.
  - At the intersection of Highway 50 and Columbia Way, the westbound left-turn lane is expected to exceed its capacity which is triggered by this development and other proposed developments.
  - To mitigate this, optimizing the cycle length and intersection splits is recommended. A 60-second cycle is forecast to

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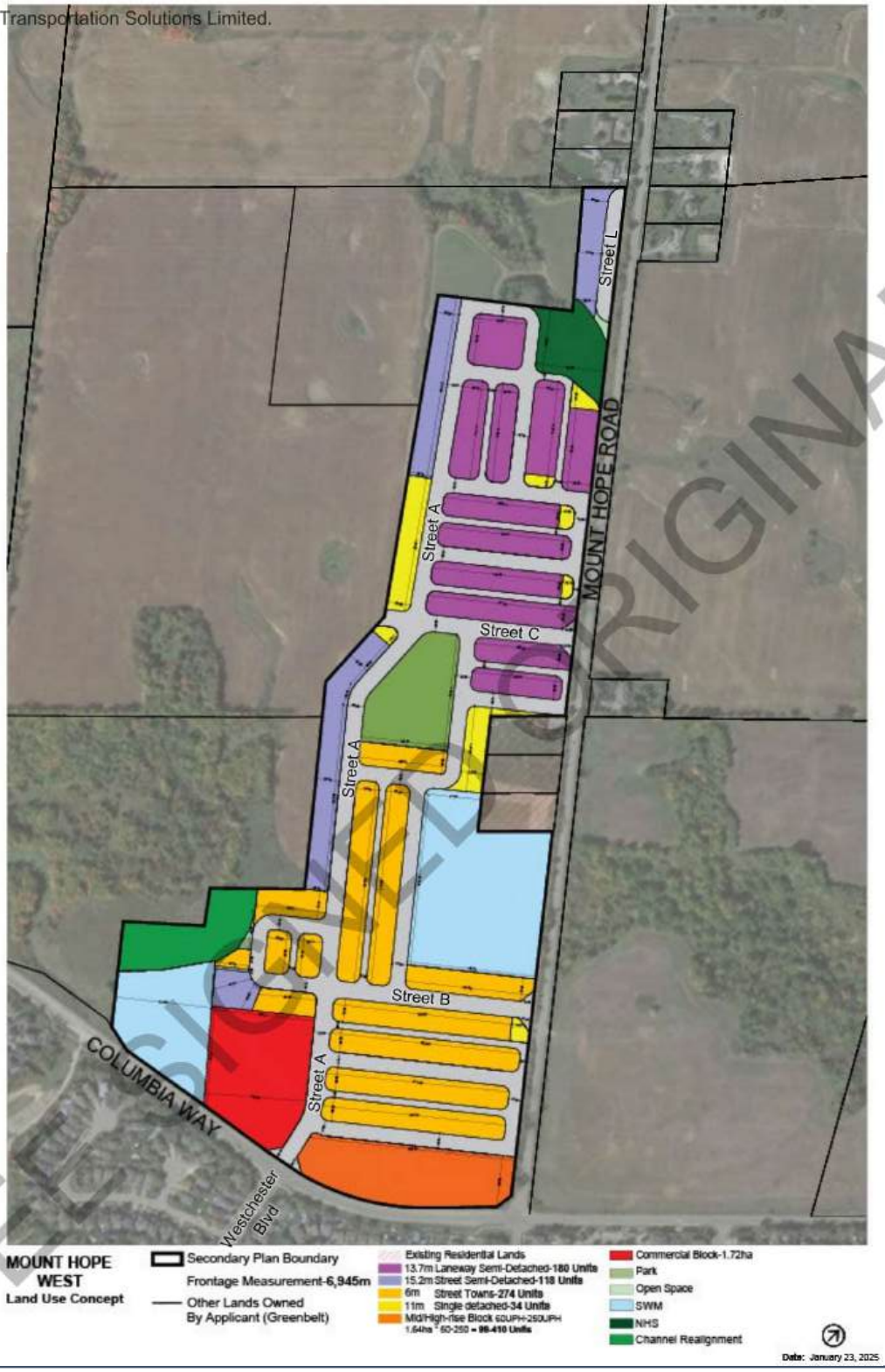
significantly reduce queue lengths. However, this cycle length may not provide enough storage space, so it is also advised to increase the storage length to 61m to handle any excess queues.

Recommendations

To address the westbound left-turn lane capacity issues at the intersection of Highway 50 and Columbia Way, signal timing adjustments and increasing the westbound left-turn lane storage length is recommended. The cycle length should be adjusted to a 60-second cycle which results in a significant reduction in queue lengths. However, to ensure sufficient capacity, it is also recommended to increase the storage length by 5 m to accommodate any potential excess queues.

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Proposed Site Plan

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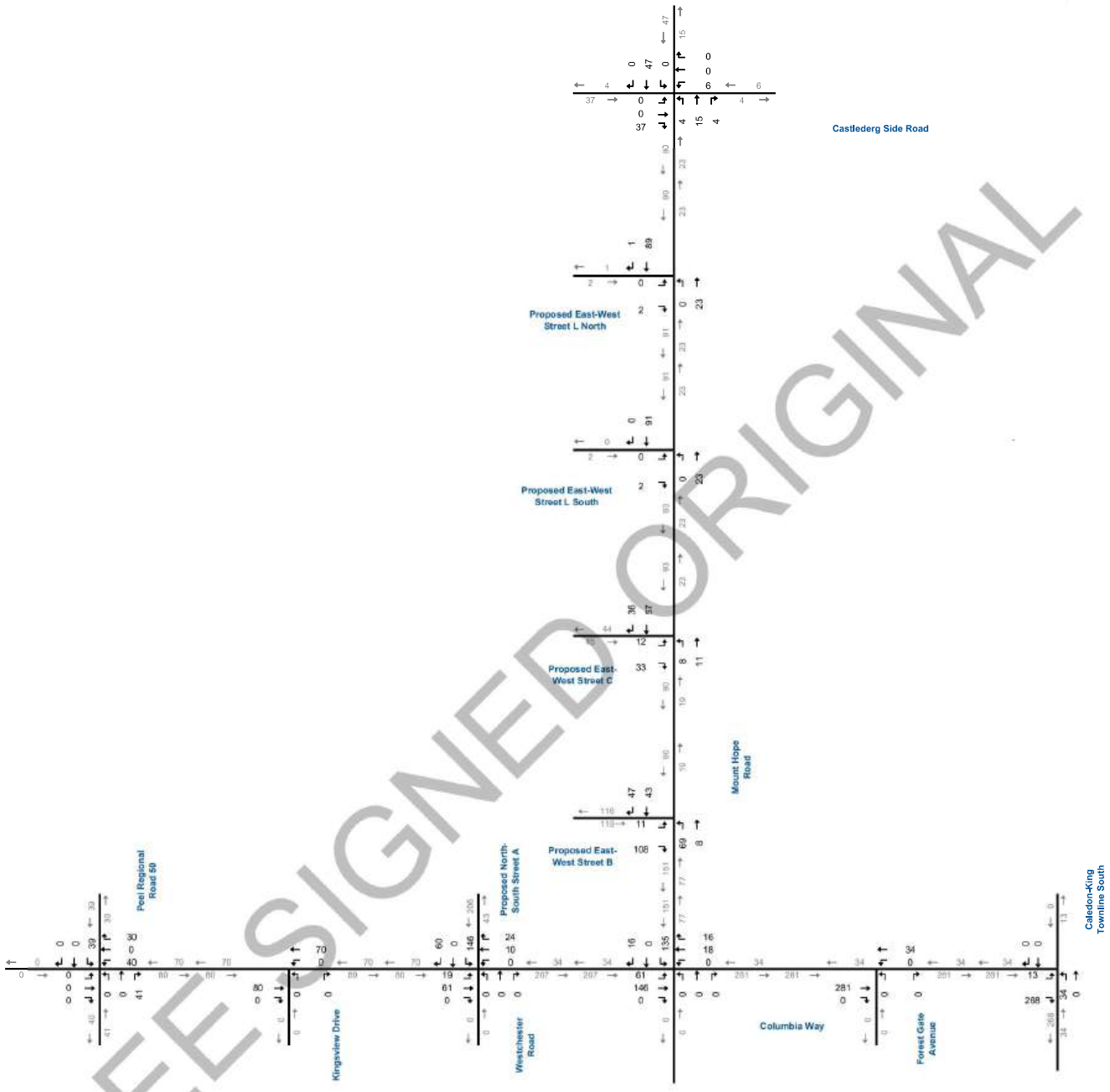
TABLE 3.1: TRIP GENERATION

Land Use Code	Amount	AM Peak Hour					PM Peak Hour				
		%	In	%	Out	Total	%	In	%	Out	Total
210: Single-Family Detached Housing	34 Units	26	7	74	21	28	63	23	37	13	36
215: Single-Family Attached Housing	180 Units	25	22	75	66	88	59	61	41	43	104
215: Single-Family Attached Housing	118 Units	25	14	75	42	56	59	39	41	28	67
215: Single-Family Attached Housing	274 Units	25	34	75	103	137	59	95	41	65	160
222: Multifamily Housing (High-Rise) Not Close to Rail	410 Units	26	28	74	81	109	62	80	38	50	130
821:Shopping Plaza (40-150k) - Supermarket - Yes	45.20 x1000 Sq. ft	62	99	38	61	160	48	223	52	243	466
Total Trips (Vehicle)			***204***		***374***	***578***		***521***		***442***	***963***
Pass-By Trips (ITE 821)		*0%*	*0*		*0*	*0*	*40%*	*93*		*93*	*186*
Net Total Trips			***204***		***374***	***578***		***428***		***349***	***777***

LUC 210 AM: Ln(T) = 0.91 Ln(X) + 0.12 PM: Ln(T) = 0.94 Ln(X) + 0.27
LUC 215 AM: T = 0.52(X) - 5.70 PM: T = 0.60(X) - 3.93
LUC 220 AM: T = 0.31(X) + 22.85 PM: T = 0.43(X) + 20.55
LUC 221 AM: T = 0.44(X) - 11.61 PM: T = 0.39(X) + 0.34
LUC 222 AM: T = 0.22(X) + 18.85 PM: T = 0.26(X) + 23.12
LUC 821 AM: Average Rate: 3.53 PM: T = 7.67(X) + 118.86

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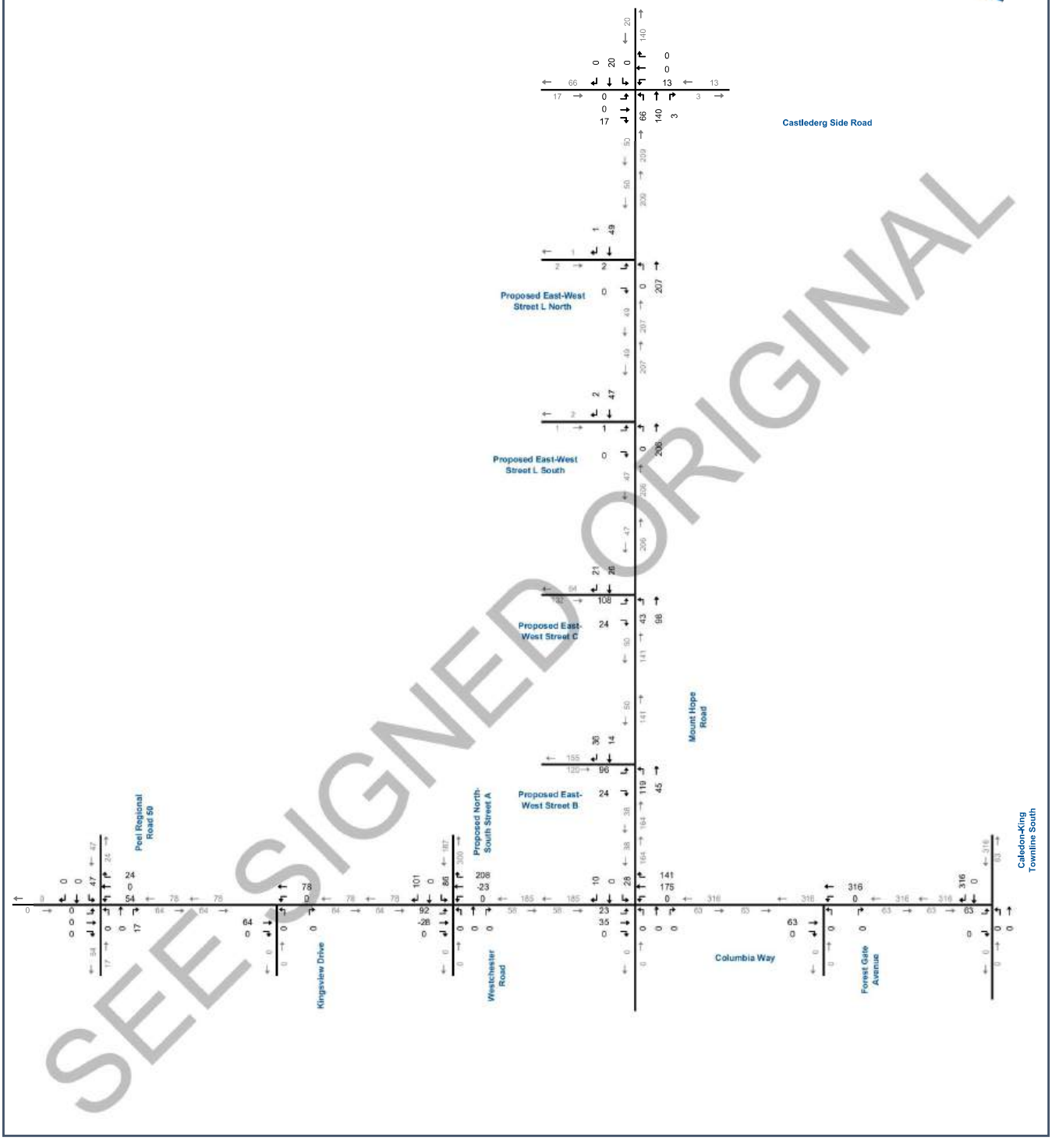
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Site-Generated Traffic Volumes AM Peak Hour

Mount Hope Road Transportation Study
230561

Figure 3.2

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Site-Generated Traffic Volumes PM Peak Hour

Mount Hope Road Transportation Study
230561

Figure 3.3

TOWN OF CALEDON
PLANNING
RECEIVED
May 19, 2023

BA Group

CALEDON STATION SECONDARY PLAN

Transportation Study – Update

Prepared For: Caledon Community Partners

February 11, 2021 (formerly Macville Secondary Plan)
Updated: January 21, 2022
Updated: May 17, 2023





TABLE 12 SITE ELEMENTARY SCHOOL TRIP GENERATION

Land Use	Number	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Elementary School		*0.40*	*0.34*	*0.74*	*0.07*	*0.09*	*0.16*
Base Vehicle Trip Generation	**1500 students[1]**	**599**	**511**	**1,110**	**110**	**130**	**240**
To/From Internal Residential (Walking Trips)[2]	85%	509	434	943	93	111	204
Total Vehicle Trips	15%	90	77	167	17	19	36
Pass-by Internal Residential to External Work AM & Pass-by External work to Internal Residential PM (Vehicle Trips)[3]	*0% In & 60% Out AM 60% In & 0% Out PM*	*0*	*45*	*45*	*9*	*0*	*9*
To/from Internal Residential (Vehicle Trips)[4]	*100% In & 40% Out AM 40% In & 100% Out PM*	*90*	*32*	*122*	*8*	*19*	*27*
Total Internal Vehicle Trips		**90**	**32**	**122**	**8**	**19**	**27**
Total External Vehicle Trips		**0**	**45**	**45**	**9**	**0**	**9**

Notes:
1. Assume 1,500 students for the purpose of this assessment
2. Assumes 100% of school trips are associated with internal residential as either direct or pass-by trips and in the order of 85% of trips will walk
3. Assumes 60% of outbound trips during the AM peak will be a drop off then continues onto work external to the Site and 60% of inbound trips during the PM peak will be a pick up on the way home from work external to the Site
4. Assumes remainder of vehicle trips are to/from internal residential

5.4.2 Site Vehicle Trip Distribution

5.4.2.1 Residential

Residential site traffic was assigned onto the area road network based on the results of the 2016 Transportation Tomorrow Survey (TTS), prevailing traffic patterns and area turn restrictions. General direction of approach percentages was based on the results of the TTS and is summarized in **Table 17**.

TABLE 17 RESIDENTIAL SITE TRAFFIC DISTRIBUTION

Direction	Roadway	Inbound/Outbound
North	The Gore Road	2.5%
	Humber Station Road	2.5%
	Emil Kolb Parkway	5%
South	The Gore Road	25%
	Humber Station Road	30%
	Emil Kolb Parkway	25%
West	King Street	10%
Total		**100%**

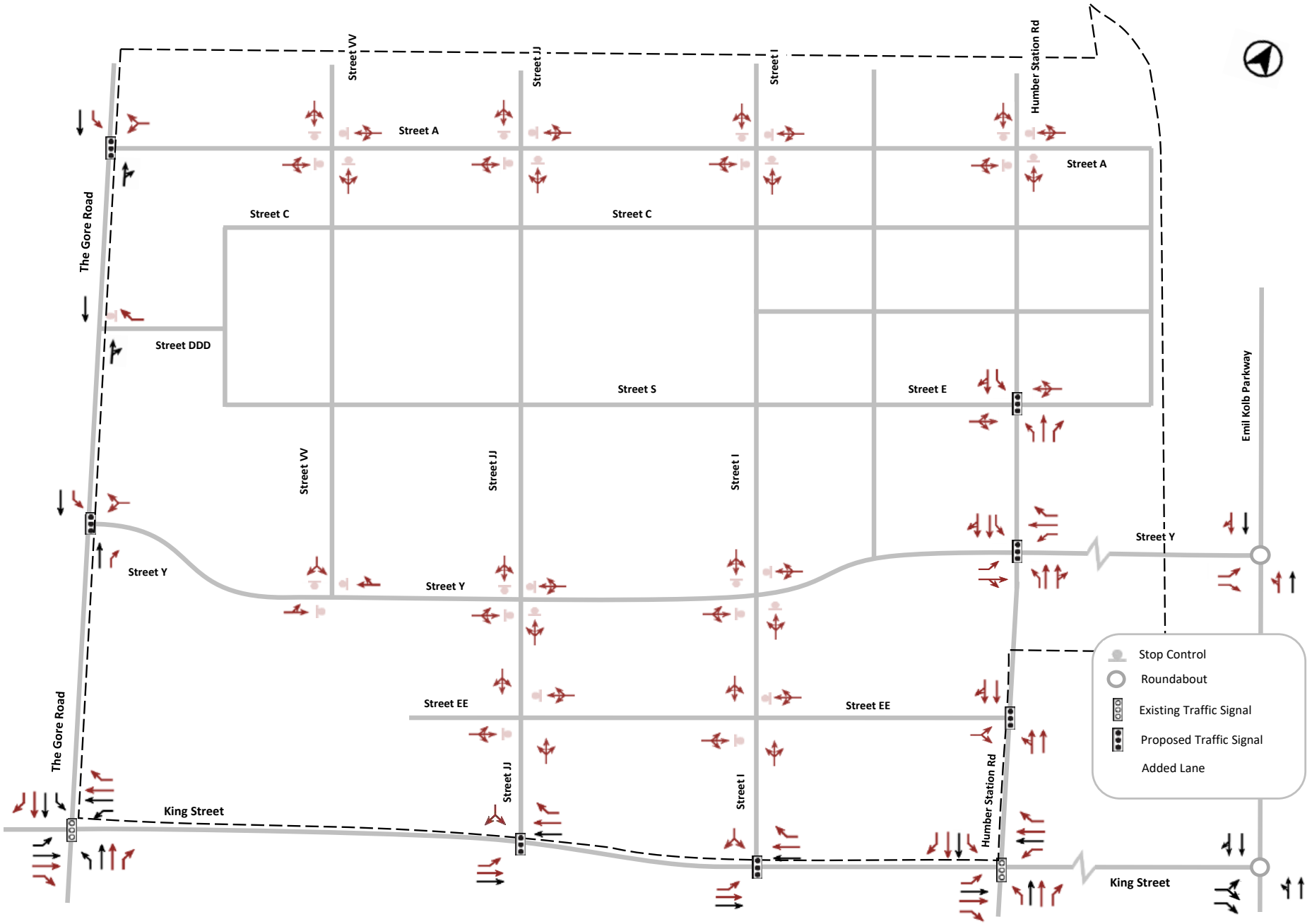
Notes:
1. Based on TTS zones 3153, 3190, 3191, 3192, 3193, and 3194

5.4.2.2 Retail External Distribution

Retail site traffic was assigned onto the area road network based on the distribution of existing and future residential population within Bolton and is summarized in **Table 18**. The distribution for local retail is specific to nearby future development, while the distribution for destination retail is based on broader Bolton.

TABLE 18 RETAIL SITE TRAFFIC DISTRIBUTION

Direction	Roadway	Destination Retail	Local Retail
		Inbound/Outbound	Inbound/Outbound
North	The Gore Road	5%	29%
	Humber Station Road	2%	12%
	Emil Kolb Parkway	12%	0%
South	The Gore Road	8%	25%
	Humber Station Road	24%	17%
	Emil Kolb Parkway	46%	0%
West	King Street	3%	17%
Total		**100%**	**100%**



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FIGURE 4 FUTURE LANE CONFIGURATIONS

CALEDON STATION SECONDARY PLAN

APPENDIX I

Town of Caledon
Multi-Modal Transportation Master Plan Excerpts

Town of Caledon

Multi-Modal Transportation Master Plan

June 2024





TOWN OF CALEDON

FUTURE CALEDON

In Collaboration with
R.J. Burnside & Associates Ltd.

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ID	Road	From	To	Recommendation
3	Albion Vaughan Road	Mayfield Road	King Street	Urbanization and widening from 2 to 4 lanes
4	Humber Station Road	Mayfield Road	North of King Street (Settlement Area Limits)	Urbanization and widening from 2 to 4 lanes
5	Abbotside Way	Bonnieglen Farm Boulevard	Heart Lake Road	Extension (4 Lanes)
6	Healey Road	The Gore Road	Coleraine Drive	Urbanization and widening from 2 to 4 lanes
7	Torbram Road	Mayfield Road	Old School Road	Urbanization and widening from 2 to 4 lanes
8	George Bolton Parkway	West of Coleraine Drive	Humber Station Road	Extension (4 Lanes)
9	Kennedy Road	Newhouse Boulevard	Old School Road	Urbanization and widening from 2 to 4 lanes

Table ES-2: Road Improvement Recommendations (2041)

ID	Road	From	To	Recommendation
10	Innis Lake Road	Mayfield Road	Old School Road	Urbanization and widening from 2 to 4 lanes
11	Centreville Creek Road	Mayfield Road	Old School Road	Urbanization and widening from 2 to 4 lanes
12	Old School Road	Winston Churchill Boulevard	Airport Road	Urbanization and widening from 2 to 4 lanes
13	Healey Road	Airport Road	The Gore Road	Urbanization and widening from 2 to 4 lanes
14	Kennedy Road	Old School Road	King Street	Urbanization and widening from 2 to 4 lanes
15	Caledon King Townline	King Street	Columbia Way	Urbanization and widening from 2 to 4 lanes
16	Columbia Way	Regional Road 50	Caledon King Townline	Urbanization and widening from 2 to 4 lanes

Table ES-3: Road Improvement Recommendations (2051)

ID	Road	From	To	Recommendation
17	Chinguacousy Road	Old School Road	King Street	Urbanization and widening from 2 to 4 lanes
18	McLaughlin Road	Old School Road	King Street	Urbanization and widening from 2 to 4 lanes
19	Bramalea Road	Mayfield Road	King Street	Urbanization and widening from 2 to 4 lanes
20	Heritage Road	Mayfield Road	Old School Road	Urbanization and widening from 2 to 4 lanes
21	Creditview Road	Mayfield Road	Old School Road	Urbanization and widening from 2 to 4 lanes
22	Heart Lake Road	Mayfield Road	Old School Road	Urbanization and widening from 2 to 4 lanes

Town of Caledon

Transportation Master Plan

FIGURE ES-1

Road Network Improvements

Road Improvements (Phasing)

- Widening to 4 lanes (by 2031)
- Widening to 4 lanes (by 2041)
- Widening to 4 lanes (by 2051)

Future Land Uses

- Community
- Employment

EAST GARAFRAXA
ORANGEVILLE
MONO
ADJALA-TOSORONTO
NEW TECUMSETH
ERIN
KING
HALTON HILLS
BRAMPTON
VAUGHAN
CALEDON VILLAGE
CALEDON EAST
MAYFIELD WEST
TULLAMORE
BOLTON

Highpoint Rd
Porterfield Rd
Shaws Creek Rd
Main St
Willoughby Rd
Horseshoe Hill Rd
Beech Grove Sideroad
St Andrews Rd
Coolihans Sideroad
Charleston Sideroad
Mountainview Rd
Finnerty Sideroad
Escarpment Sideroad
Duffys Ln
Bush St
Forks of the Credit
Patterson Sideroad
Mount Wolfe Rd
The Grange Sideroad
Old Church Rd
Olde Base Line Rd
Mount Hope Rd
Boston Mills Rd
Castlederg Sideroad
Queen St
Mount Pleasant Rd
Winston Churchill Blvd
McLaughlin Rd
Hurontario St
Kennedy Rd
Heart Lake Rd
Bramalea Rd
Torbram Rd
Airport Rd
Innis Lake Rd
Centreville Creek Rd
The Gore Rd
Emil Kolb Pkwy
King St
Heritage Rd
Mississauga Rd
Creditview Rd
Chinguacousy Rd
Dixie Rd
Humber Station Rd
Old School Rd
Healey Rd
Coleraine Dr
Albion Vaughan Rd
Mayfield Rd

9
136
136
24
24
7
11
19
10
12
22
50
8
1
4
9
7
150
14
410

Mayfield West

Old School Rd
Kennedy Rd
Newhouse Blvd
Hurontario St
Heart Lake Rd
410

Bolton

Columbia Way
King St
King St
Caledon King Townline
150
Queen St
Healey Rd
Coleraine Dr
Simpson Rd
Nixon Rd
George Bolton Pkwy
Albion Vaughan Rd

Caledon East

Airport Rd
Walker Rd
Old Church Rd
Mountainview Rd
Innis Lake Rd

0 1 2 4 6 8 km

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Active Transportation Plan

Active transportation strategies were developed based on the following objectives:

1. **Continuity:** Continuity within active transportation networks is important in establishing a reliable, “low-stress” active transportation network. Missing links should be identified in a network to identify and address continuity gaps.

2. **Connectivity:** Connectivity to proposed active transportation facilities in surrounding municipalities, existing and planned Regional routes and infrastructure, and key destinations should be considered in establishing a seamless inter-municipal network within and beyond Town boundaries.

3. **Policy framework for development and new infrastructure:** Opportunities will exist for the planning and implementation of active transportation infrastructure through the development review process. This will include active transportation strategies of new Secondary Plans in the SABE area and with individual developments. A policy framework guides the continuous development of the active transportation network within the Town of Caledon.

The MMTMP recommends regularly updating the Town’s Active Transportation Plan to focus on the following objectives:

- Establish comprehensive walking and cycling networks that connect existing and new settlement areas and rural communities

- Establish a trail system that is integrated with the pedestrian and cycling network and includes connections to open spaces

- Identify opportunities and locations for safe pedestrian and cycling crossings, including strategically located grade-separated crossings

- Promotes bicycle amenities at major employment / residential / institutional developments

- Engages community groups

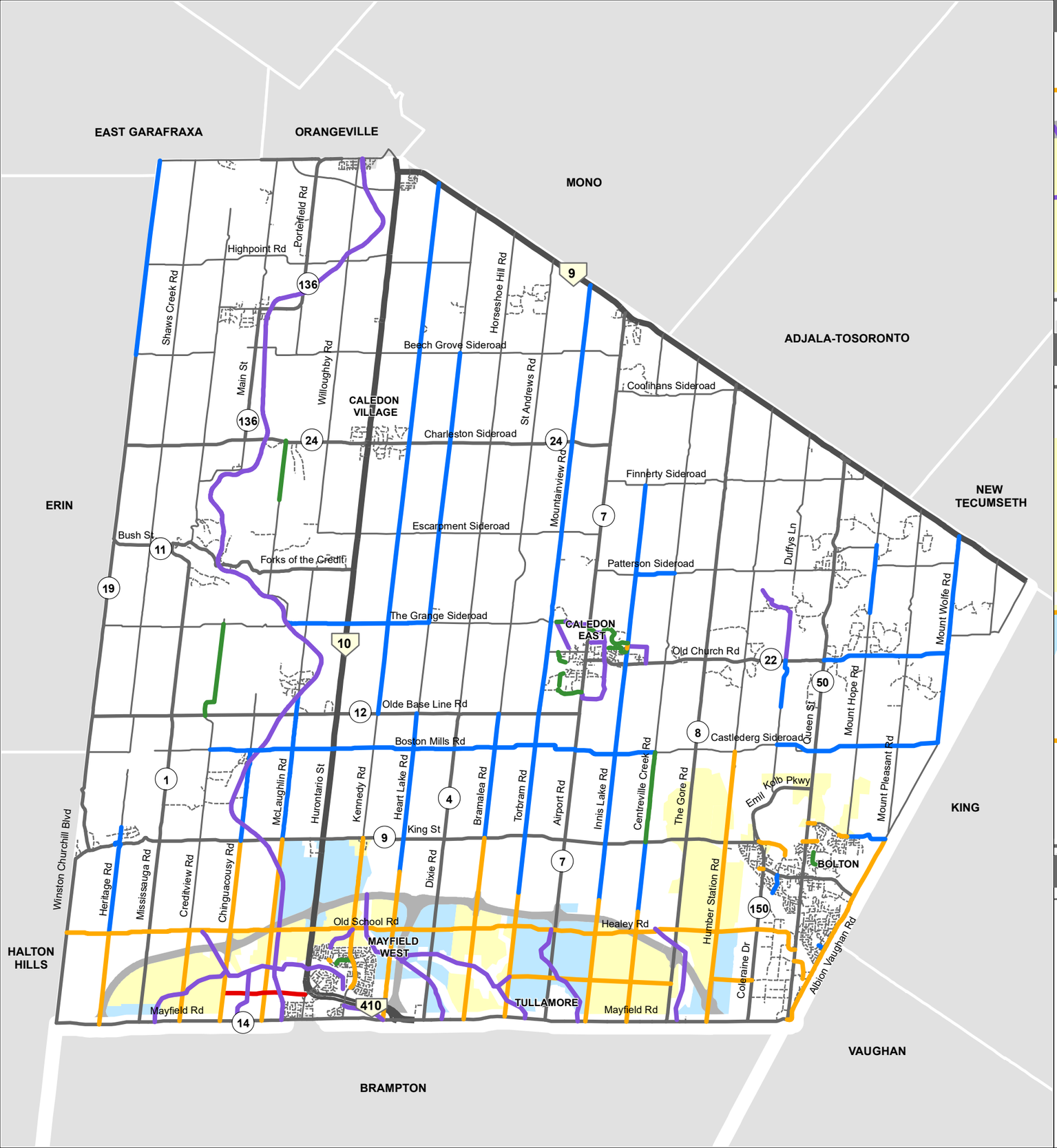
The Town’s AT Plan should provide a network implementation plan for facility selection, timing and costing of: paved shoulders on rural arterial and collector roads, separated facilities on urban arterial and collector roads and shared facilities on local roads and projects that enhance continuity within the Town and connectivity to adjacent municipalities. The active transportation plan is illustrated in **Figure ES-2**.

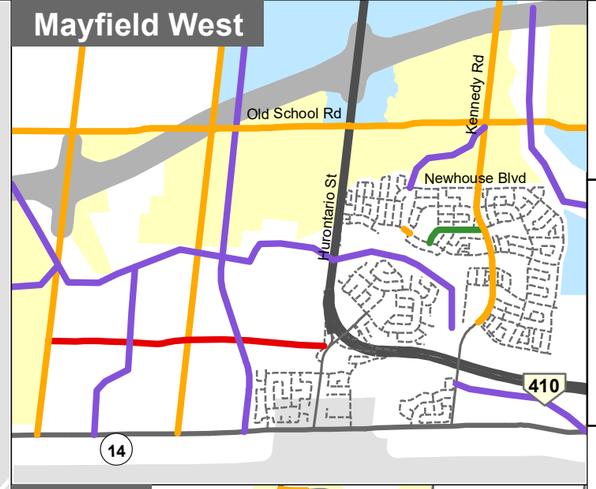
Town of Caledon

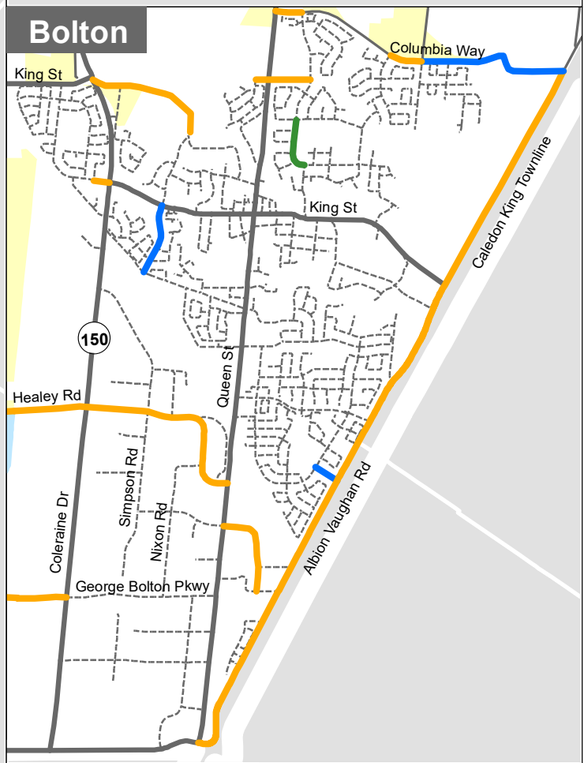
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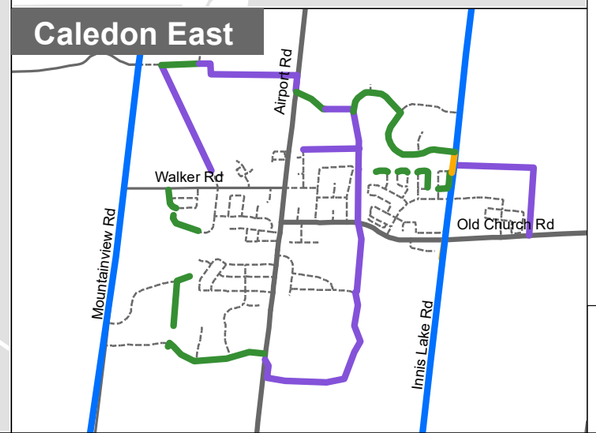
FIGURE ES-2

Future Active Transportation Network









Proposed Facility Type

- Multi-use Trail
- Painted Bike Lane
- Physically Separated
- Shared
- Visually Separated

Future Land Uses

- Community
- Employment

Source: Town of Caledon ATMP

0 1 2 4 6 8 km

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Transit Network Plan

Given the trip characteristics, population, growth and phasing within the town's secondary plans, along with origin and destination patterns, the MMTMP recommends that the Town leverage Brampton Transit by 2035. Leveraging the existing Brampton Transit system will allow for benefits from economies of scale, fare integration and connectivity with a seamless transit service.

Beyond 2035 and following the completion of all Secondary Plans in the SABE area and the Highway 413 Environmental Assessment and Detailed Design, it is recommended that the Town revisit and undertake a transit strategy study to develop a service plan over a longer time horizon. In the meantime, it is also recommended that, as part of the secondary plan's approval process, the Town review and have developers submit and develop the transit plans, which will inform jurisdiction, implications, and connection to existing transit services, and also be reviewed by municipal partners. Transit planning can be informed by the needs and strategies at the secondary plan level, in which internal collector road networks, connections to external networks, and land use will be identified that will assess the efficiencies and merits of specific routing. Therefore, in addition to the proposed fixed-route transit corridors outlined in this MMTMP, the transit strategy study should take all transit plans from secondary plans as input for revisiting the transit plan at a larger scale to improve efficiency.

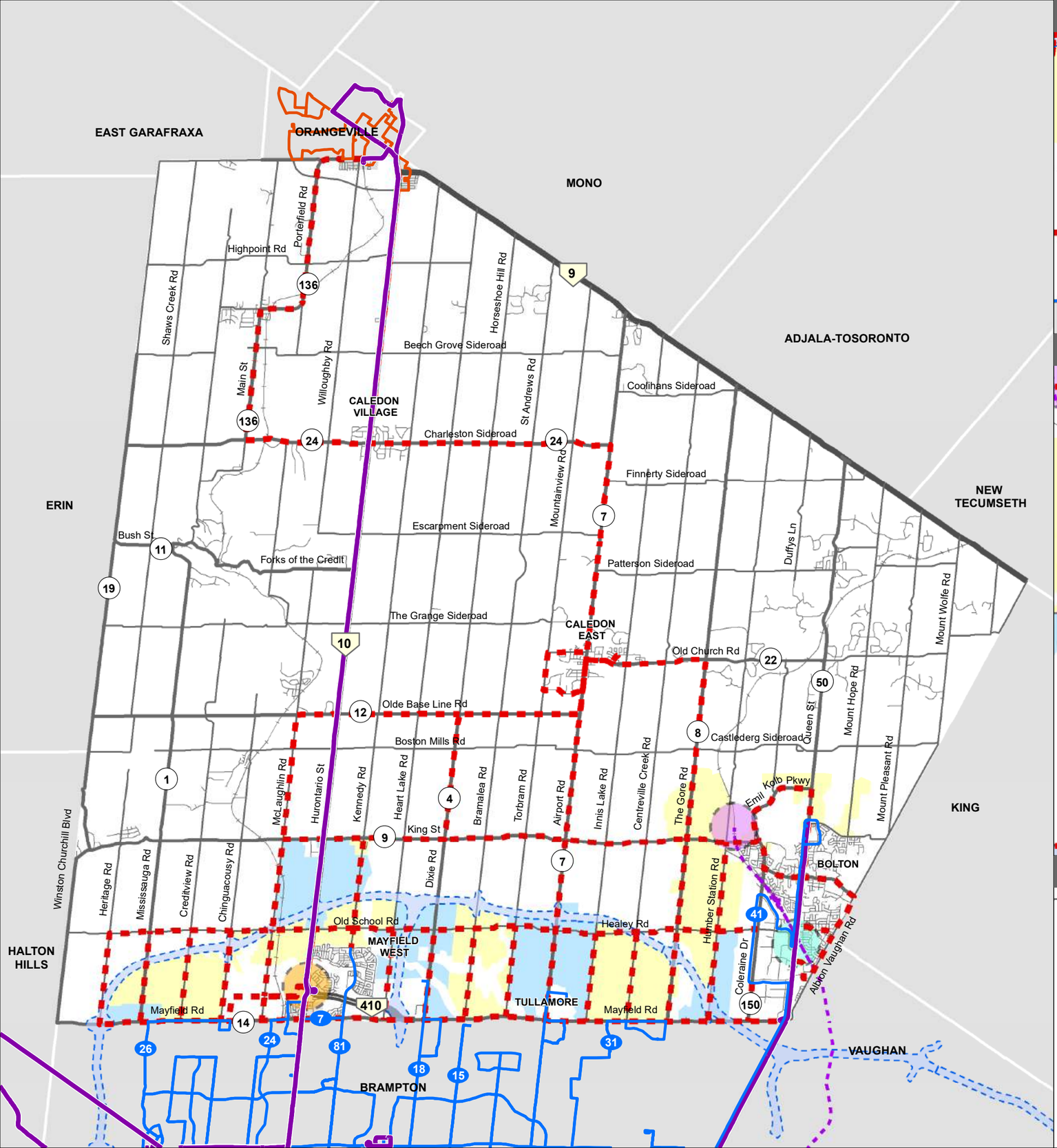
Proposed fixed-route transit corridors are illustrated in **Figure ES-3**. The fixed-route corridors serve as conceptual high-level recommendations for consideration in future studies to investigate further the feasibility of the proposed corridors, as well as internal connections to secondary plans.

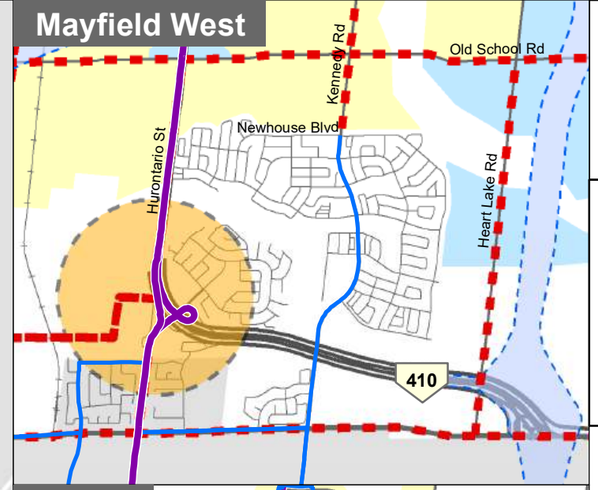
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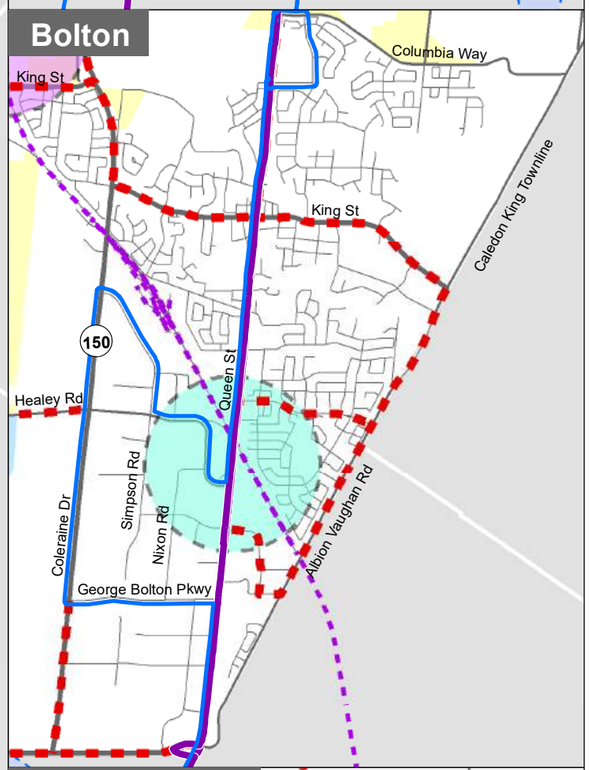
Transportation Master Plan

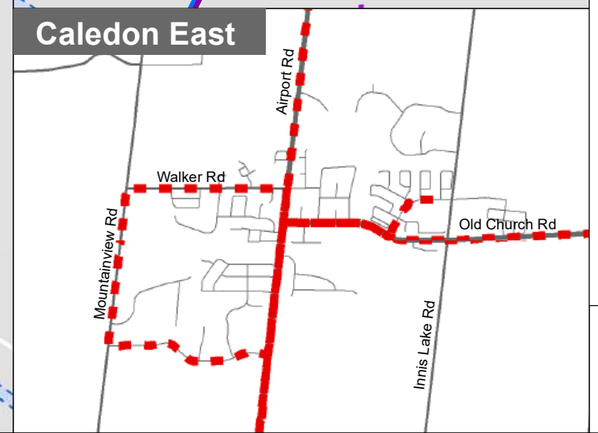
FIGURE ES-3

Proposed Transit Network









Existing

- GO Transit
- Brampton Transit
- Orangeville Transit

Future

- Proposed Corridors
- Bolton GO Rail
- Caledon GO Station
- Potential Second GO Station
- Mayfield Transit Hub
- GTA West Preferred Route

Future Land Uses

- Community
- Employment

0 1 2 4 6 8 km

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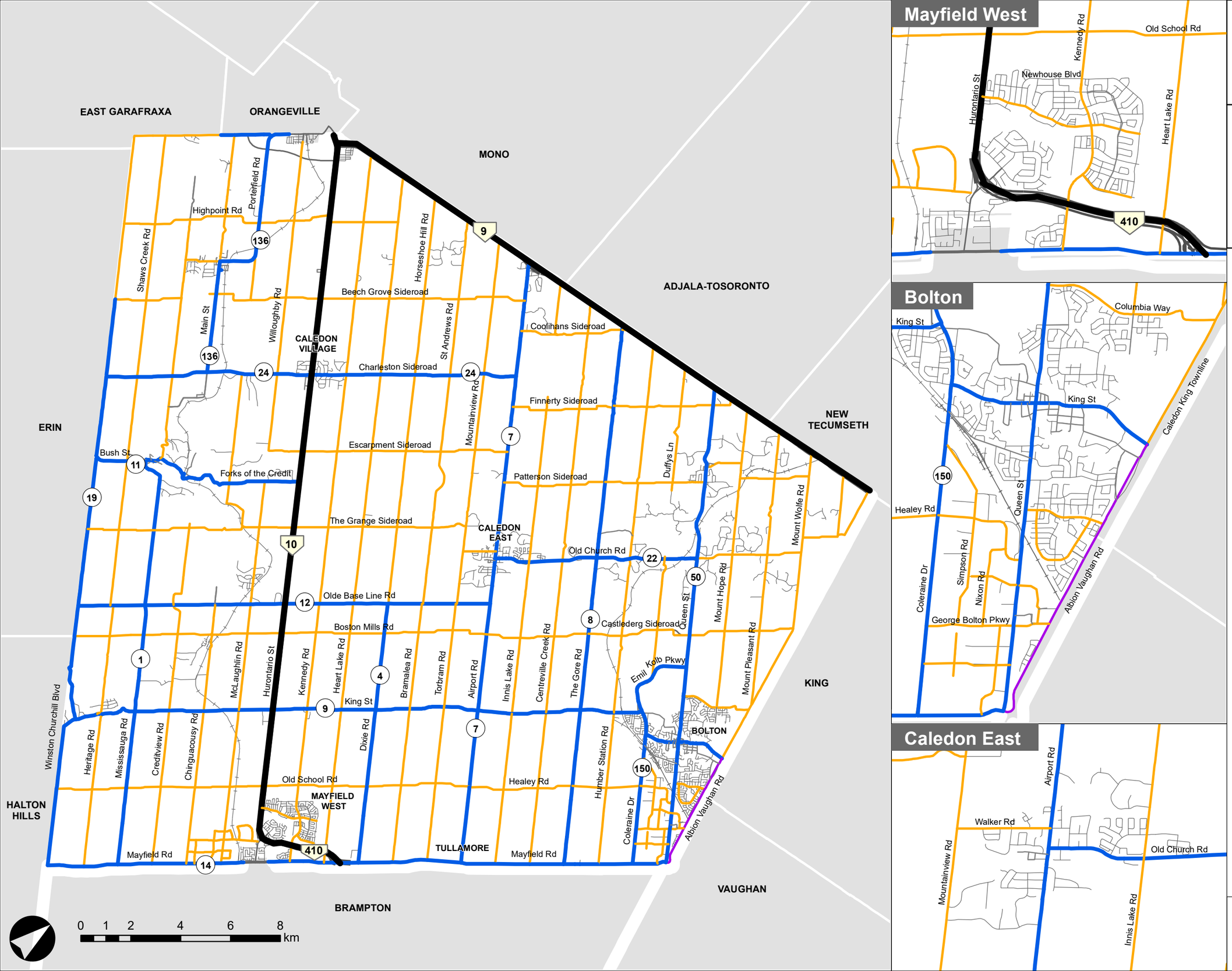
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Town of Caledon

Transportation Master Plan

FIGURE 3-7

Existing Road Network



- Provincial Highway / Freeway
- Regional Arterial
- Town Arterial
- Town Collector
- Town Local

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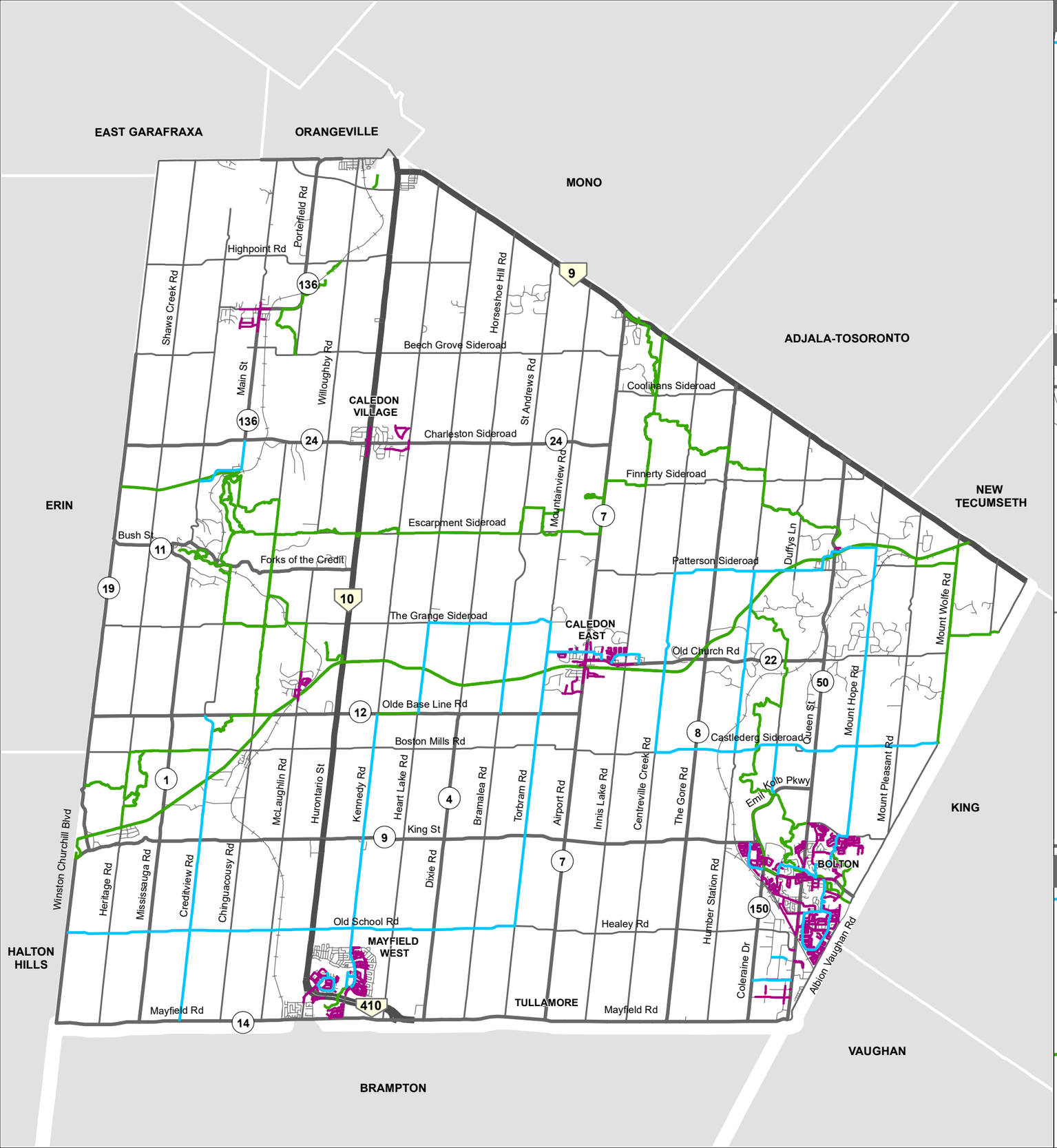
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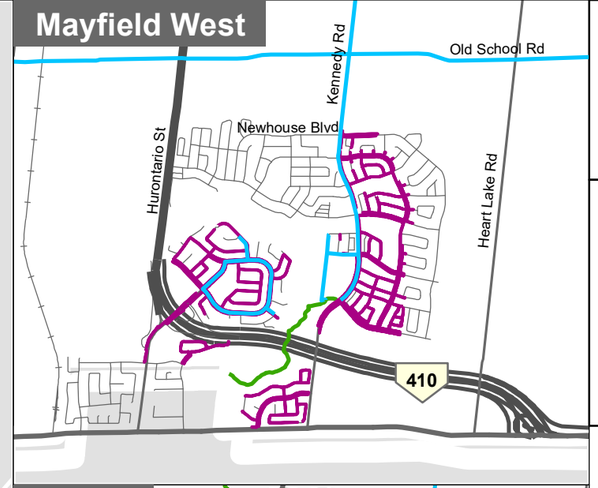
Town of Caledon

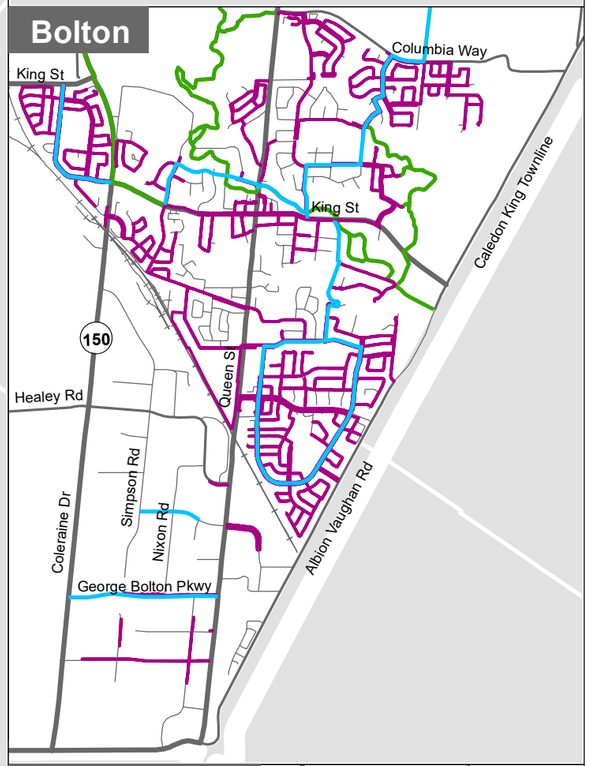
Transportation Master Plan

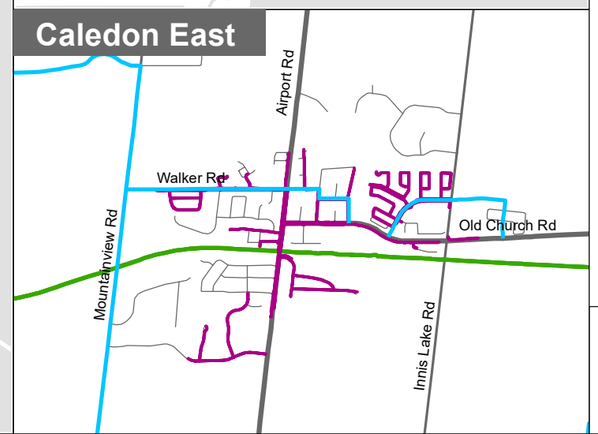
FIGURE 3-8

Existing Active Transportation Network









- Cycling Routes
- Trails
- Sidewalk

0 1 2 4 6 8 km

BURNSIDE

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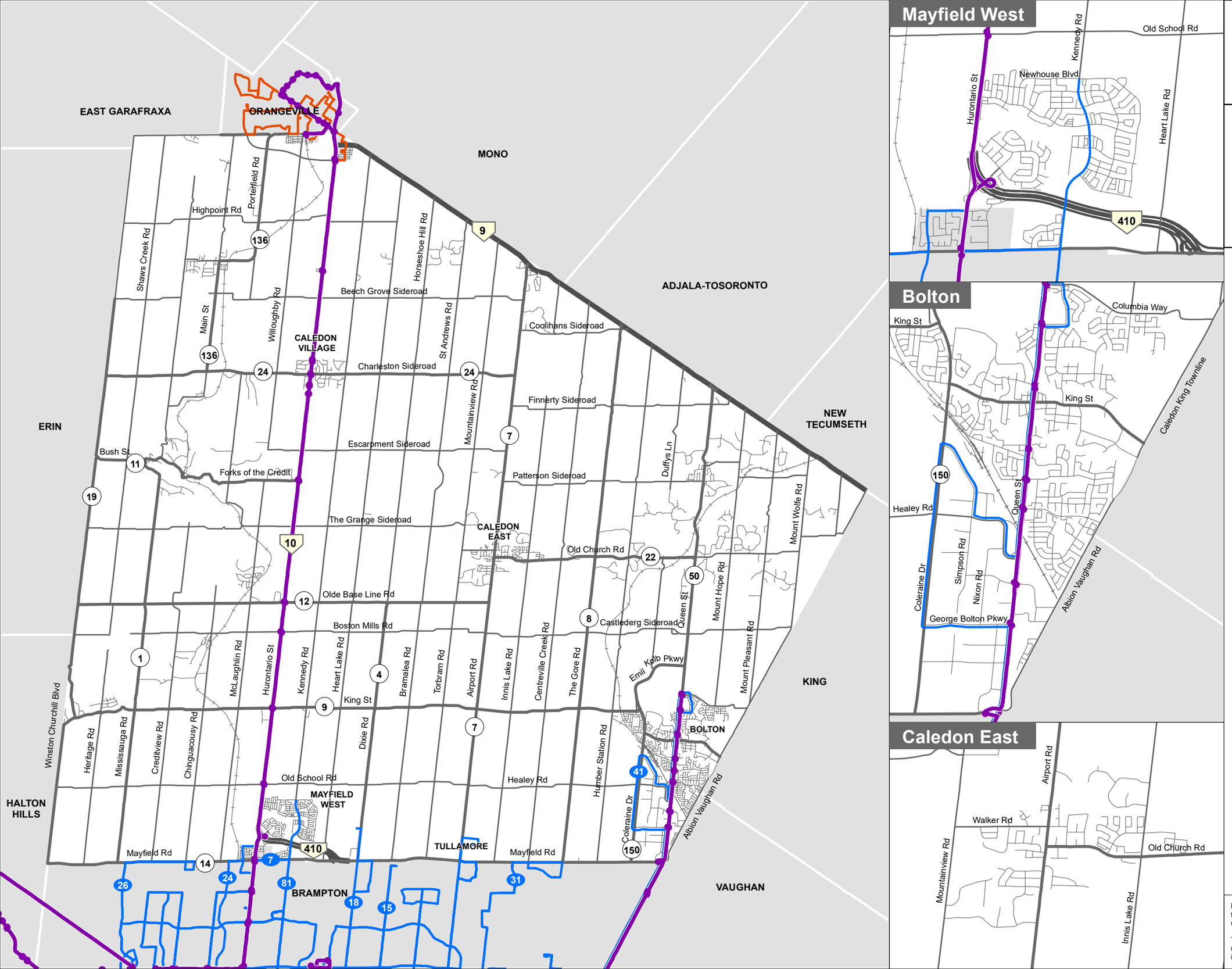
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Town of Caledon

Transportation Master Plan

FIGURE 3-9

Existing Transit Network



- Brampton Transit
- GO Bus Transit
- Orangeville Transit

0 1 2 4 6 8 km

BURNSIDE

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Town of Caledon

Transportation Master Plan

FIGURE 5-2

Truck Restrictions on Regional Roads within Caledon

Trucks Prohibited

EAST GARAFRAXA
ORANGEVILLE
MONO
ADJALA-TOSORONTO
NEW TECUMSETH
KING
ERIN
HALTON HILLS
BRAMPTON
TULLAMORE
VAUGHAN
CALEDON VILLAGE
CALEDON EAST
MAYFIELD WEST
BOLTON

Highpoint Rd
Porterfield Rd
Shaws Creek Rd
Main St
Willoughby Rd
Horseshoe Hill Rd
Beech Grove Sideroad
Coolihans Sideroad
St Andrews Rd
Charleston Sideroad
Finnerty Sideroad
Mountainview Rd
Escarpment Sideroad
Bush St
Forks of the Credit
Patterson Sideroad
Duffys Ln
Mount Wolfe Rd
The Grange Sideroad
Old Church Rd
Olde Base Line Rd
Boston Mills Rd
Castlederg Sideroad
Queen St
Mount Hope Rd
Mount Pleasant Rd
Emil Kolb Pkwy
King St
Winston Churchill Blvd
Heritage Rd
Mississauga Rd
Creditview Rd
Chinguacousy Rd
McLaughlin Rd
Hurontario St
Kennedy Rd
Heart Lake Rd
Bramalea Rd
Torbram Rd
Airport Rd
Innis Lake Rd
Centreville Creek Rd
The Gore Rd
Dixie Rd
Humber Station Rd
Old School Rd
Healey Rd
Mayfield Rd
Coleraine Dr
Albion Vaughan Rd

9
136
24
7
10
12
1
4
8
22
50
19
11
14
410
150

Mayfield West

Old School Rd
Kennedy Rd
Newhouse Blvd
Hurontario St
Heart Lake Rd
410

Bolton

Columbia Way
King St
Caledon King Townline
150
Queen St
Healey Rd
Coleraine Dr
Simpson Rd
Nixon Rd
George Bolton Pkwy
Albion Vaughan Rd

Caledon East

Airport Rd
Walker Rd
Old Church Rd
Mountainview Rd
Innis Lake Rd

0 1 2 4 6 8 km

BURNSIDE

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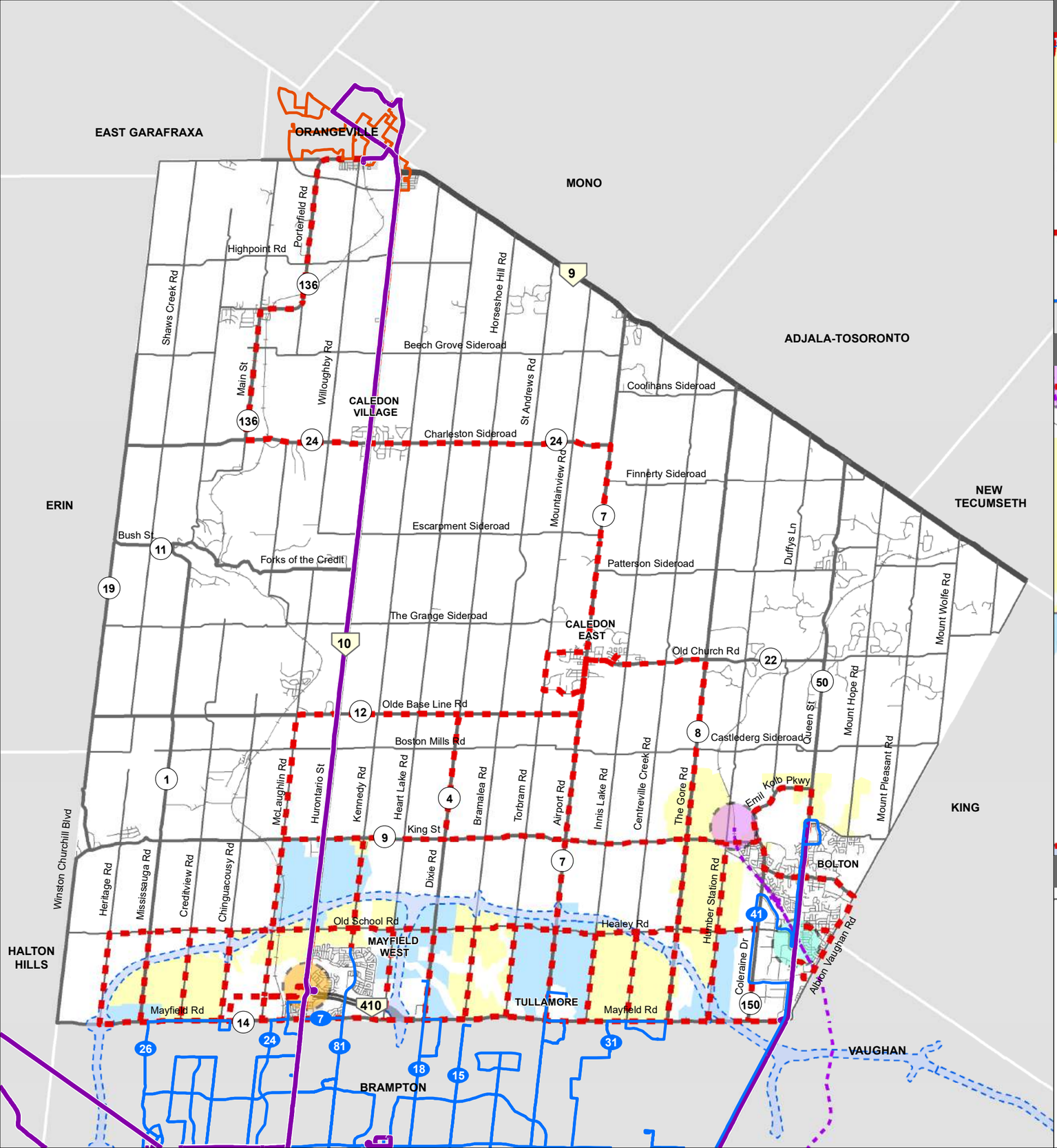
This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

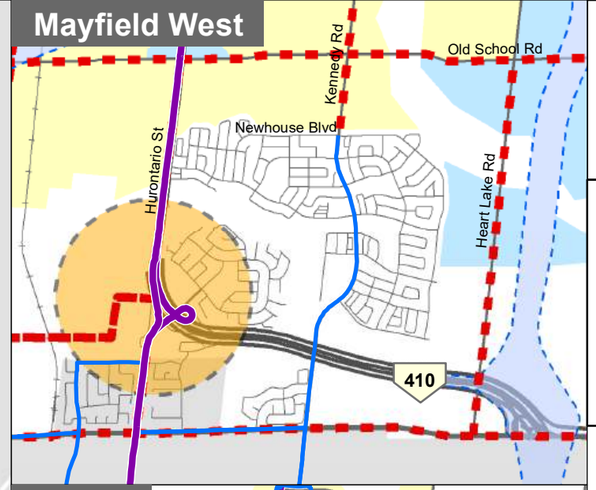
Town of Caledon

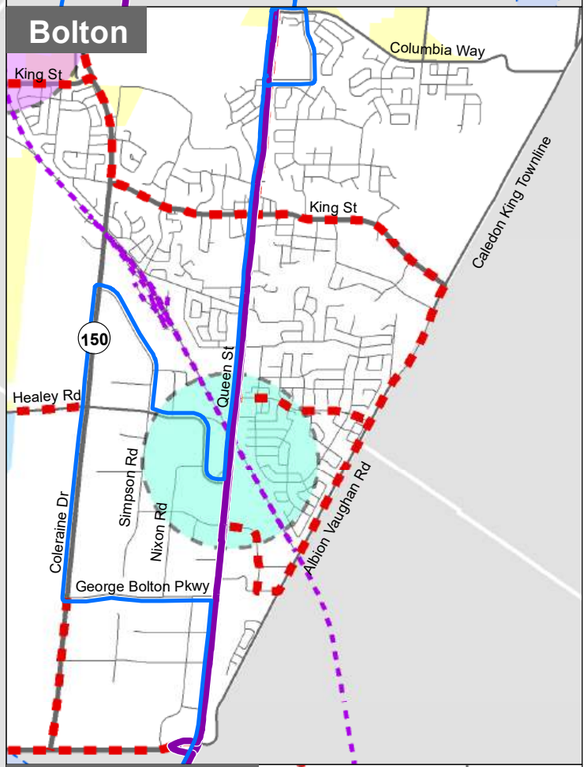
Transportation Master Plan

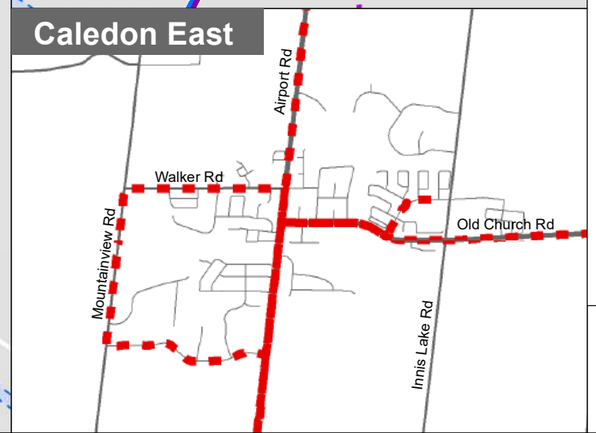
FIGURE 6-5

Transit Network Opportunities









Existing

- GO Transit
- Brampton Transit
- Orangeville Transit

Future

- Proposed Corridors
- Bolton GO Rail
- Caledon GO Station
- Potential Second GO Station
- Mayfield Transit Hub
- GTA West Preferred Route

Future Land Uses

- Community
- Employment

0 1 2 4 6 8 km

BURNSIDE

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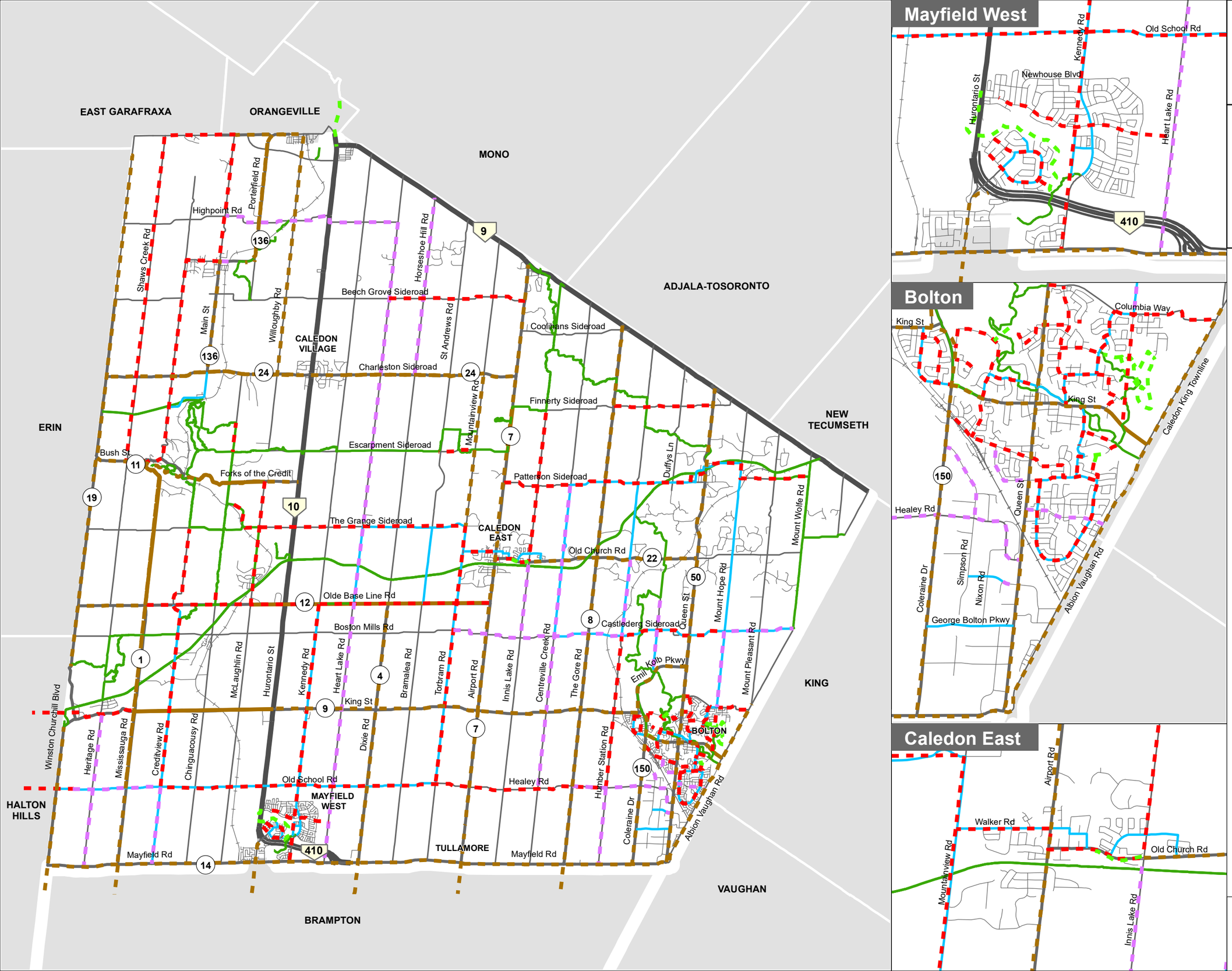
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Town of Caledon

Transportation Master Plan

FIGURE 7-1

Previous (2017) Active Transportation Recommendations



Proposed

- Multi-Use Route
- Separated On-Road
- Shared On-Road
- Regional

Existing

- Cycling Route
- Trails
- Regional

0 1 2 4 6 8 km

BURNSIDE

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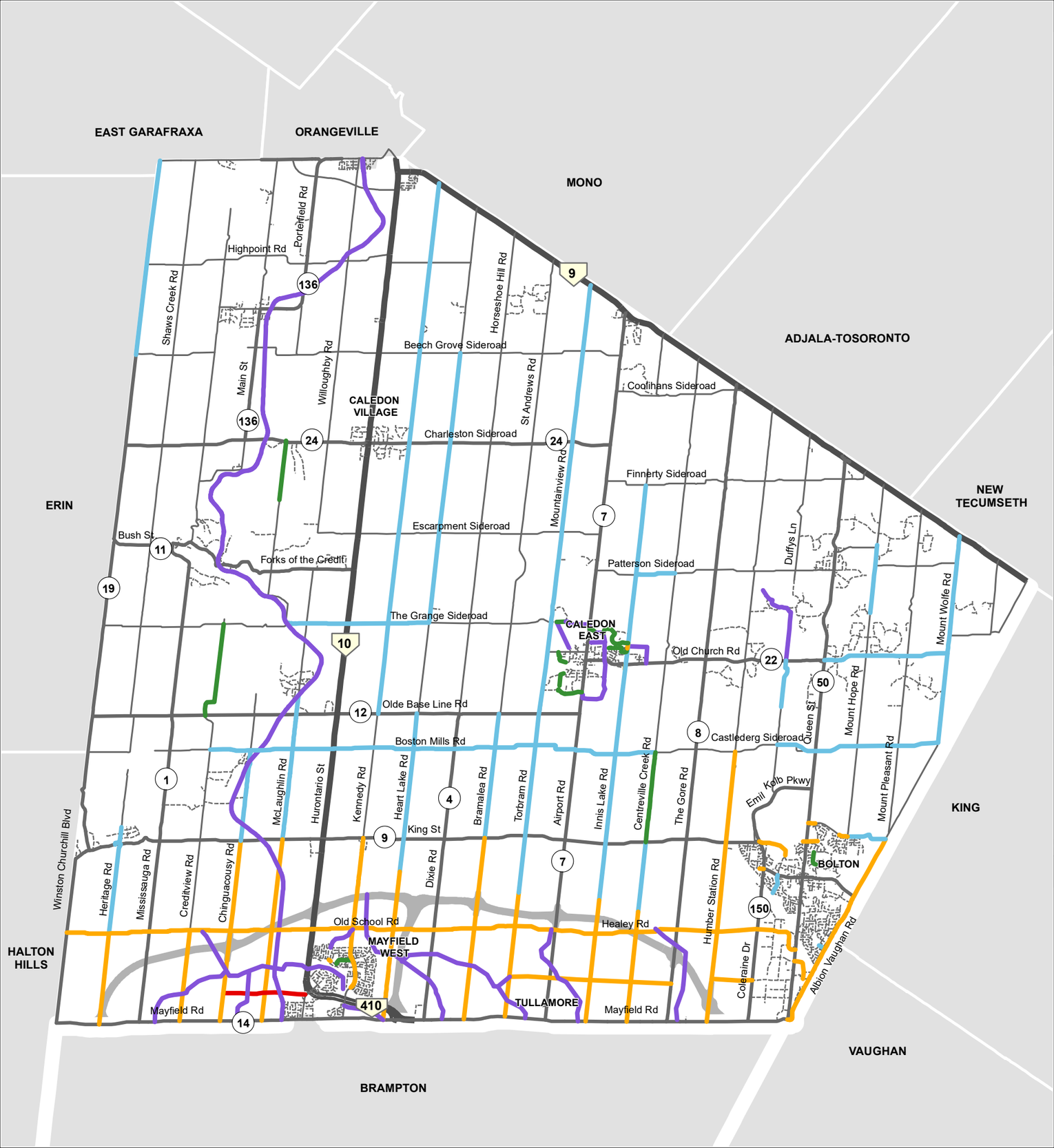
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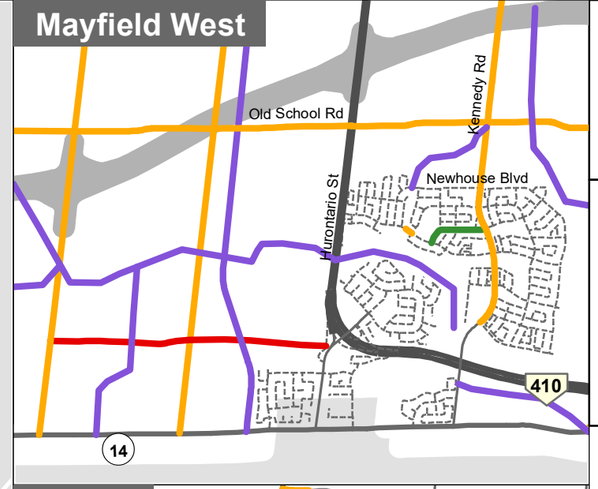
Town of Caledon

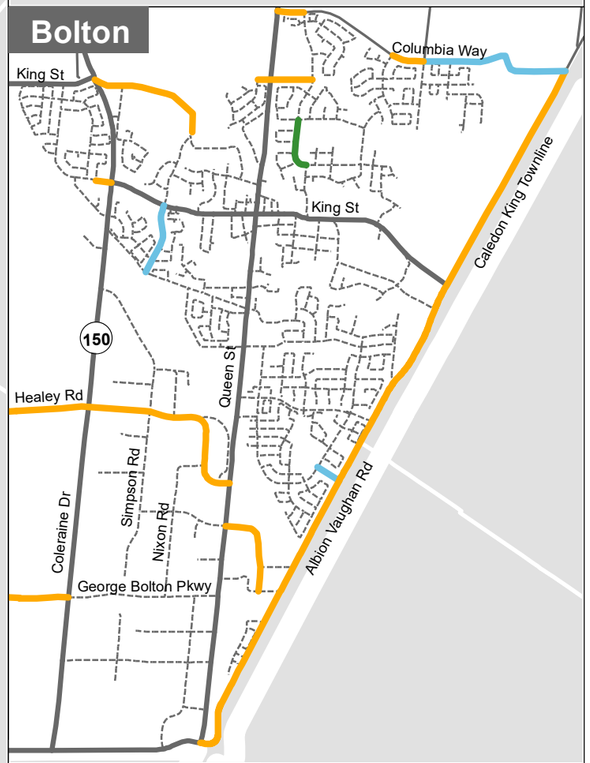
Transportation Master Plan

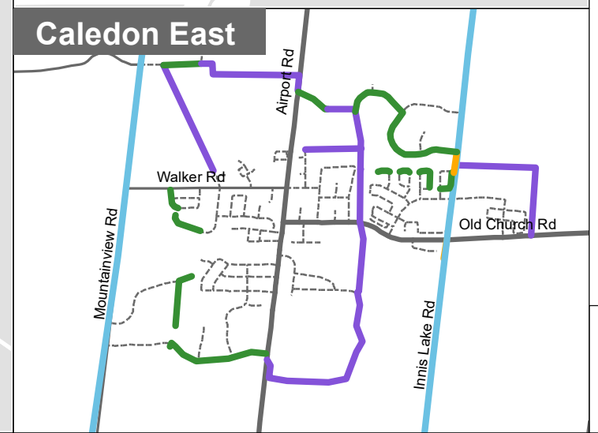
FIGURE 7-4

Proposed Active Transportation Network









Proposed Facility Type

- Multi-use Trail
- Painted Bike Lane
- Physically Separated
- Shared
- Visually Separated

Source: Town of Caledon ATMP

0 1 2 4 6 8 km

BURNSIDE

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Town of Caledon

Transportation Master Plan

FIGURE 9-1

Proposed Travel Lanes for Town Roads by 2051

Road Improvements (Phasing)

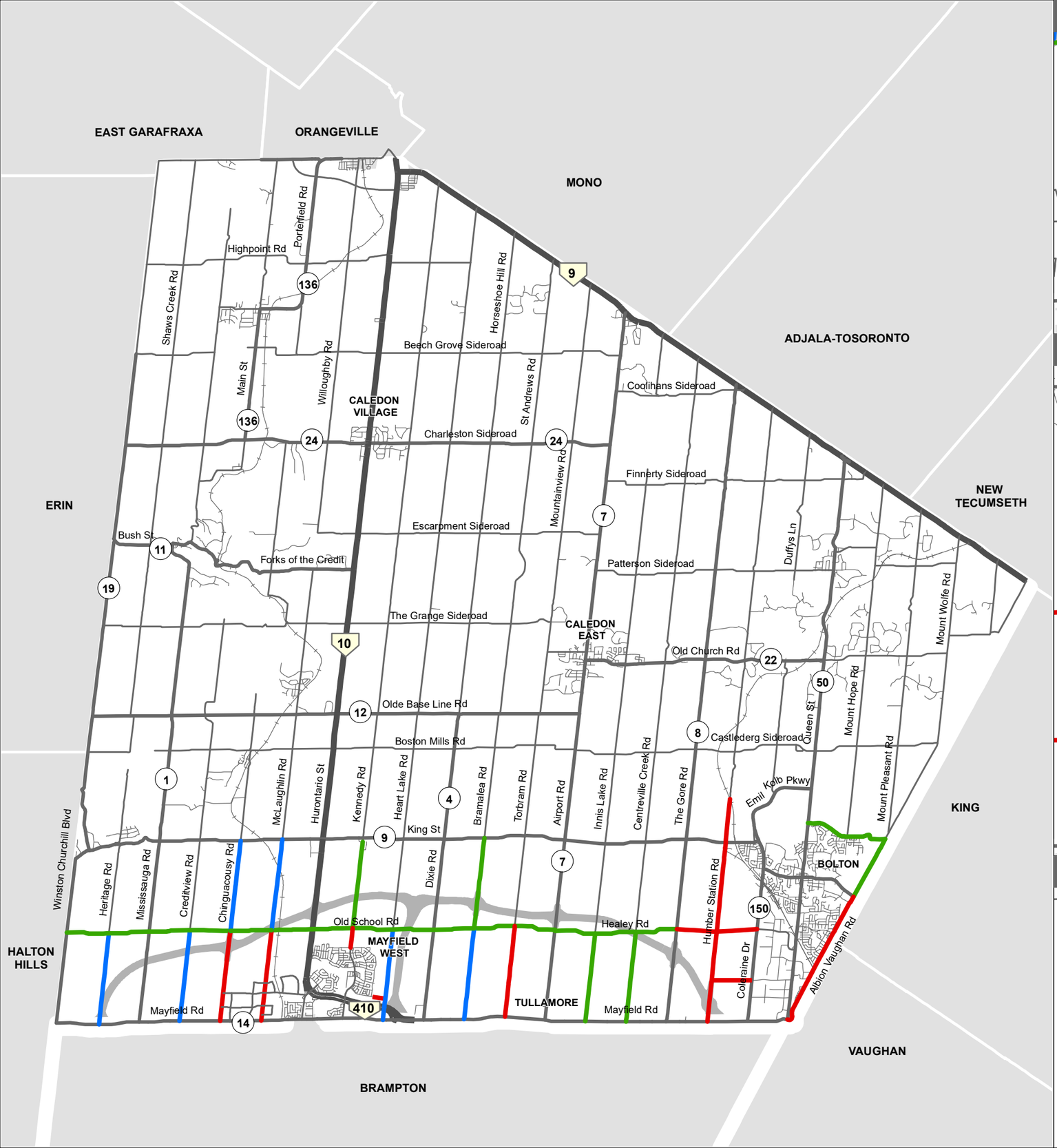
- Widening to 4 lanes (by 2031)
- Widening to 4 lanes (by 2041)
- Widening to 4 lanes (by 2051)

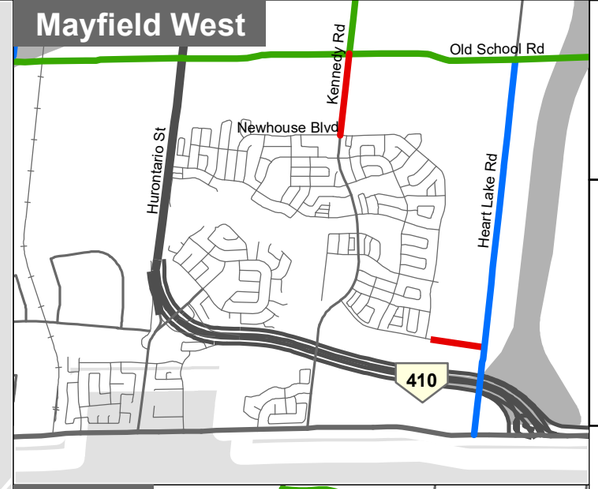
0 1 2 4 6 8 km

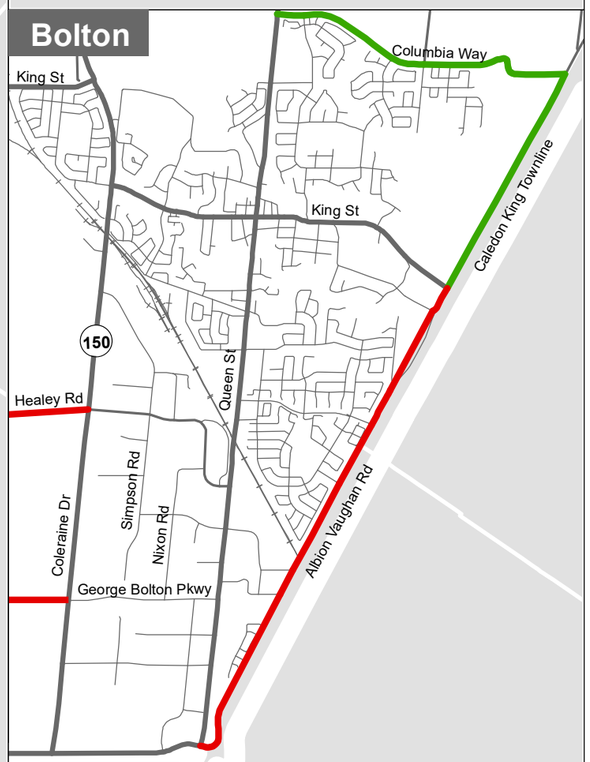
BURNSIDE

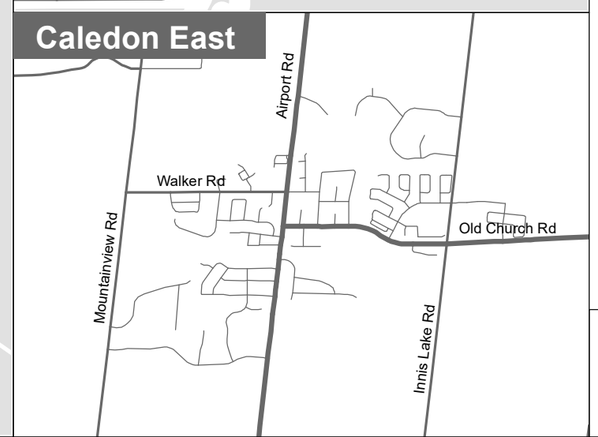
R.J. Burnside & Associates Limited is not responsible for the accuracy of the spatial, temporal, or other aspects of the data represented on this map. It is recommended that users confirm the accuracy of the information represented.

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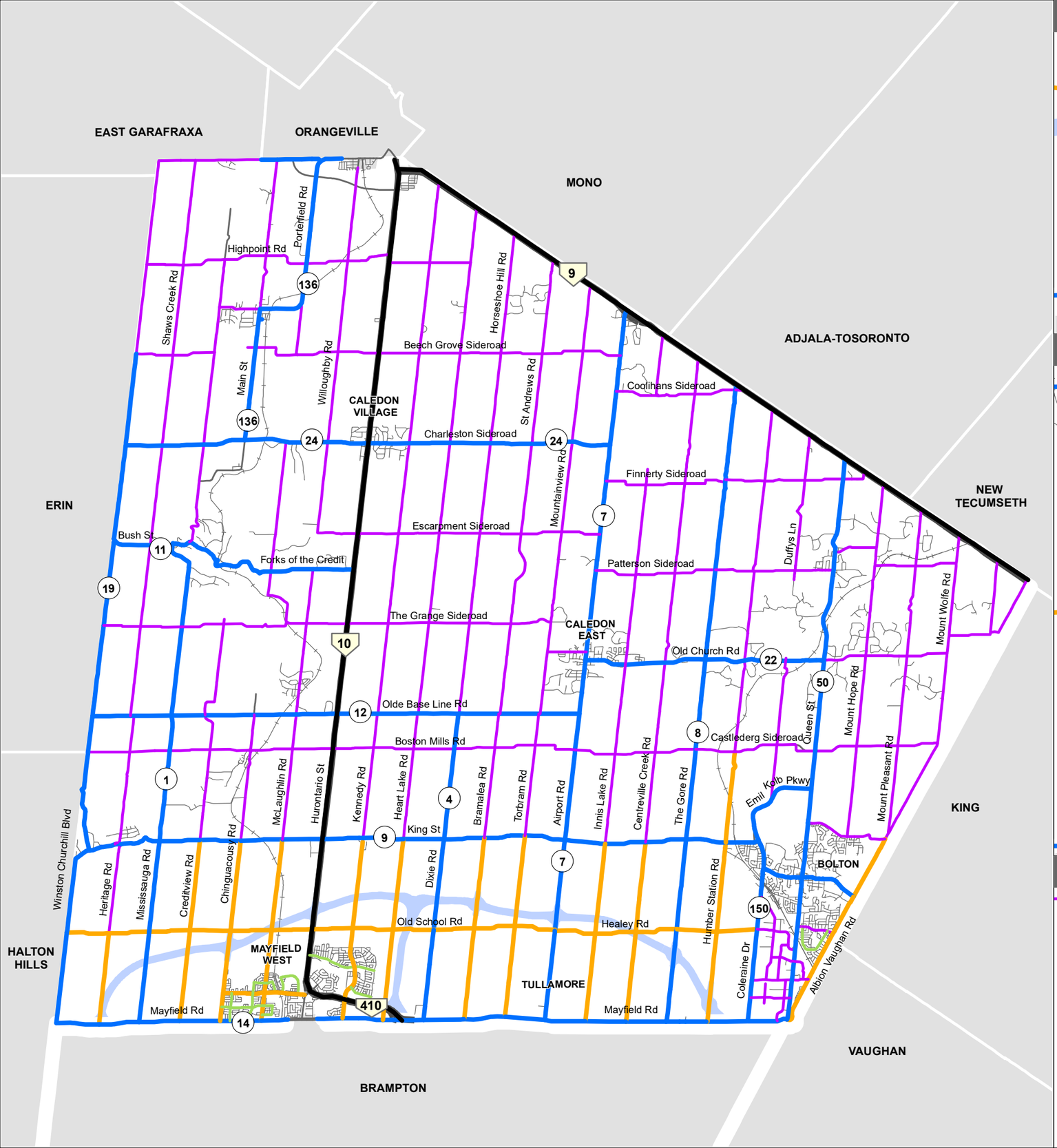


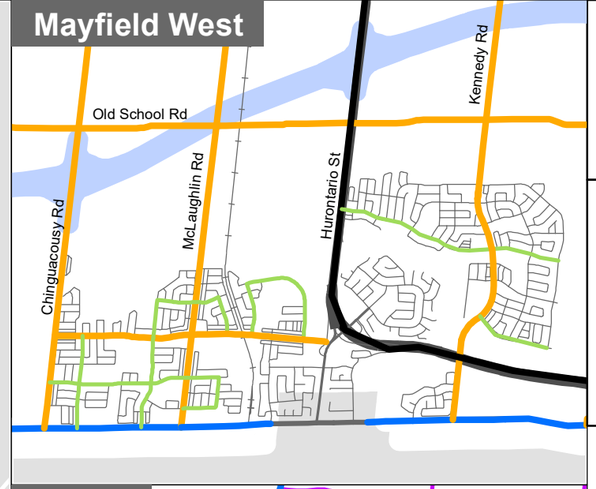
Town of Caledon

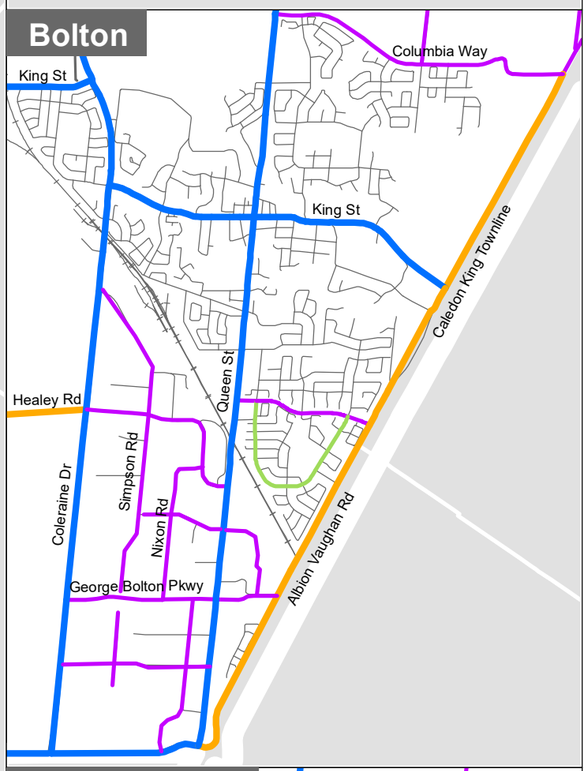
Transportation Master Plan

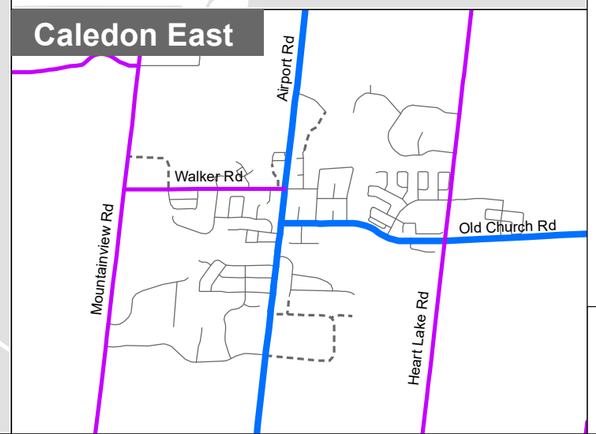
FIGURE 9-2

Road Classifications









- Provincial Highway / Freeway
- Regional Arterial
- Town Arterial
- Major Collector
- Minor Collector
- Local
- GTA West Corridor

0 1 2 4 6 8 km

BURNSIDE

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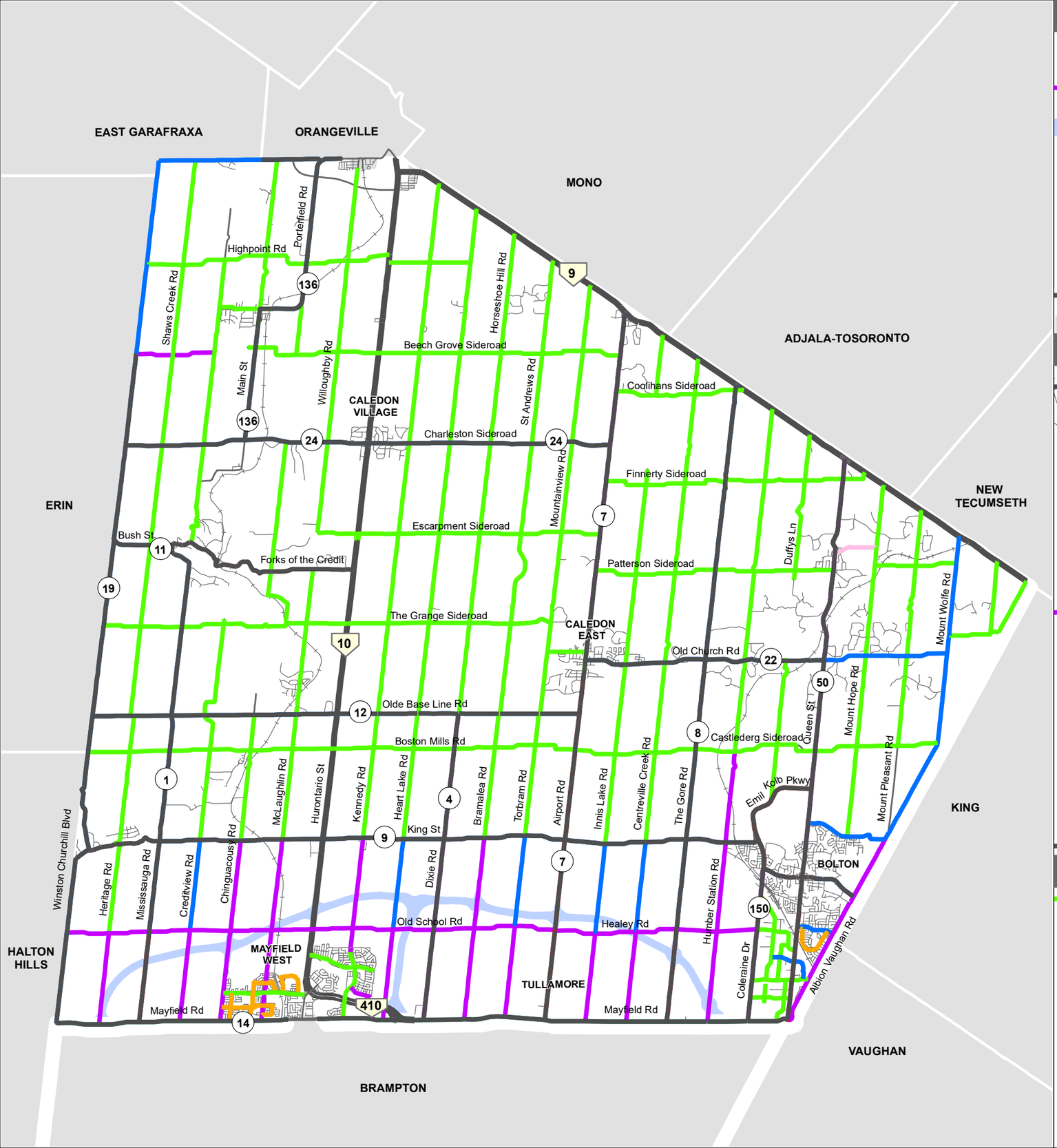
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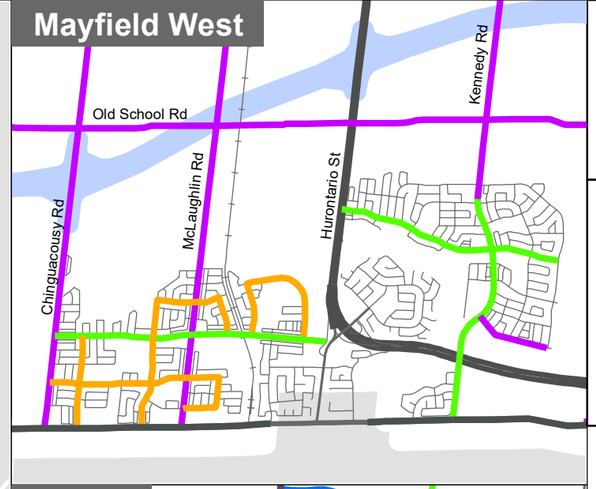
Town of Caledon

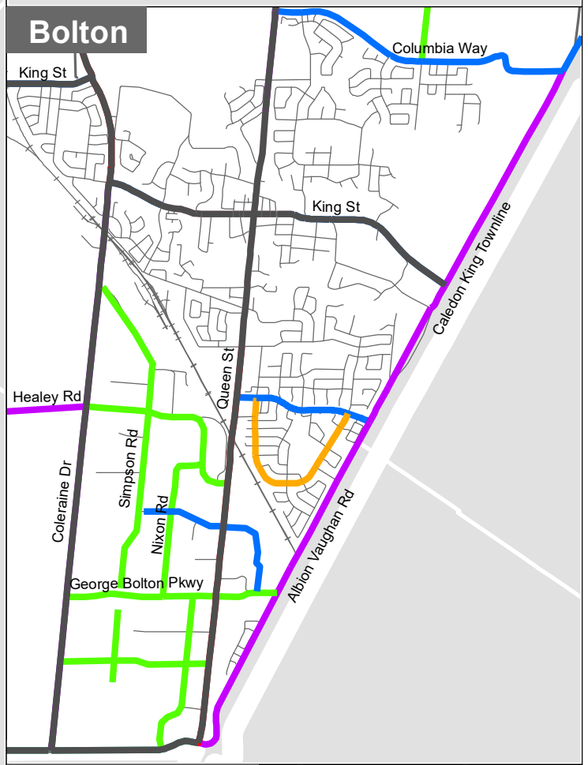
Transportation Master Plan

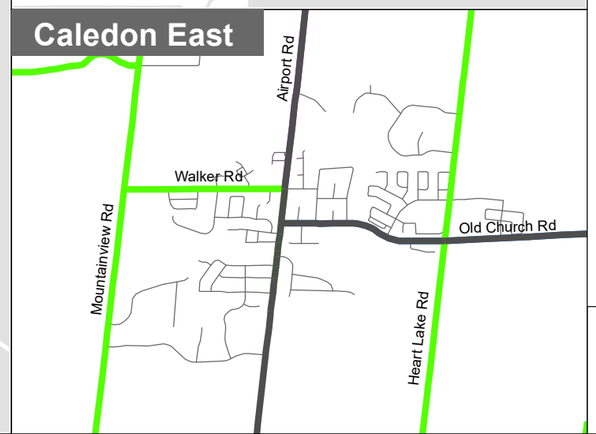
FIGURE 9-3

Right of Way (ROW) Widths









ROW Width (m)

- 20
- 22
- 26
- 30
- 36
- Regional Roads
- GTA West Corridor

*** Note: ROW widths along Regional roads are based on the Region's 2019 Long Range Transportation Plan. Refer to Region for latest Regional Road ROWs.**

0 1 2 4 6 8 km

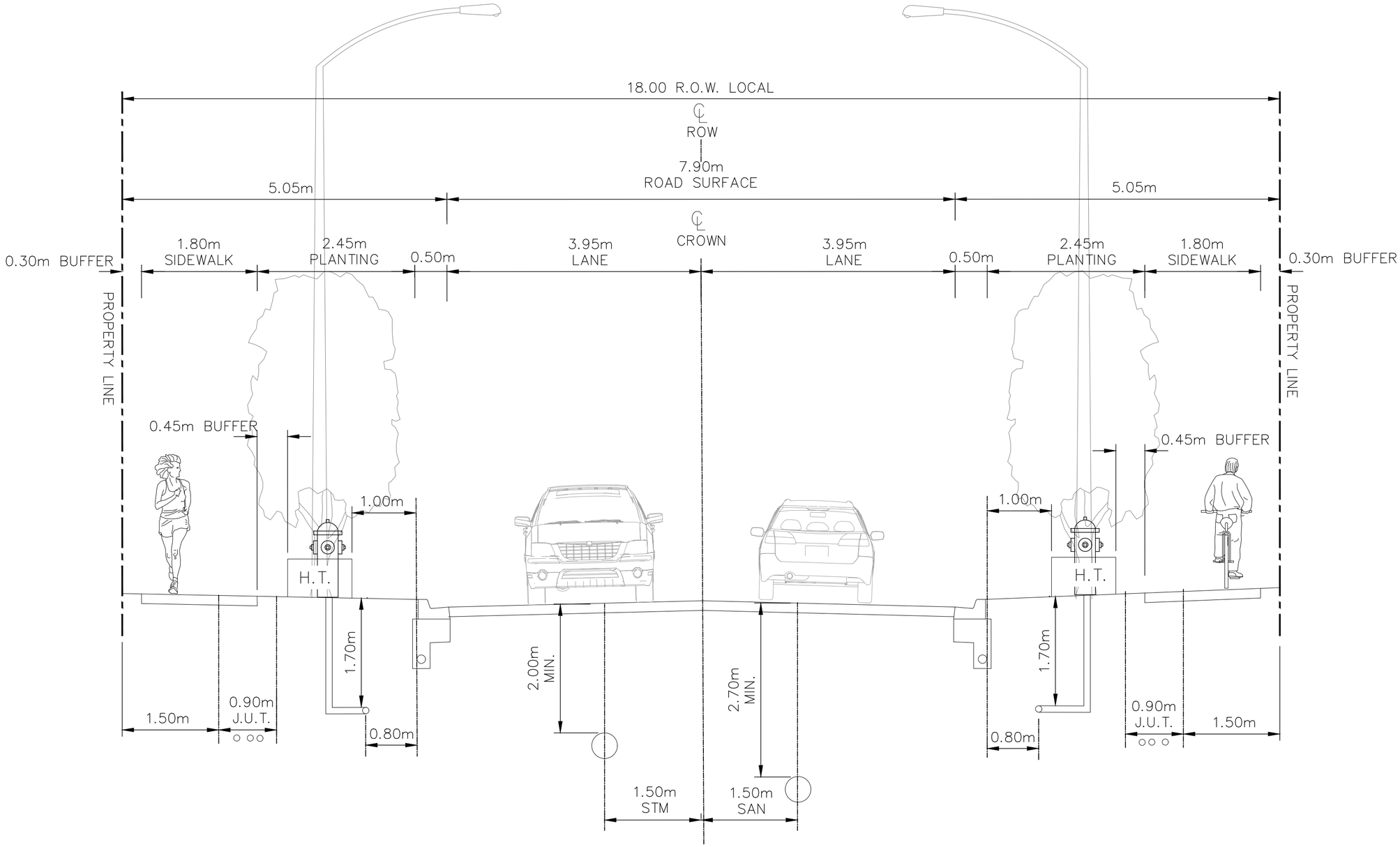
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APPENDIX J

Sample Cross Sections



CALEDON CROSS-SECTION – 18m ROW
RESIDENTIAL LOCAL

N.T.S.

No.	ISSUE	DATE: YYYY/MM/DD
0	ISSUED FOR 1st SUBMISSION	YYYY/MM/DD

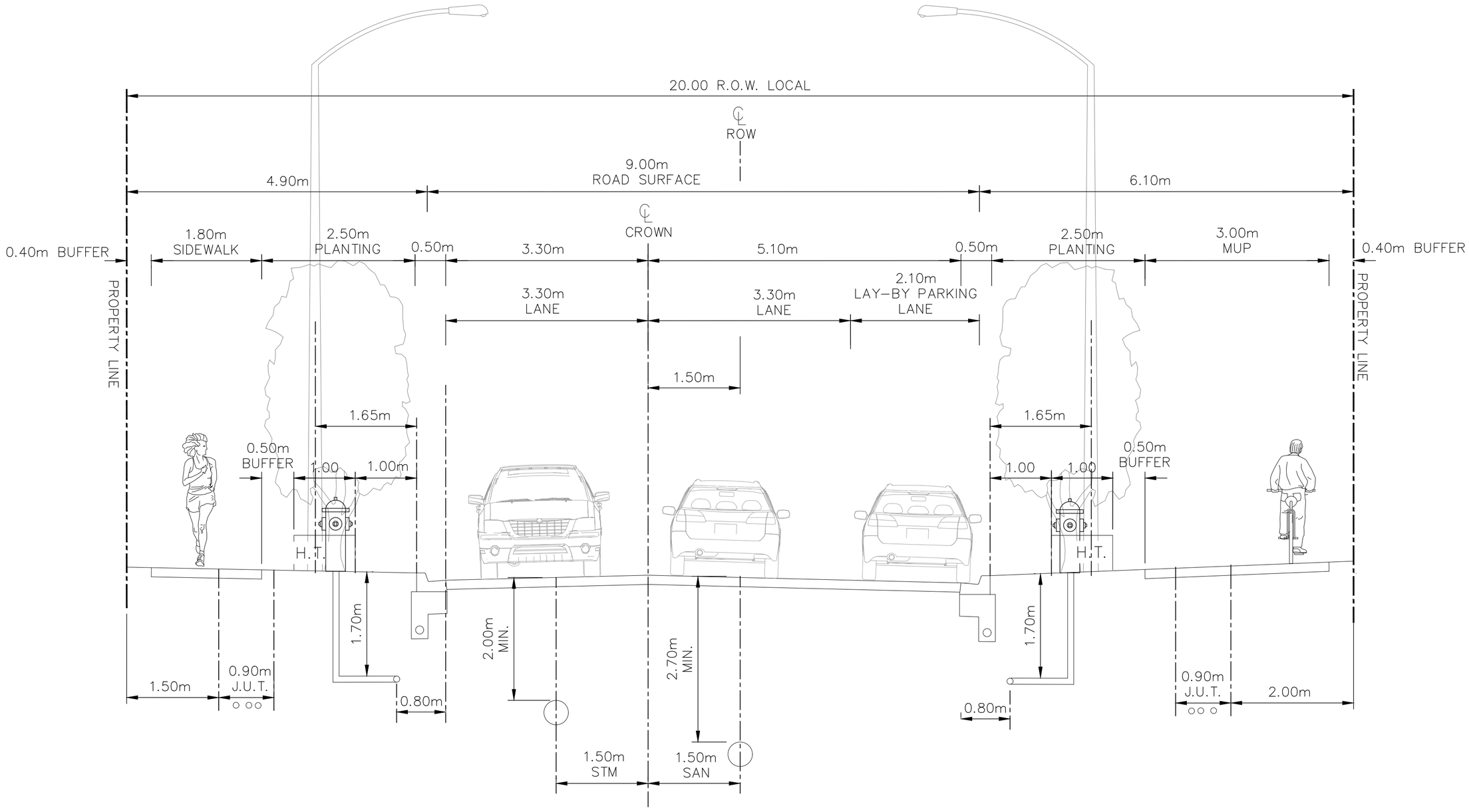
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Project
BOLTON NORTH HILL LANDOWNERS GROUP
TOWN OF CALEDON, REGION OF PEEL

Drawing
LOCAL ROAD CROSS SECTION

CROZIER
CONSULTING ENGINEERS

Drawn By	Design By	Project
J.W.	J.W./M.L.	0708-3446
Check By	Check By	Drawing
J.W/M.L.	M.L./K.K.	T-100



CALEDON CROSS–SECTION – 20m ROW
RESIDENTIAL ROAD WITH SINGLE MULTI–USE PATH
AND SINGLE PARKING LANE

N.T.S.

No.	ISSUE	DATE: YYYY/MM/DD
0	ISSUED FOR 1st SUBMISSION	YYYY/MM/DD

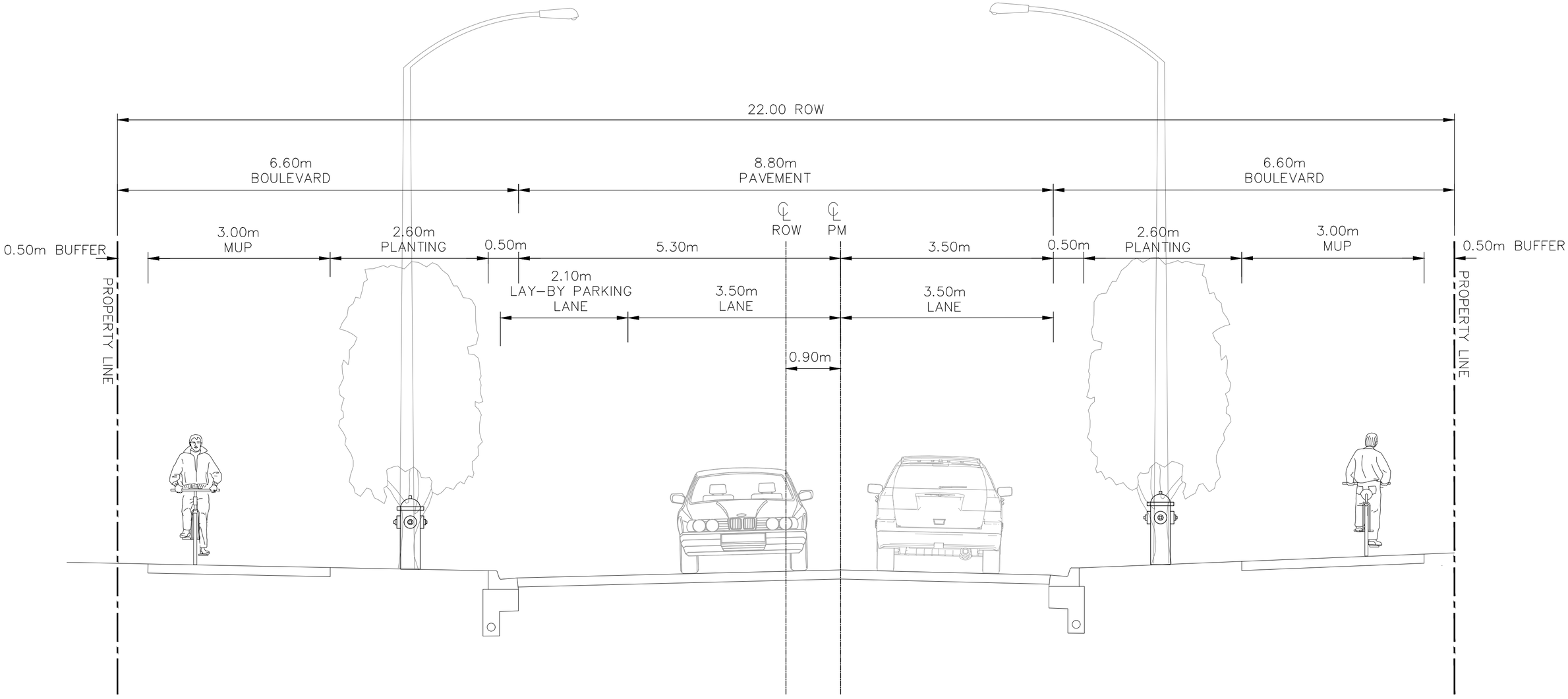
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Project
BOLTON NORTH HILL LANDOWNERS GROUP
TOWN OF CALEDON, REGION OF PEEL

Drawing
TYPICAL CROSS SECTION

CROZIER
CONSULTING ENGINEERS

Drawn By	J.W.	Design By	J.W./M.L.	Project	0708–3446
Check By	J.W/M.L.	Check By	M.L./K.K.	Drawing	T–101



CALEDON CROSS–SECTION – 22m ROW
RESIDENTIAL MINOR COLLECTOR WITH MULTI–USE PATH BOTH SIDES
SINGLE PARKING LANE

N.T.S.

No.	ISSUE	DATE: YYYY/MM/DD
0	ISSUED FOR 1st SUBMISSION	YYYY/MM/DD

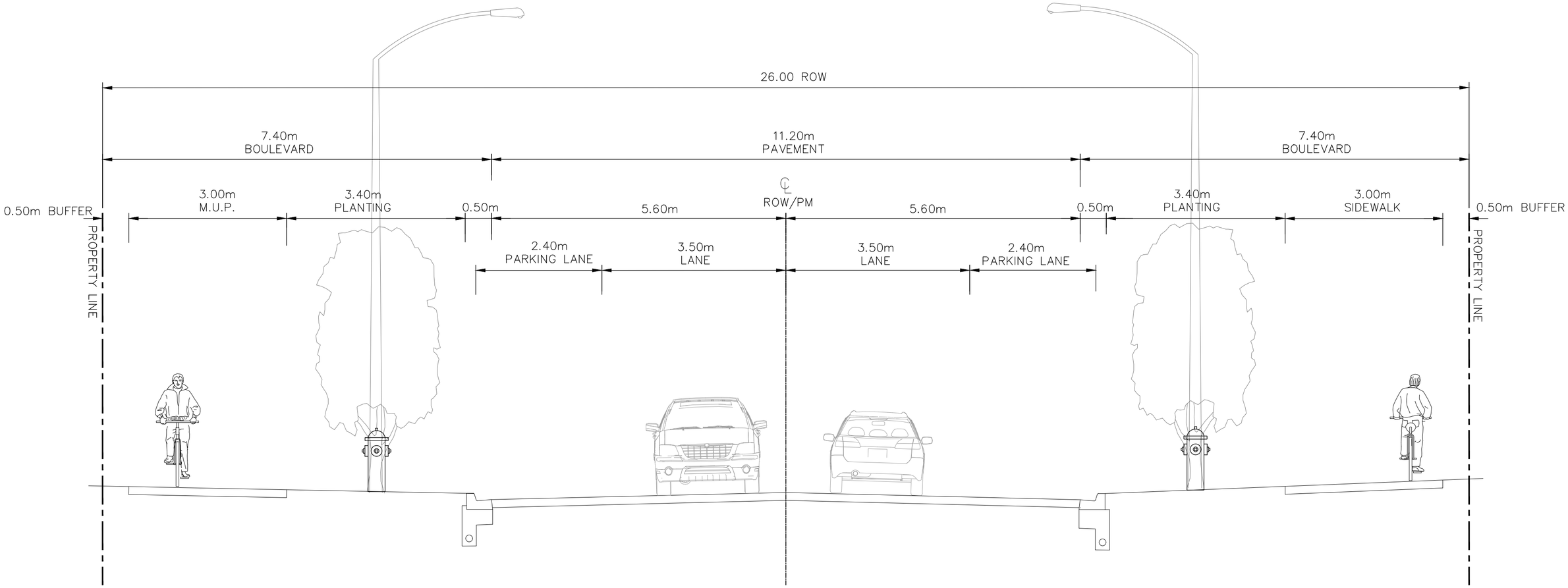
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Project
BOLTON NORTH HILL LANDOWNERS GROUP
TOWN OF CALEDON, REGION OF PEEL

Drawing
MINOR COLLECTOR CROSS–SECTION

CROZIER
CONSULTING ENGINEERS

Drawn By	Design By	Project
J.W.	J.W./M.L.	0708–3446
Check By	Check By	Drawing
J.W/M.L.	M.L./K.K.	T–102



MAJOR COLLECTOR CROSS-SECTION
26m ROW - MID BLOCK
RESIDENTIAL COLLECTOR WITH ON-STREET PARKING AND M.U.P.
(BOTH SIDES)

N.T.S.

No.	ISSUE	DATE: YYYY/MM/DD
0	ISSUED FOR 1st SUBMISSION	YYYY/MM/DD

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Project
BOLTON NORTH HILL LANDOWNERS GROUP
TOWN OF CALEDON, REGION OF PEEL

Drawing
MAJOR COLLECTOR CROSS-SECTION

CROZIER
CONSULTING ENGINEERS

Drawn By	Design By	Project
J.W.	J.W./M.L.	0708-3446
Check By	Check By	Drawing
J.W/M.L.	M.L./K.K.	T-103

APPENDIX K

Trip Distribution and Assignment Analysis

Trip Distribution per Bolton TMP

AM Peak

OUTBOUND TRIPS

Bolton	5925	37%
Wellington	65	0%
Dufferin	222	1%
Caledon	638	4%
Simcoe	171	1%
York	2279	15%
Durham	18	0%
Toronto	2979	19%
Mississauga	1493	10%
Brampton	1690	11%
Halton	327	2%
Hamilton	51	0%
Total	15858	100%

PM Peak

INBOUND TRIPS

Bolton	5925	37%
Wellington	65	0%
Dufferin	222	1%
Caledon	638	4%
Simcoe	171	1%
York	2279	15%
Durham	18	0%
Toronto	2979	19%
Mississauga	1493	10%
Brampton	1690	11%
Halton	327	2%
Hamilton	51	0%
Total	15858	100%

INBOUND TRIPS

Bolton	5925	43%
Wellington	37	0%
Dufferin	489	4%
Caledon	1459	11%
Simcoe	841	6%
York	1294	9%
Durham	73	0%
Toronto	862	6%
Mississauga	553	4%
Brampton	1949	14%
Halton	217	2%
Hamilton	65	1%
Total	13764	100%

OUTBOUND TRIPS

Bolton	5925	43%
Wellington	37	0%
Dufferin	489	4%
Caledon	1459	11%
Simcoe	841	6%
York	1294	9%
Durham	73	0%
Toronto	862	6%
Mississauga	553	4%
Brampton	1949	14%
Halton	217	2%
Hamilton	65	1%
Total	13764	100%

	% Breakdown		
Municipality	**South via Hwy 50**	**West via Emil Kolb Parkway**	**North via Hwy 50**
Bolton	75%	25%	
Wellington			100%
Dufferin			100%
Caledon		20%	80%
Simcoe			100%
York	50%		50%
Durham	100%		
Toronto	60%	40%	
Mississauga	40%	60%	
Brampton	30%	70%	
Halton	60%	40%	
Hamilton	60%	40%	

*raw

	AM IN	**AM OUT**	**PM IN**	**PM OUT**
South via Hwy 50	48%	48%	55%	55%
West via Emil Kolb Parkway	29%	29%	32%	32%
North via Hwy 50	23%	23%	13%	13%
	100%	100%	100%	100%

Adjusted

	AM IN	**AM OUT**	**PM IN**	**PM OUT**
South via Hwy 50	40%	40%	40%	40%
West via Emil Kolb Parkway	40%	40%	40%	40%
North via Hwy 50	20%	20%	20%	20%
	100%	100%	100%	100%

TTS Query Results	
Distribution:	**AM IN**

Field	Selection	Value
Row variable:	**2006 GTA zone of origin**	**-**
Column variable:	**2006 GTA zone of destination**	**-**
Filter 1:	**2006 GTA zone of destination**	**3192,3193,3194**
Filter 2:	**Start time of trip**	**0630-0930**
Filter 3:	**Trip purpose of destination**	**Home (H)**

AM IN	Internal									External								Totals
	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	External	External	External	External	External	External	External	External	
Direction	**I**	**NW**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	
Trips	420	27	31	0	0	0	0	18	0	0	0	0	0	0	59	26	0	581
%	72.29%	4.65%	5.34%	0.00%	0.00%	0.00%	0.00%	3.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.15%	4.48%	0.00%	100.00%
% w/o trips in subject TAZ	0.00%	16.77%	19.25%	0.00%	0.00%	0.00%	0.00%	11.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	36.65%	16.15%	0.00%	100.00%

Thu May 30 2024 09:20:34 GMT-0400 (Eastern Daylight Time) - Run Time: 2729ms

Cross Tabulation Query Form - Trip - 2016

Row: 2006 GTA zone of origin - gta06_orig

Column: 2006 GTA zone of destination - gta06_dest

Filters:

(2006 GTA zone of destination - gta06_dest In 3192,3193,3194

and

Start time of trip - start_time In 0630-0930

and

Trip purpose of destination - purp_dest In H,)

Trip 2016

Table:

,3192,3193,3194

168,14,0,0

415,18,0,0

2023,0,0,27

3003,0,31,0

3189,0,0,27

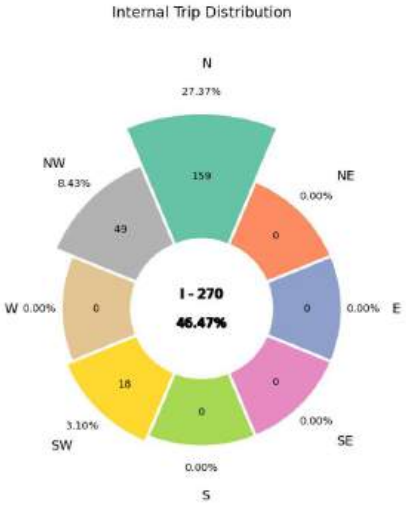
3191,0,0,18

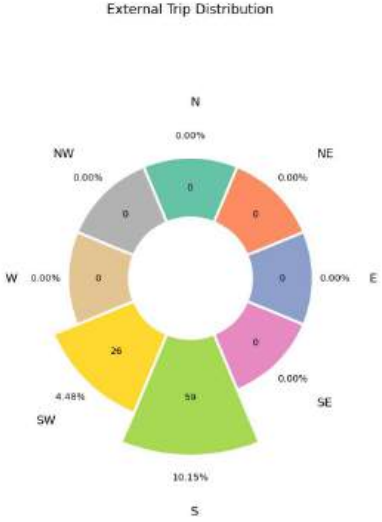
3192,111,62,97

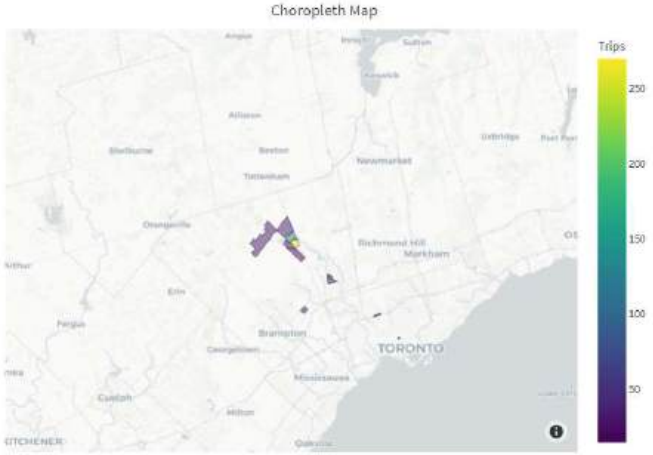
3193,60,45,23

3194,0,0,22

3331,0,0,26







TTS Query Results	
Distribution:	AM OUT

Field	Selection	Value
Row variable:	2006 GTA zone of destination	-
Column variable:	2006 GTA zone of origin	-
Filter 1:	2006 GTA zone of origin	3192,3193,3194
Filter 2:	Start time of trip	630-930
Filter 3:	Trip purpose of origin	Home (H)

AM OUT	Internal									External								
	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	External	External	External	External	External	External	External	External	
Direction	I	NW	N	NE	E	SE	S	SW	W	NW	N	NE	E	SE	S	SW	W	Totals
Trips	2229	100	525	0	0	0	194	557	155	82	87	151	360	558	2273	1093	34	8398
%	26.54%	1.19%	6.25%	0.00%	0.00%	0.00%	2.31%	6.63%	1.85%	0.98%	1.04%	1.80%	4.29%	6.64%	27.07%	13.02%	0.40%	100.00%
% w/o trips in subject TAZ	0.00%	1.62%	8.51%	0.00%	0.00%	0.00%	3.14%	9.03%	2.51%	1.33%	1.41%	2.45%	5.84%	9.05%	36.85%	17.72%	0.55%	100.00%

Thu May 30 2024 09:24:06 GMT-0400 (Eastern Daylight Time) - Run Time: 2589ms

Cross Tabulation Query Form - Trip - 2016

Row: 2006 GTA zone of destination - gta06_dest

Column: 2006 GTA zone of origin - gta06_orig

Filters:

(2006 GTA zone of origin - gta06_orig In 3192,3193,3194

and

Start time of trip - start_time In 0630-0930

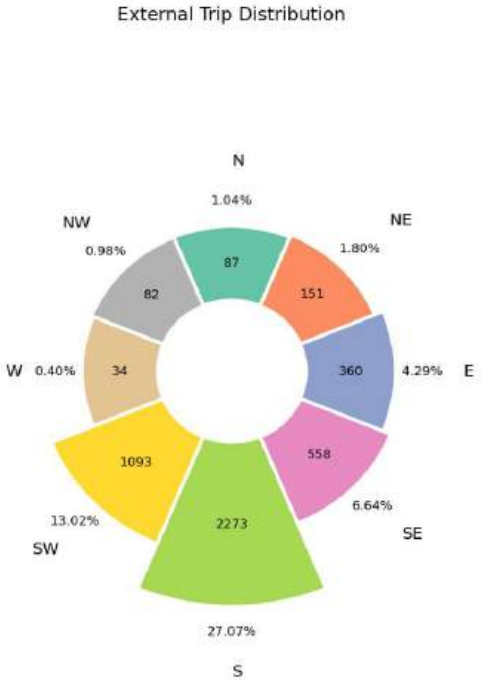
and

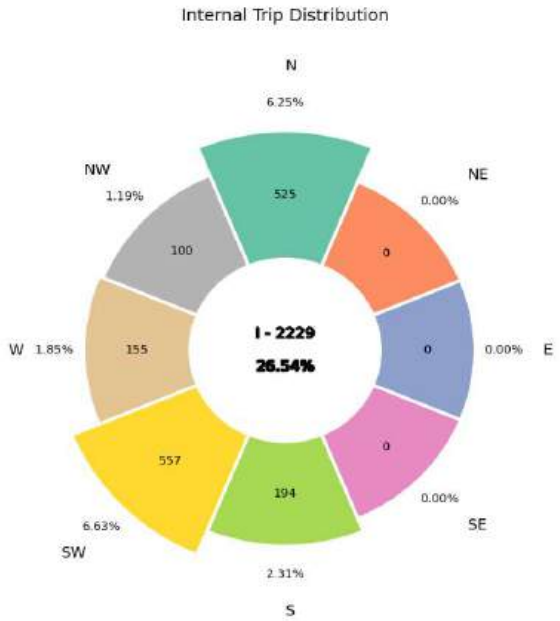
Trip purpose of origin - purp_orig In H,)

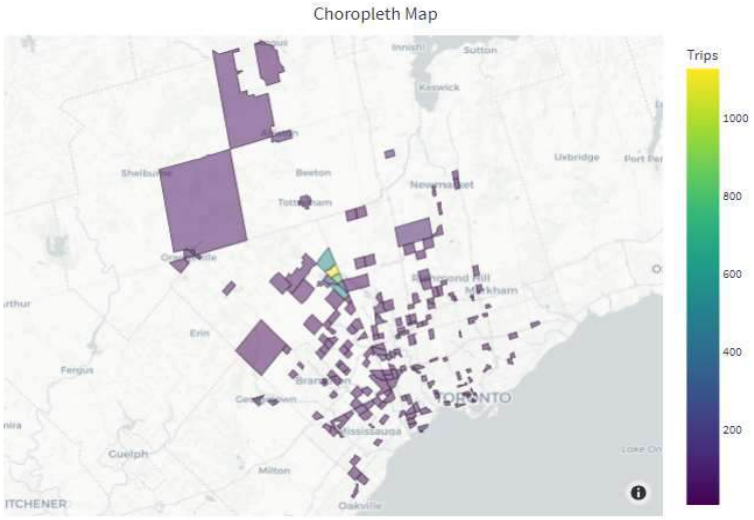
Trip 2016

Table:

,3192,3193,3194	379,0,21,0	2558,0,11,0	3443,0,0,9	8663,0,13,0
38,0,23,0	388,0,22,0	2604,0,22,0	3447,0,10,0	
46,0,0,24	392,0,47,0	2606,30,0,0	3458,36,0,0	
55,0,9,0	415,11,0,0	2623,0,22,0	3474,11,0,0	
57,0,0,9	443,0,16,0	2624,0,13,0	3475,0,0,18	
58,13,0,0	460,0,22,0	2653,0,10,0	3480,0,21,23	
68,0,13,0	472,15,0,0	2654,0,10,0	3516,0,48,0	
69,0,22,24	487,0,0,14	2656,0,39,0	3519,0,0,10	
74,0,15,0	525,0,0,30	2659,0,0,26	3609,29,26,0	
89,0,0,10	529,0,8,0	2667,18,65,0	3611,8,0,0	
113,0,12,0	578,15,0,0	2669,0,23,0	3612,0,8,10	
125,0,11,0	1209,0,22,0	2672,17,0,0	3628,23,0,0	
126,0,33,0	2003,0,22,30	2674,27,0,0	3656,9,0,0	
131,0,31,0	2005,34,0,0	3001,0,32,0	3662,0,0,17	
133,0,8,0	2017,0,25,0	3003,107,20,6212	3674,0,0,37	
135,0,17,0	2021,0,10,0	3005,0,0,16	3690,15,0,0	
143,17,0,0	2022,41,0,23	3014,0,0,10	3693,71,0,0	
168,14,0,0	2023,43,0,27	3017,0,0,18	3694,0,0,25	
180,18,0,0	2031,12,0,0	3103,0,0,32	3695,0,0,31	
185,0,0,24	2039,15,0,0	3153,36,0,56	3696,0,6,10	
187,21,0,0	2045,0,16,0	3189,0,0,27	3699,9,0,17	
204,0,33,0	2058,39,0,0	3190,62,83,49	3701,20,35,0	
210,0,31,8	2062,0,44,10	3191,21,120,5113	3702,0,0,24	
221,0,0,18	2064,0,0,11	3192,42,42,43176	3704,0,0,23	
236,0,0,10	2069,21,0,0	3193,34,66,66115	3705,0,0,10	
290,42,0,0	2070,16,27,17	3194,62,47,150	3709,0,8,10	
296,0,21,0	2081,24,0,0	3196,15,0,0	3710,0,8,0	
298,0,22,0	2083,0,24,17	3197,0,41,0	3717,0,14,0	
299,0,39,0	2084,16,0,0	3325,14,0,0	3815,0,31,0	
301,0,22,0	2091,39,0,10	3330,21,0,0	3836,0,12,0	
307,0,14,0	2092,24,0,0	3331,20,0,0	3853,21,0,0	
308,40,0,0	2098,0,0,20	3337,0,38,0	4023,0,0,10	
310,0,35,0	2104,34,0,0	3338,0,0,24	4024,0,20,0	
322,0,47,0	2106,0,29,9	3340,0,0,29	4027,0,0,10	
330,20,0,0	2110,0,21,0	3342,0,8,0	4081,20,0,0	
335,0,19,0	2111,21,0,26	3348,0,0,7	4159,0,16,0	
354,0,22,0	2113,0,8,8	3351,0,11,0	4163,18,0,0	
355,0,30,0	2132,20,0,0	3356,14,0,0	8402,0,0,14	
356,10,25,0	2133,12,0,0	3357,0,13,0	8403,17,13,0	
357,0,35,8	2205,0,0,7	3385,34,14,0	8405,0,14,24	
358,0,20,0	2210,0,0,13	3417,0,71,0	8415,30,14,0	
359,0,0,8	2249,0,0,7	3418,10,0,0	8509,0,14,0	
361,28,0,0	2253,40,0,0	3419,0,14,0	8553,0,43,0	
371,59,85,66	2369,0,12,0	3420,0,14,0	8562,0,60,0	
372,0,12,13	2375,23,29,0	3421,0,13,0	8571,0,0,13	
373,45,30,14	2377,0,16,0	3422,15,8,0	8592,0,9,0	
374,8,0,0	2393,0,15,0	3434,20,0,0	8619,0,0,22	
378,9,50,0	2551,20,0,0	3442,0,0,16	8640,84,0,10	







TTS Query Results	
Distribution:	PM IN

Field	Selection	Value
Row variable:	2006 GTA zone of origin	-
Column variable:	2006 GTA zone of destination	-
Filter 1:	2006 GTA zone of destination	3192,3193,3194
Filter 2:	Start time of trip	1530-1830
Filter 3:	Trip purpose of destination	Home (H)

PM IN	Internal									External								
	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	External	External	External	External	External	External	External	External	
Direction	I	NW	N	NE	E	SE	S	SW	W	NW	N	NE	E	SE	S	SW	W	Totals
Trips	1062	167	0	0	0	0	351	525	159	30	43	139	278	574	1929	1051	59	6367
%	16.68%	2.62%	0.00%	0.00%	0.00%	0.00%	5.51%	8.25%	2.50%	0.47%	0.68%	2.18%	4.37%	9.02%	30.30%	16.51%	0.93%	100.00%
% w/o trips in subject TAZ	0.00%	3.15%	0.00%	0.00%	0.00%	0.00%	6.62%	9.90%	3.00%	0.57%	0.81%	2.62%	5.24%	10.82%	36.36%	19.81%	1.11%	100.00%

Thu May 30 2024 09:22:26 GMT-0400 (Eastern Daylight Time) - Run Time: 2774ms

Cross Tabulation Query Form - Trip - 2016

Row: 2006 GTA zone of origin - gta06_orig

Column: 2006 GTA zone of destination - gta06_dest

Filters:

(2006 GTA zone of destination - gta06_dest In 3192,3193,3194

and

Start time of trip - start_time In 1530-1830

and

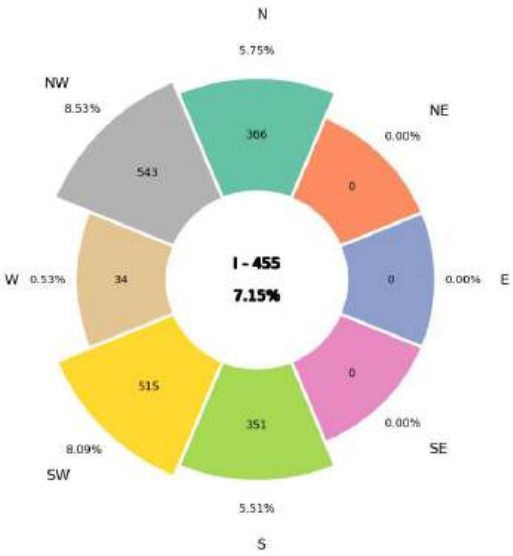
Trip purpose of destination - purp_dest In H,)

Trip 2016

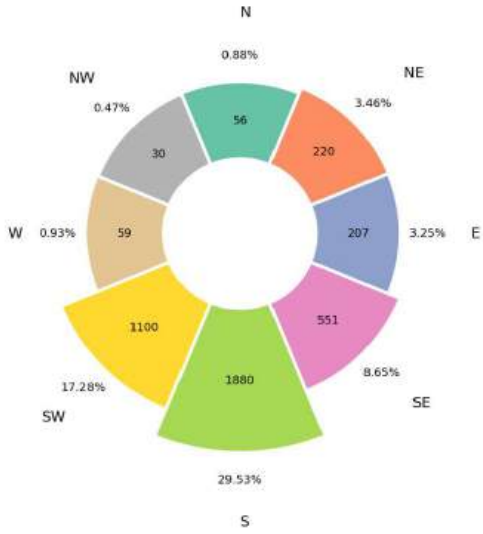
Table:

,3192,3193,3194	385,18,0,0	2092,24,0,0	3190,156,134,61	3693,71,0,0
17,11,0,0	388,0,22,0	2098,0,0,20	3191,177,203,96	3694,0,0,25
38,0,23,0	391,20,0,0	2104,34,0,0	3192,280,97,78	3695,0,0,31
46,0,0,24	392,0,47,0	2106,0,0,9	3193,151,163,52	3699,0,0,17
51,0,22,0	393,21,0,0	2110,0,21,0	3194,52,100,89	3701,20,35,0
55,58,9,0	402,0,27,0	2111,21,0,26	3197,0,108,0	3702,0,0,24
57,27,0,9	409,0,19,0	2112,0,8,0	3324,0,21,0	3704,0,0,10
58,13,0,0	443,0,16,0	2113,0,8,8	3325,70,0,0	3705,0,0,10
59,0,8,0	472,15,0,0	2114,35,0,0	3330,21,0,0	3709,0,15,34
68,0,13,0	476,0,14,0	2131,12,0,0	3331,20,0,0	3710,34,0,0
69,0,22,24	487,0,0,14	2132,20,0,0	3333,32,0,0	3712,24,0,0
126,0,33,0	525,0,0,30	2249,0,0,7	3334,24,0,0	3815,0,43,0
204,0,33,0	1043,27,0,0	2253,40,0,0	3337,0,38,0	3836,0,12,0
210,0,31,8	1209,0,22,0	2373,0,0,22	3340,0,0,29	3853,21,0,0
221,0,0,18	1224,0,43,0	2375,0,29,0	3342,0,8,0	4024,0,20,18
224,15,0,0	2003,0,0,30	2377,0,16,0	3348,0,0,7	4081,20,0,0
228,0,8,0	2005,34,0,0	2393,0,15,0	3351,0,0,25	4159,0,16,0
298,0,22,0	2008,0,0,25	2551,20,0,0	3357,0,34,37	7234,0,22,0
299,0,17,0	2015,0,23,12	2609,0,0,12	3385,34,0,0	7568,21,0,0
307,0,14,0	2017,0,37,0	2621,13,0,0	3417,20,0,0	8403,17,0,0
308,26,0,0	2021,0,10,0	2623,0,22,0	3418,10,0,0	8413,0,0,13
310,0,35,0	2022,0,0,23	2624,0,13,0	3422,15,27,0	8415,30,0,13
322,0,47,0	2023,21,0,0	2654,0,10,0	3443,0,0,9	8527,21,0,0
330,20,0,0	2031,0,0,22	2656,0,39,0	3474,11,14,0	8560,72,0,0
335,0,11,0	2040,19,0,0	2659,0,0,26	3475,0,0,18	8599,21,0,0
354,0,11,0	2041,0,8,0	2667,18,0,0	3480,0,0,23	8620,0,0,23
355,0,15,0	2058,39,0,0	2669,0,23,0	3516,0,48,0	8640,84,0,10
356,10,25,0	2062,21,44,10	2670,0,9,0	3517,0,20,0	8663,0,13,0
357,0,8,8	2063,21,0,0	3001,0,48,0	3519,0,0,10	9998,0,25,0
359,0,0,8	2070,16,0,17	3005,0,0,16	3606,36,0,0	
361,28,0,0	2071,0,19,0	3014,0,0,10	3609,29,15,0	
367,0,15,0	2081,24,11,0	3017,21,0,18	3611,8,0,0	
372,14,0,0	2082,0,0,40	3103,0,0,32	3612,0,0,10	
373,0,30,14	2083,0,23,17	3151,0,8,0	3656,9,0,0	
376,0,39,0	2084,16,0,0	3153,0,31,56	3662,0,0,17	
378,9,50,6	2091,39,0,10	3189,0,0,27	3674,0,0,37	

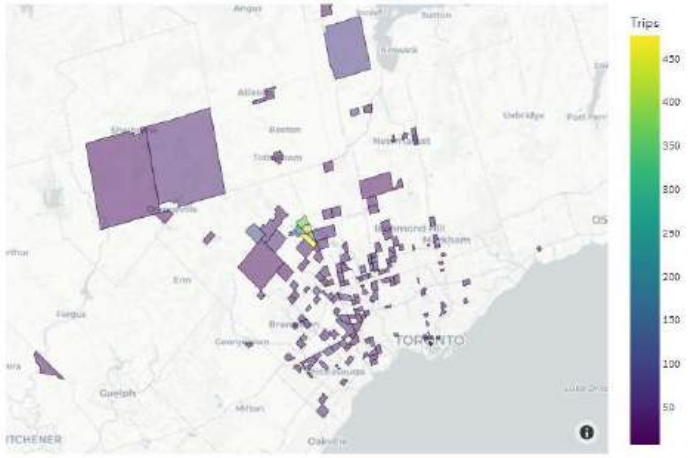
Internal Trip Distribution



External Trip Distribution



Choropleth Map

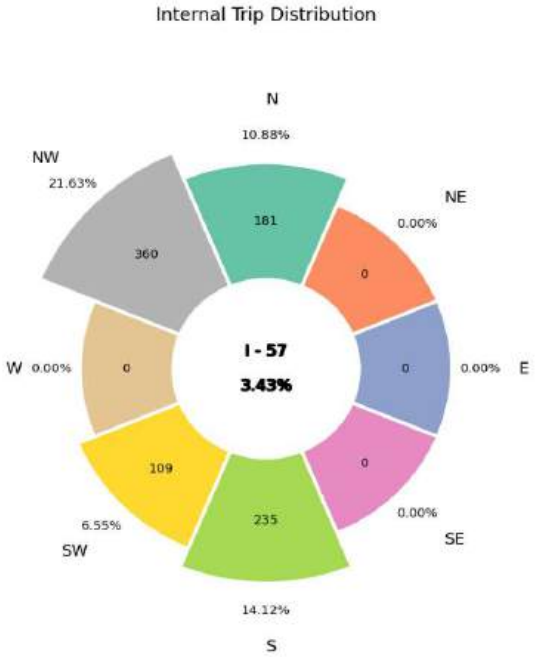


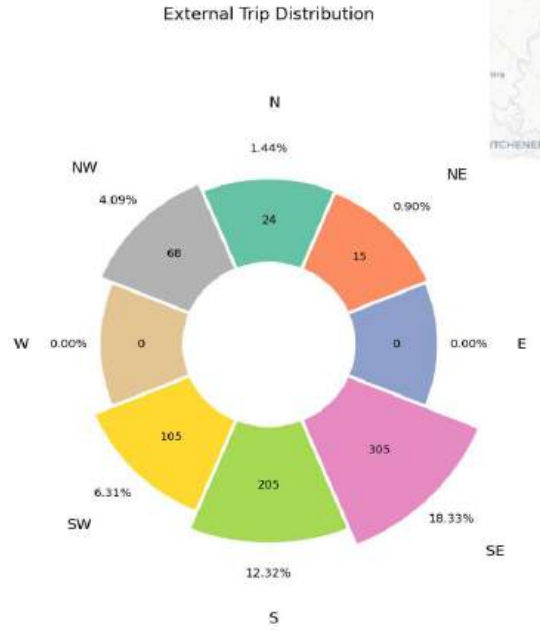
TTS Query Results	
Distribution:	**PM OUT**

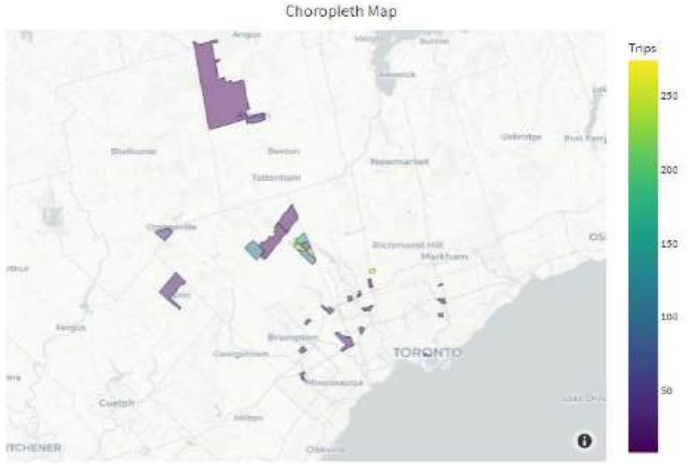
Field	Selection	Value
Row variable:	**2006 GTA zone of destination**	**-**
Column variable:	**2006 GTA zone of origin**	**-**
Filter 1:	**2006 GTA zone of origin**	**3192,3193,3194**
Filter 2:	**Start time of trip**	**1530-1830**
Filter 3:	**Trip purpose of origin**	**Home (H)**

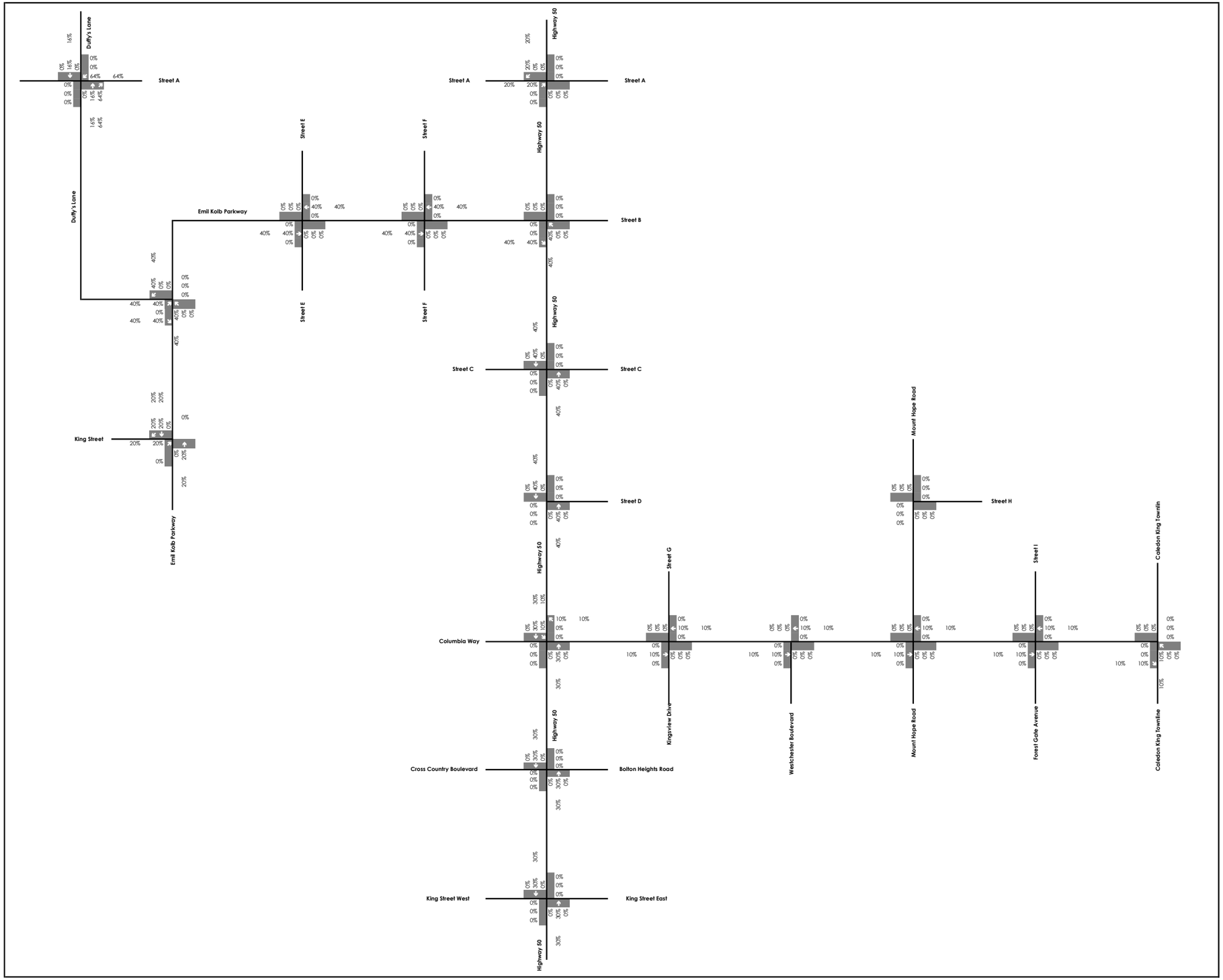
PM OUT	Internal									External								
	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	External	External	External	External	External	External	External	External	
Direction	**I**	**NW**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**Totals**
Trips	458	127	13	0	0	0	235	109	0	68	24	15	0	288	242	85	0	1664
%	27.52%	7.63%	0.78%	0.00%	0.00%	0.00%	14.12%	6.55%	0.00%	4.09%	1.44%	0.90%	0.00%	17.31%	14.54%	5.11%	0.00%	100.00%
% w/o trips in subject TAZ	0.00%	10.53%	1.08%	0.00%	0.00%	0.00%	19.49%	9.04%	0.00%	5.64%	1.99%	1.24%	0.00%	23.88%	20.07%	7.05%	0.00%	100.00%

Thu May 30 2024 09:24:35 GMT-0400 (Eastern Daylight Time) - Run Time: 2574ms
Cross Tabulation Query Form - Trip - 2016
Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of origin - gta06_orig
Filters:
(2006 GTA zone of origin - gta06_orig In 3192,3193,3194
and
Start time of trip - start_time In 1530-1830
and
Trip purpose of origin - purp_orig In H,)
Trip 2016
Table:
,3192,3193,3194
58,34,0,0
66,0,12,0
232,0,0,17
242,0,0,23
355,0,31,0
403,19,0,0
476,0,14,0
2034,0,25,0
2040,19,0,0
2069,34,0,0
2070,0,8,0
2081,274,0,0
3189,0,0,13
3190,86,123,26
3191,17,28,64
3192,14,43,0
3193,0,115,53
3194,35,165,33
3195,13,0,0
3197,0,114,0
3325,0,8,0
3333,30,0,0
3357,0,17,0
3611,0,30,0
3709,0,20,0
8372,0,25,0
8403,0,43,0
8553,0,0,13
8562,0,15,0
8568,11,0,0

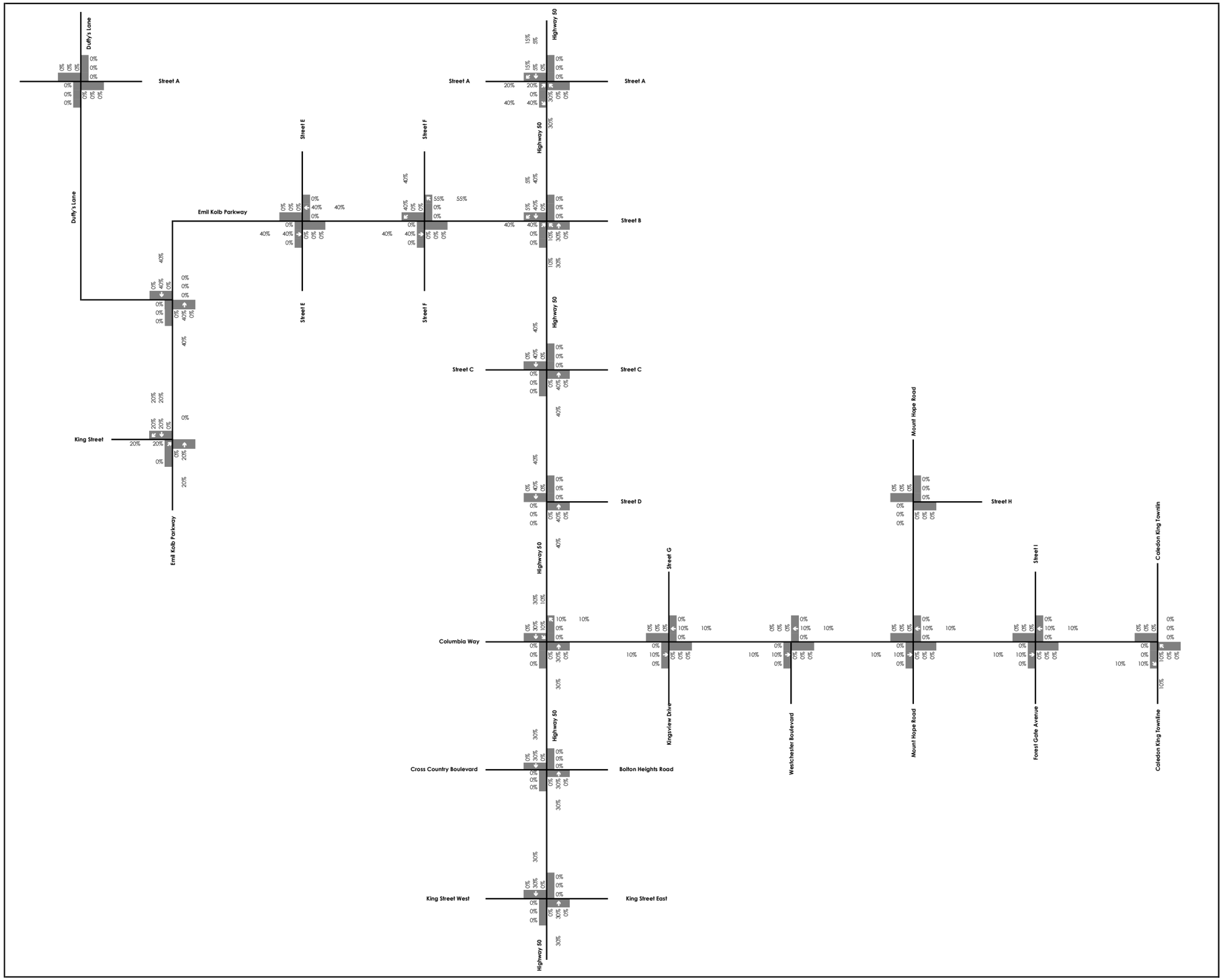




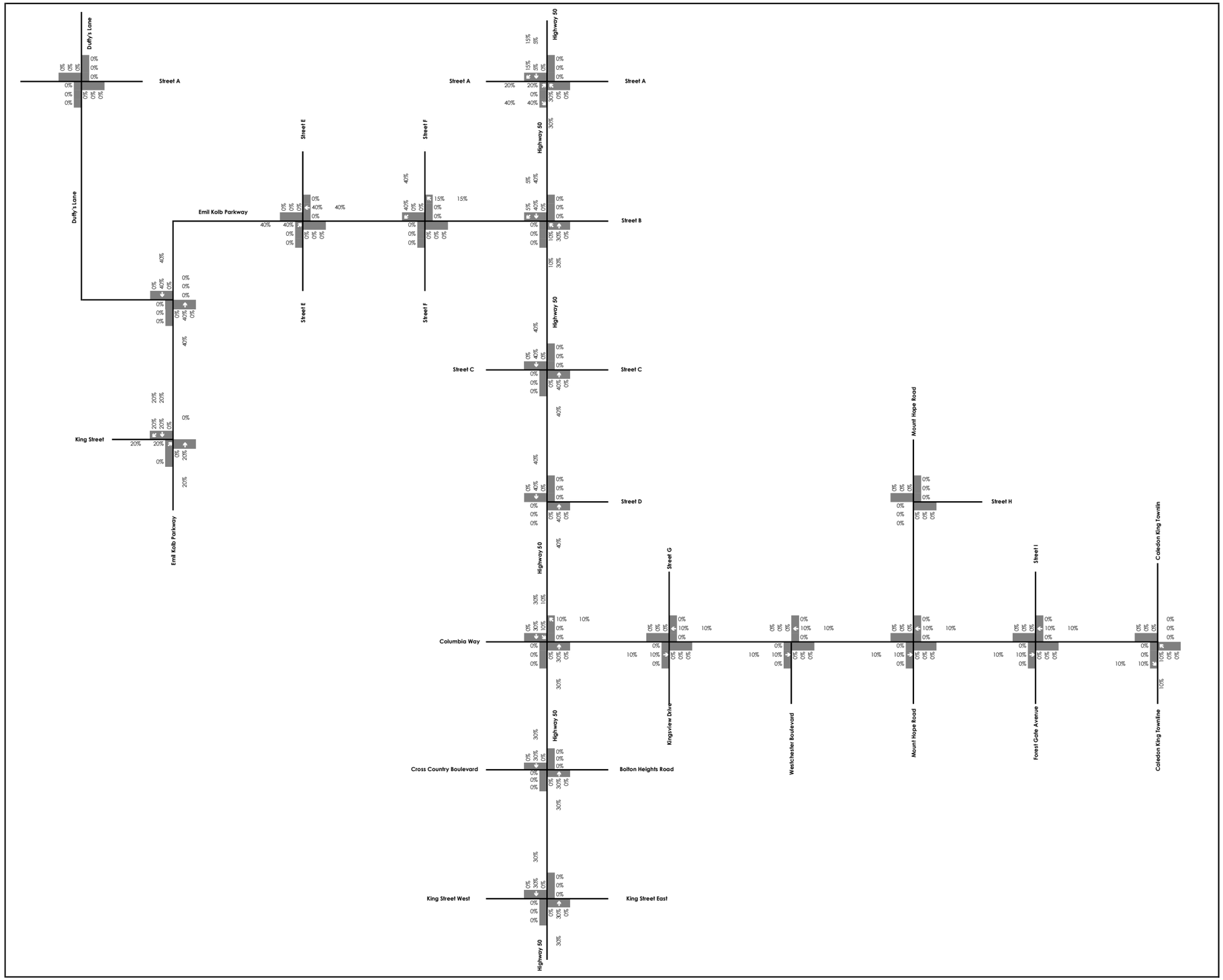




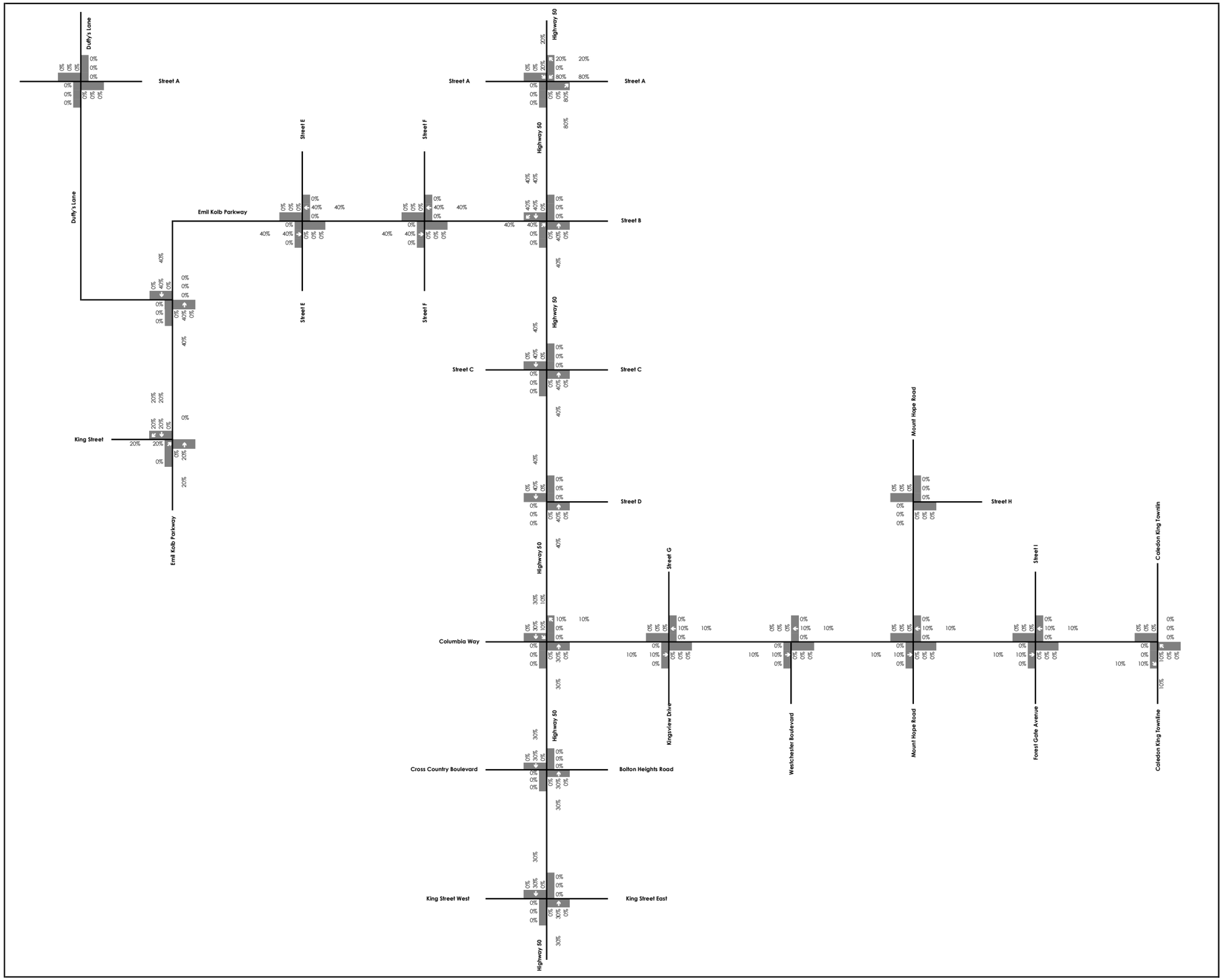
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K1
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone A Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



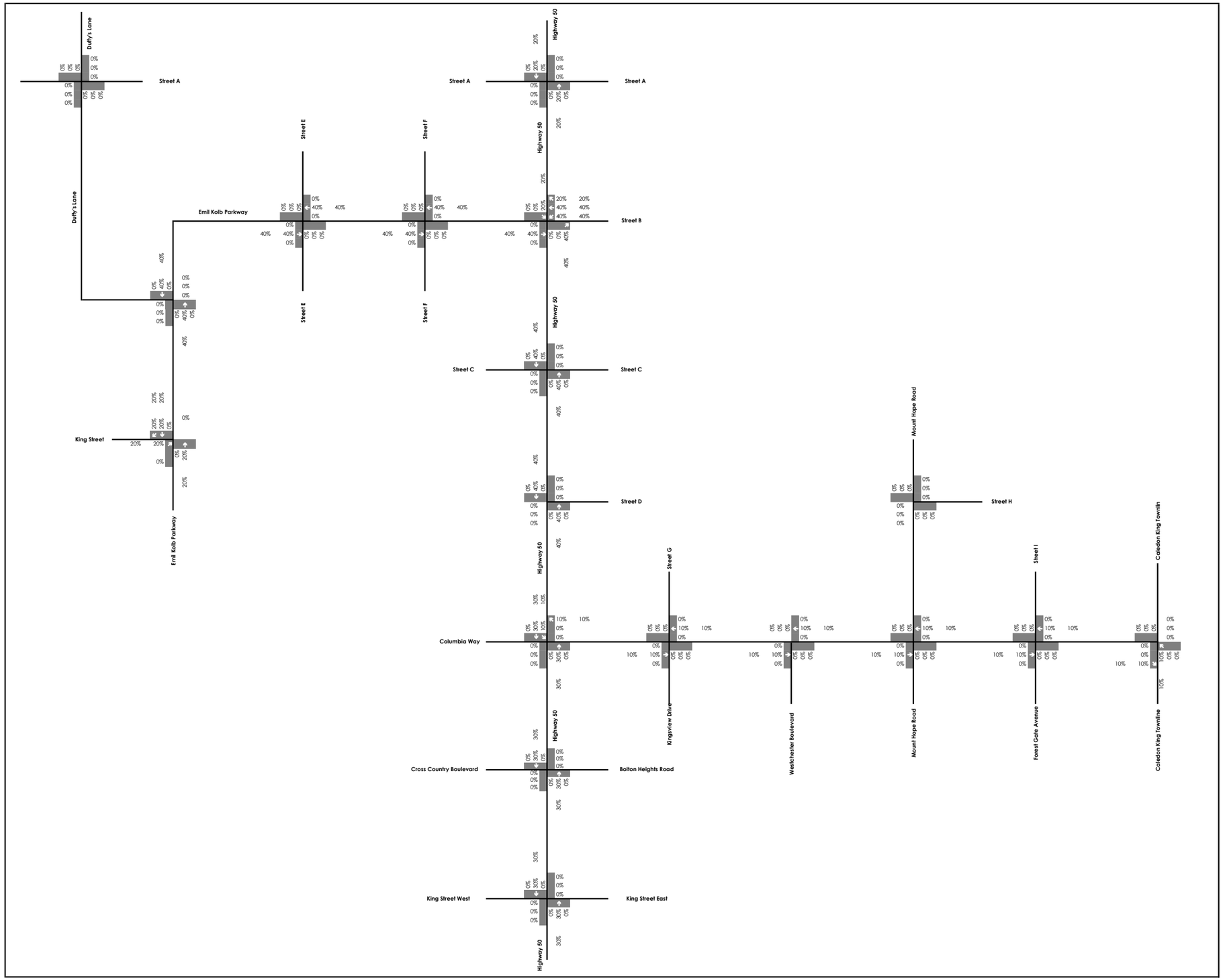
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K2
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	2031 Traffic Analysis Zone B Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



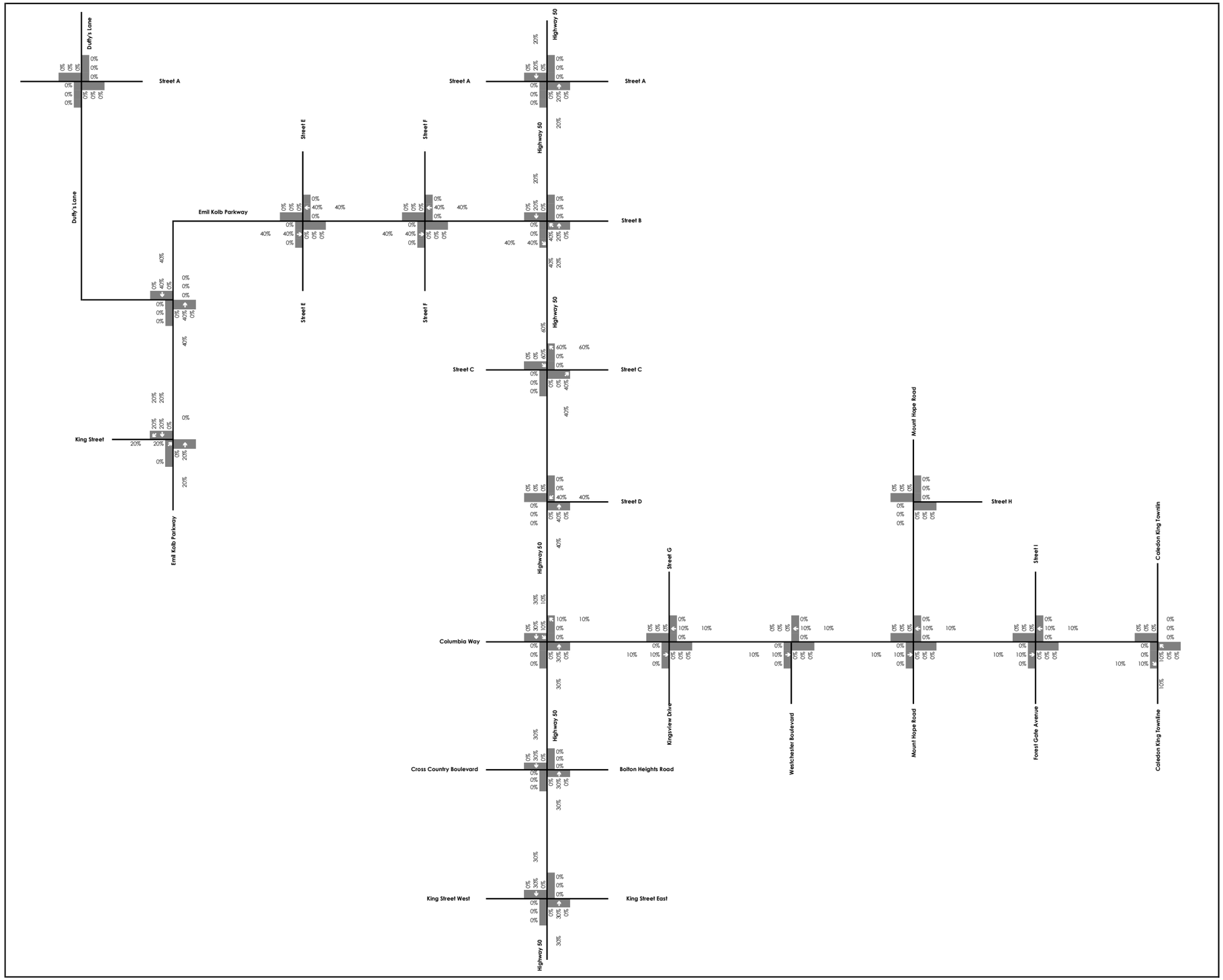
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K3
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	2041 & 2051 Traffic Analysis Zone B Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



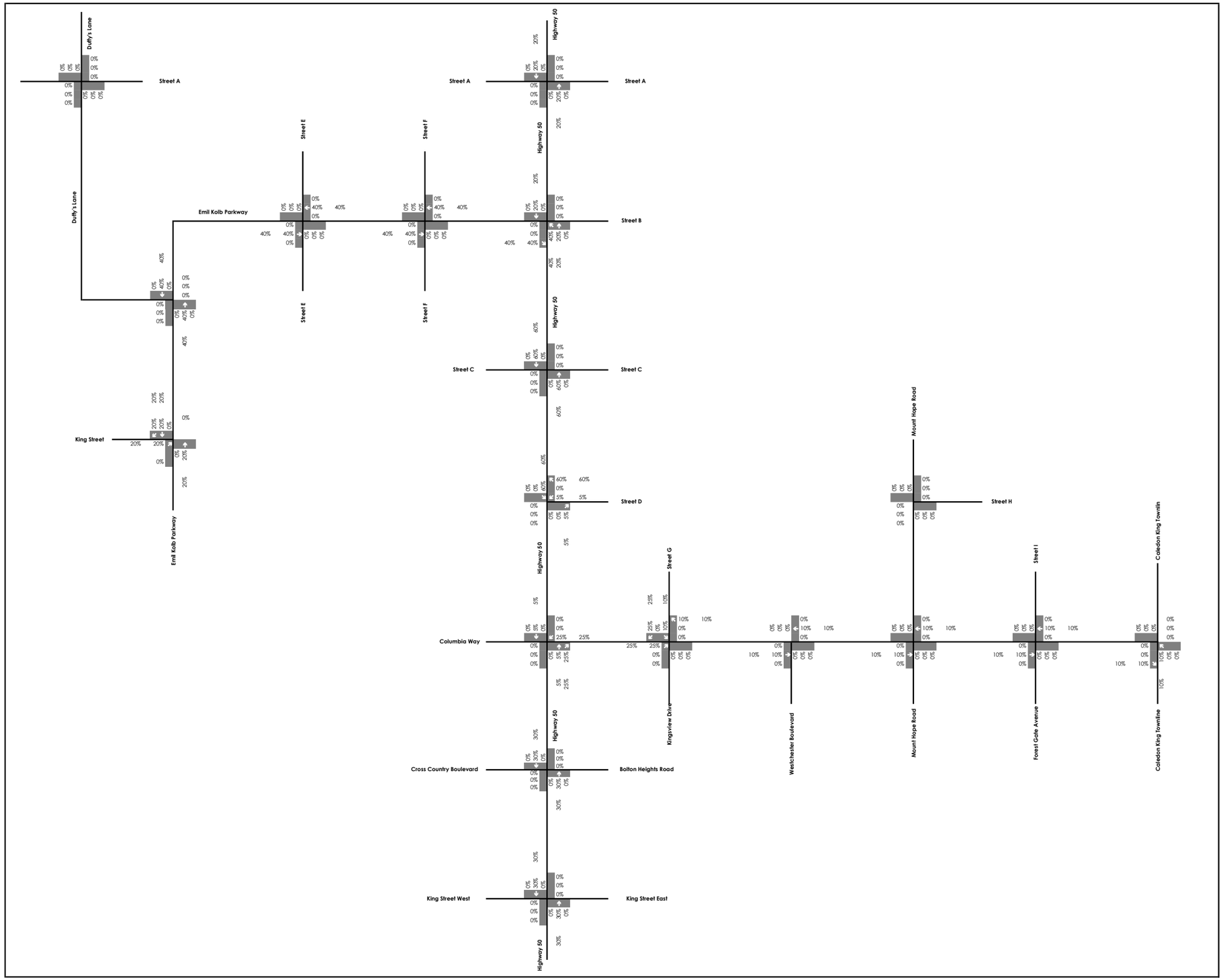
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K4
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone C Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



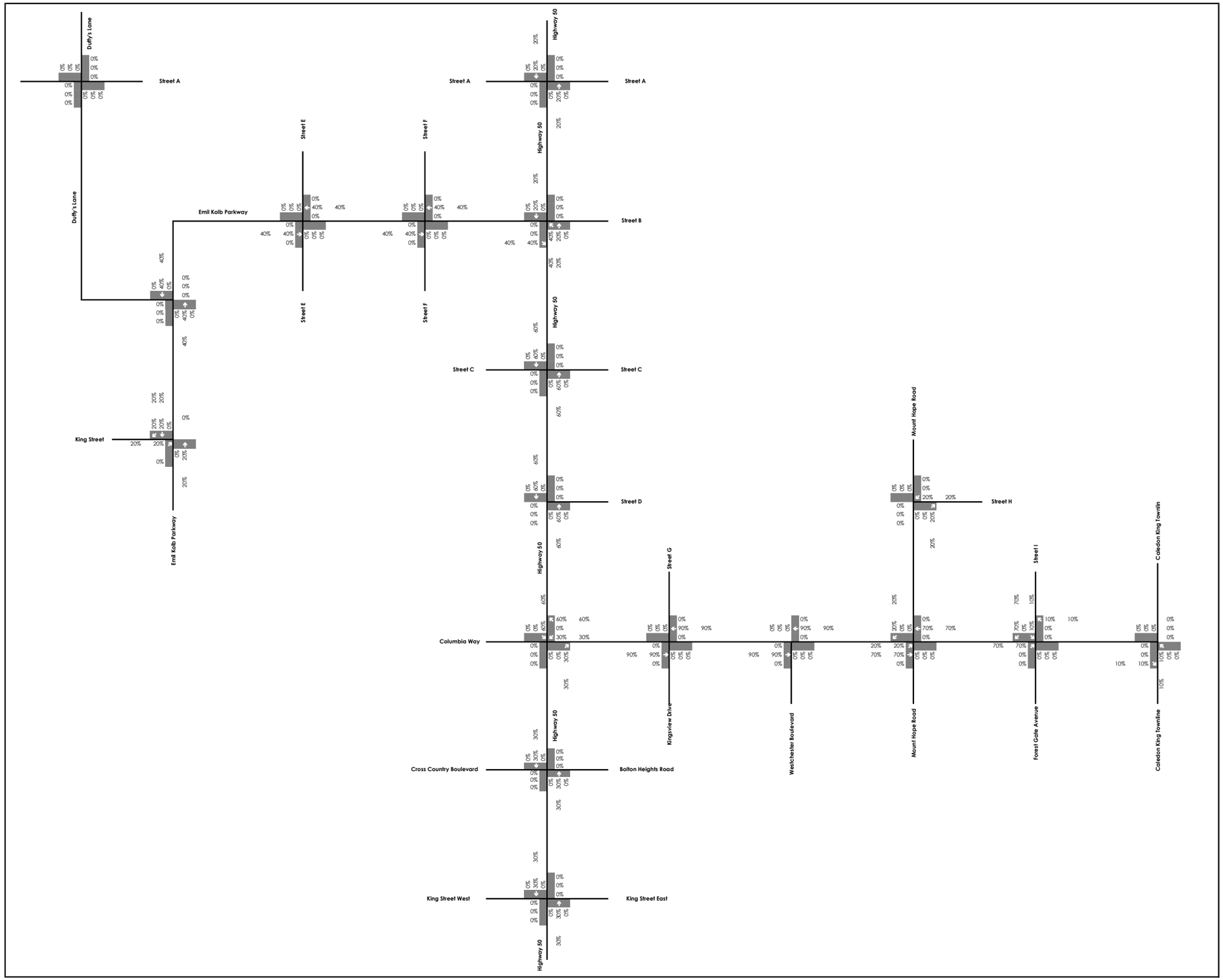
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K5
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone D Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



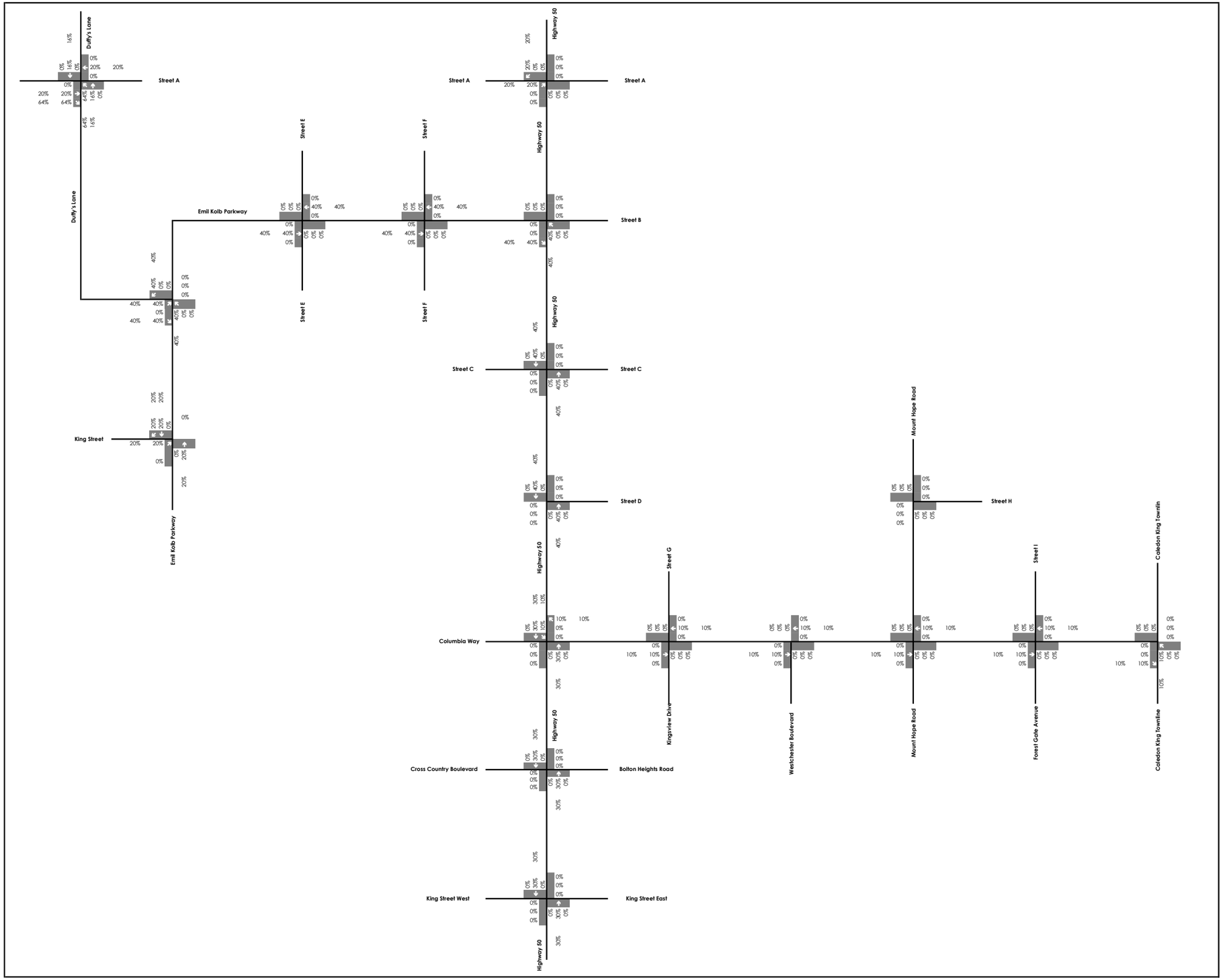
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K6
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone E Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



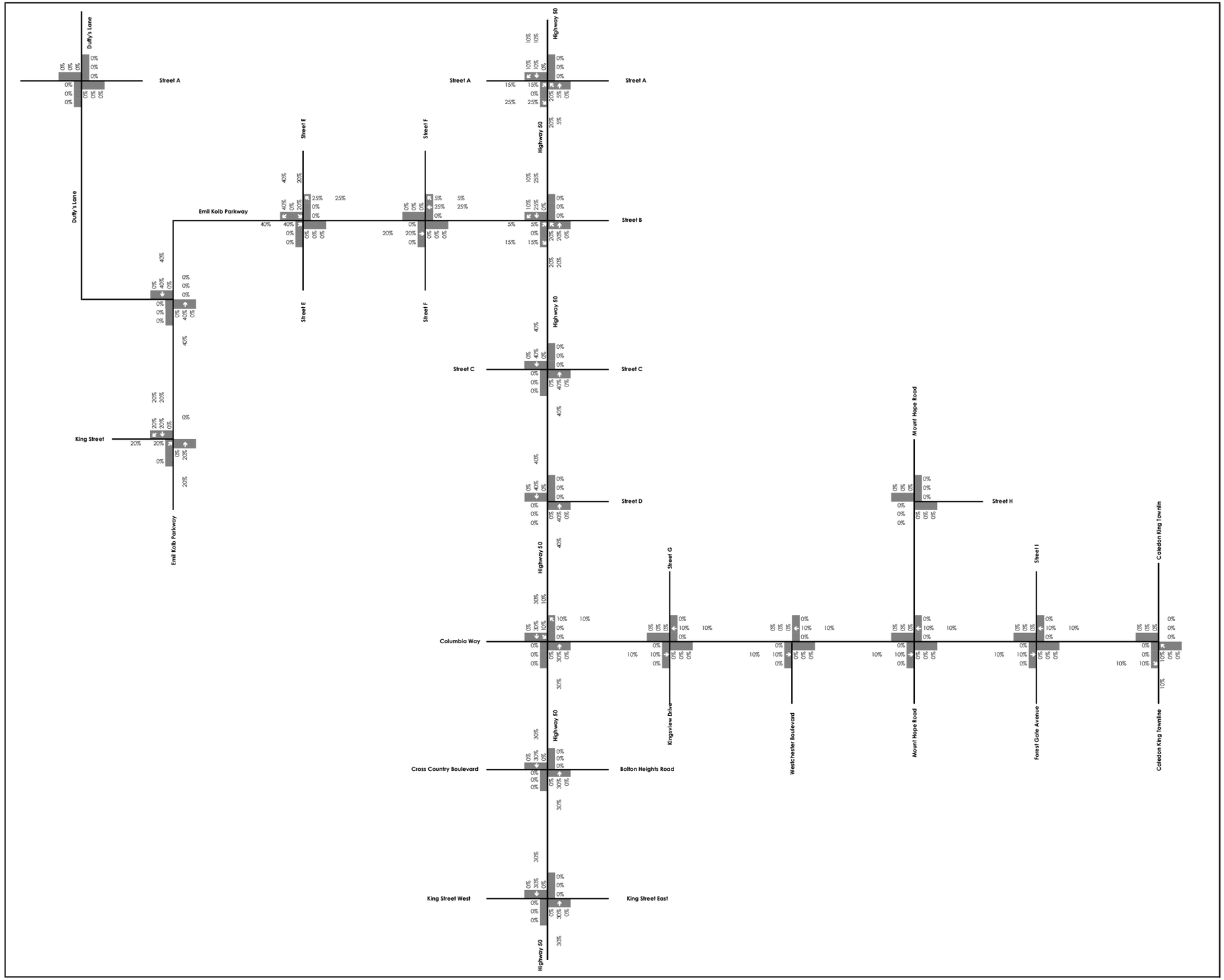
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K7
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone F Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



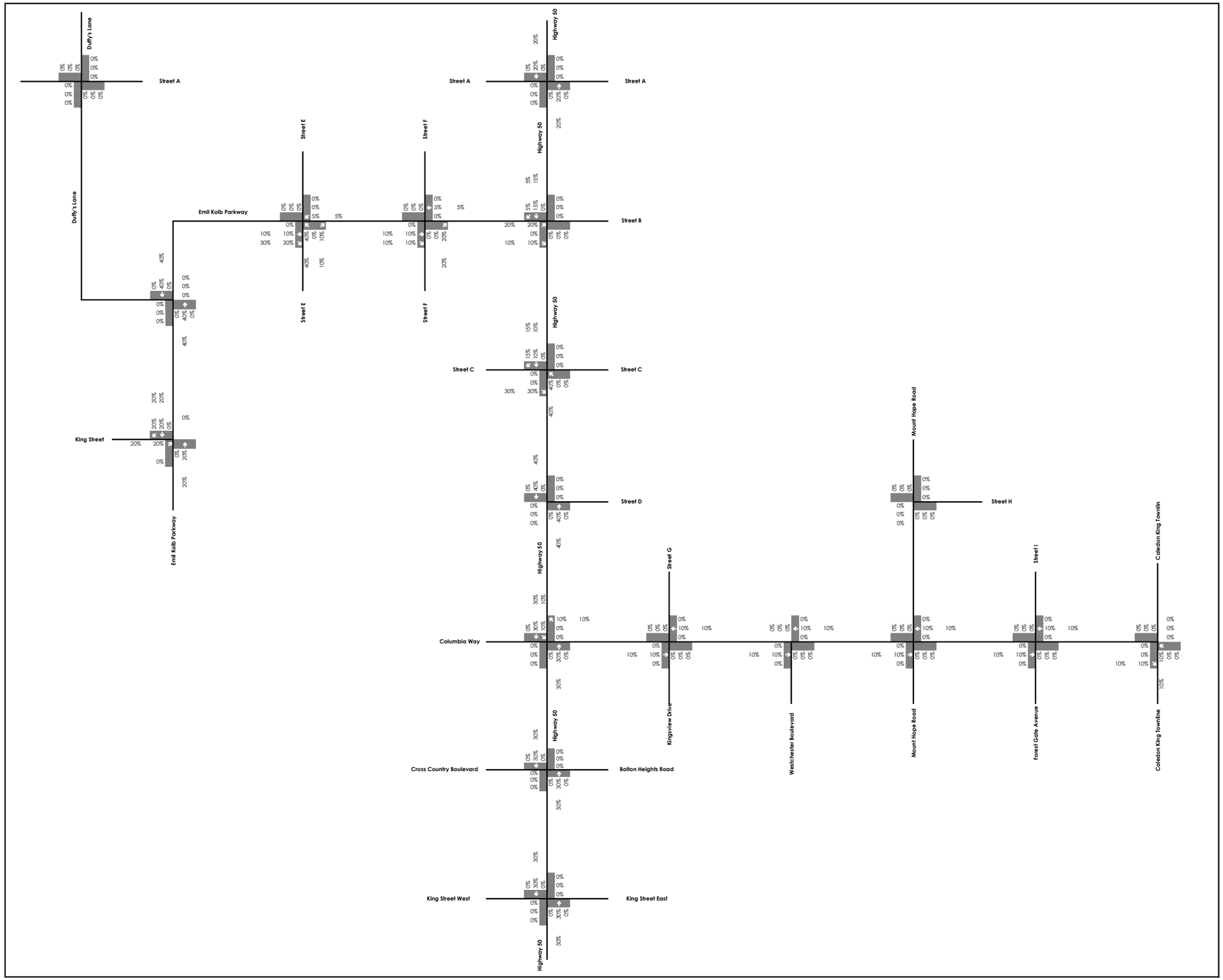
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K8
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone G Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



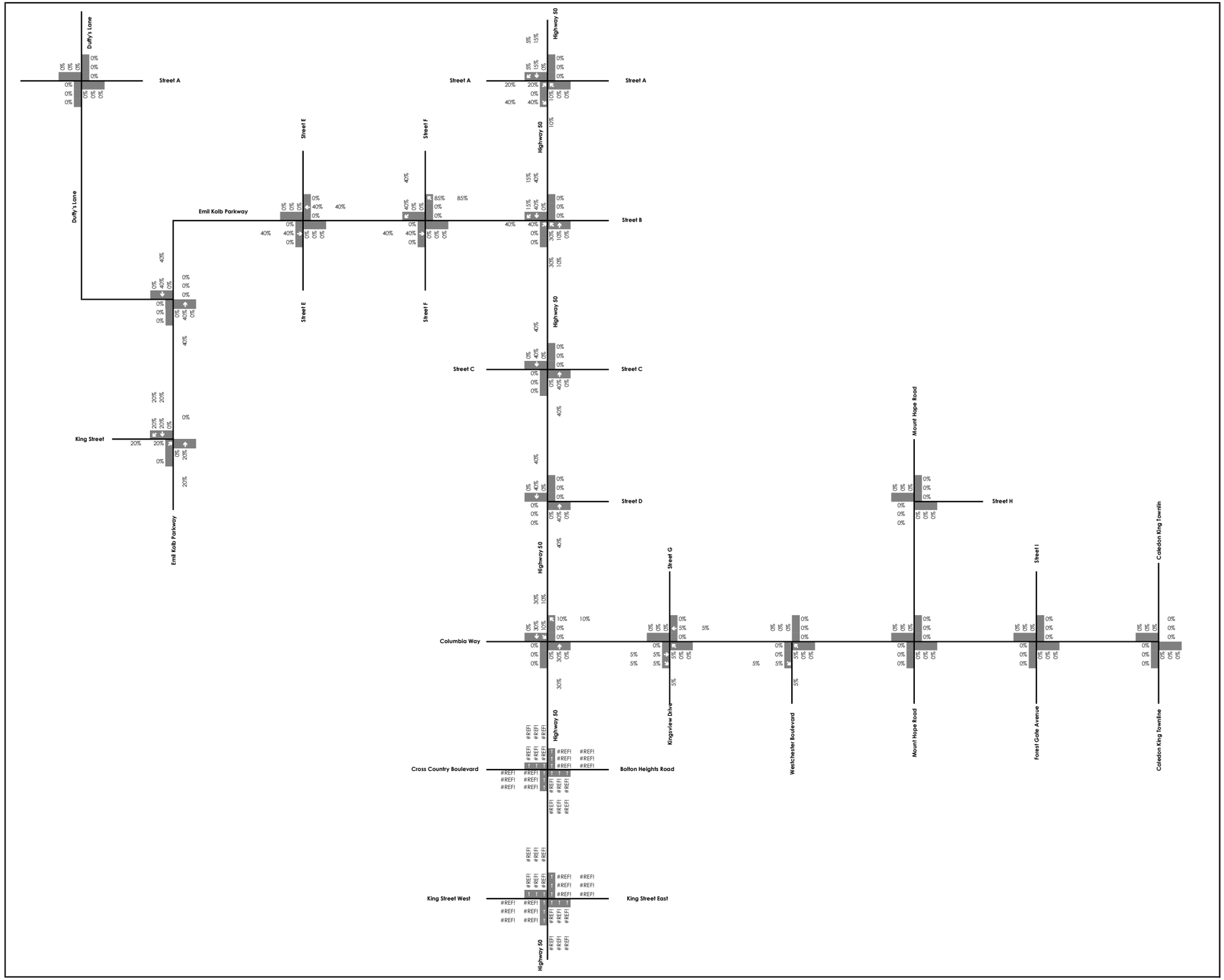
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K9
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone H Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



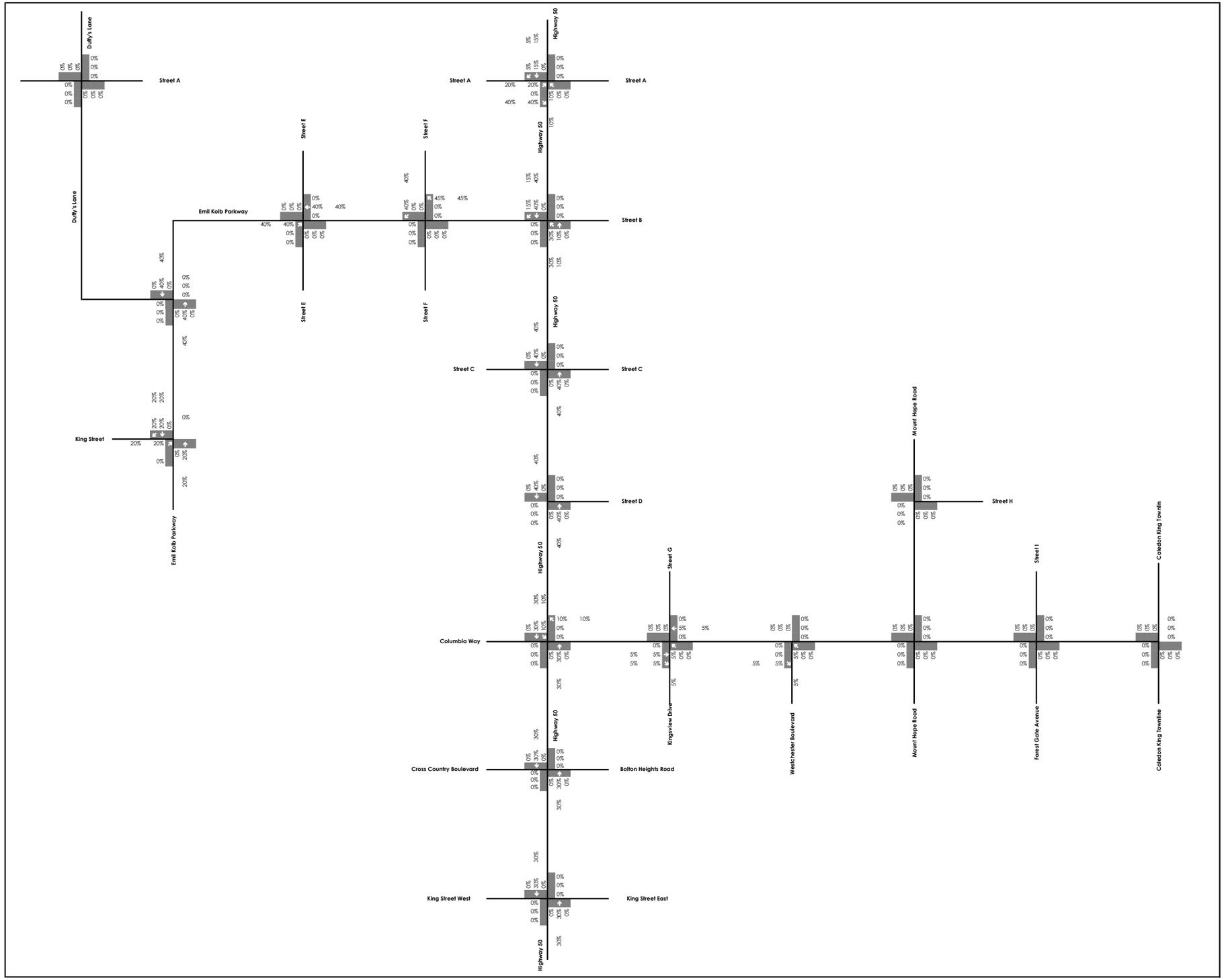
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K10
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone I Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



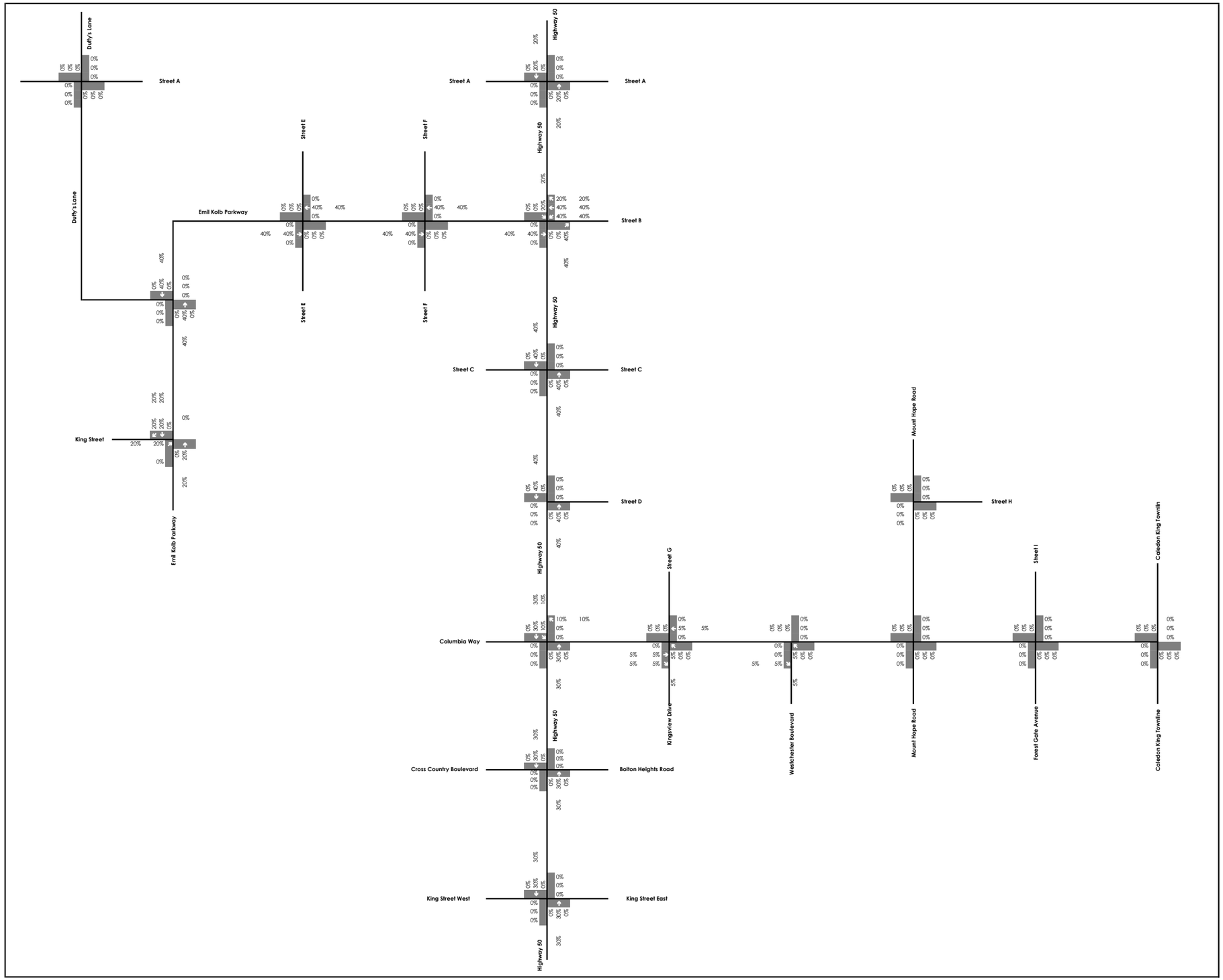
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K11
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone J Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



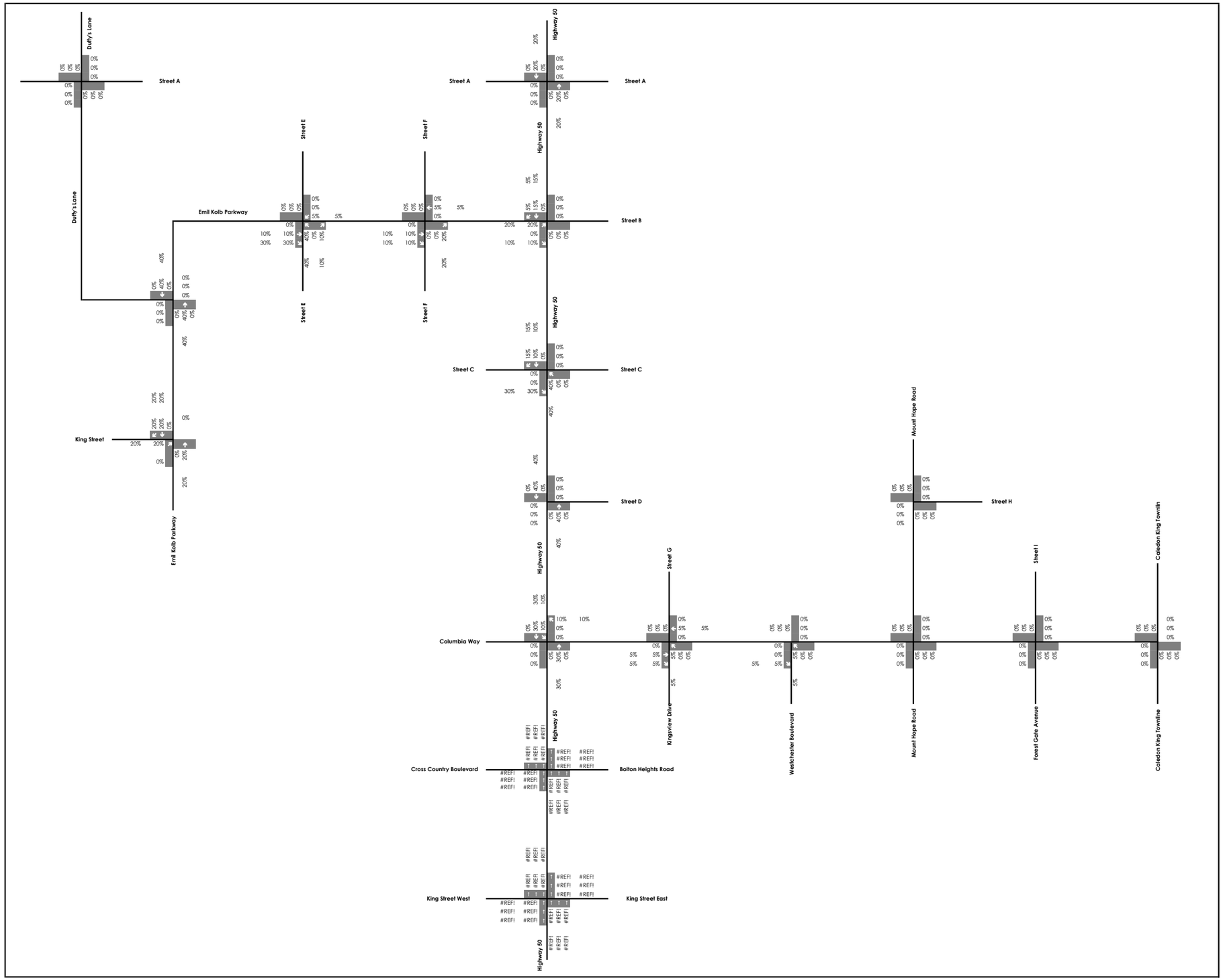
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K12
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	2031 Traffic Analysis Zone B Commercial Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



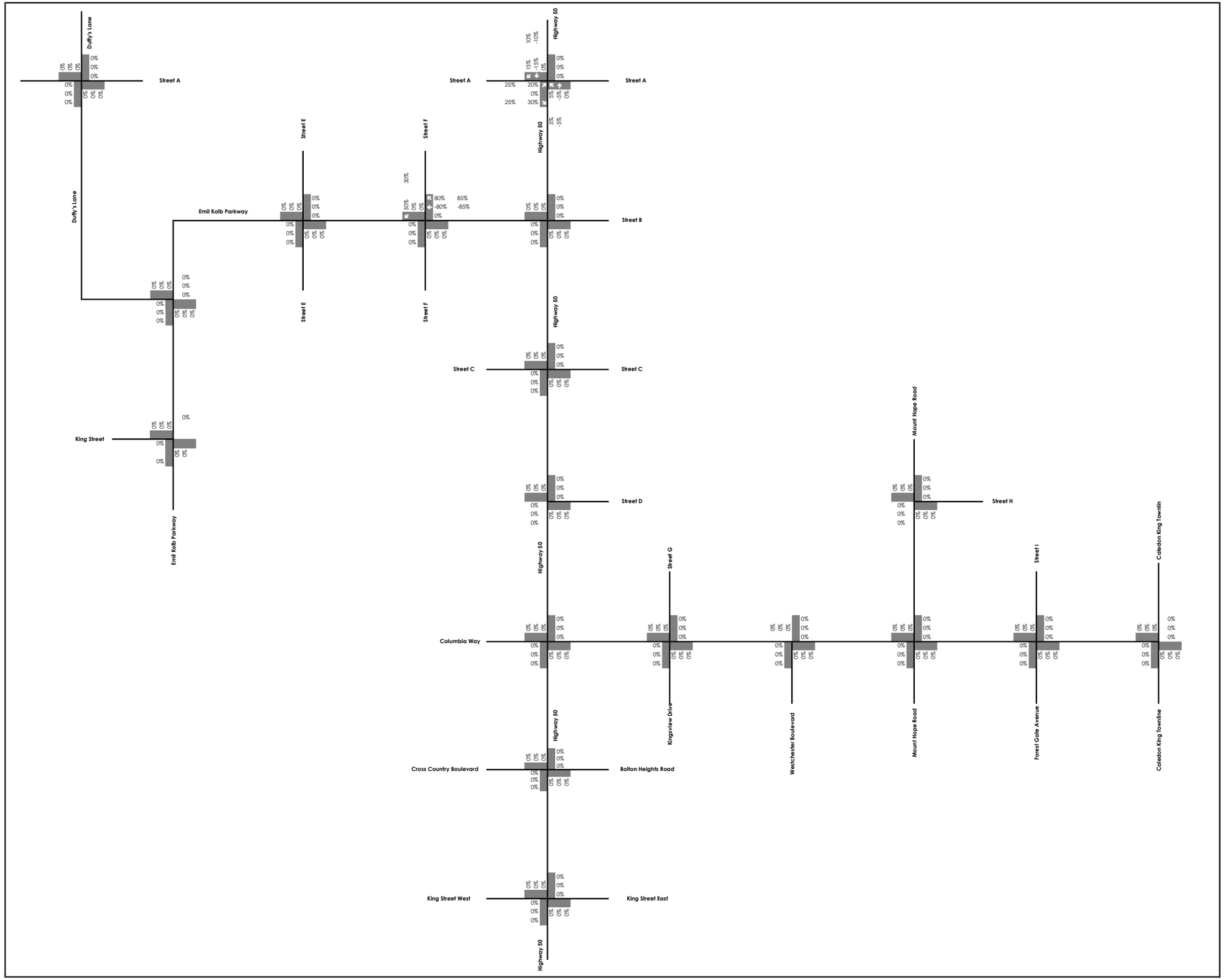
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K13
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	2041 & 2051 Traffic Analysis Zone B Commercial Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



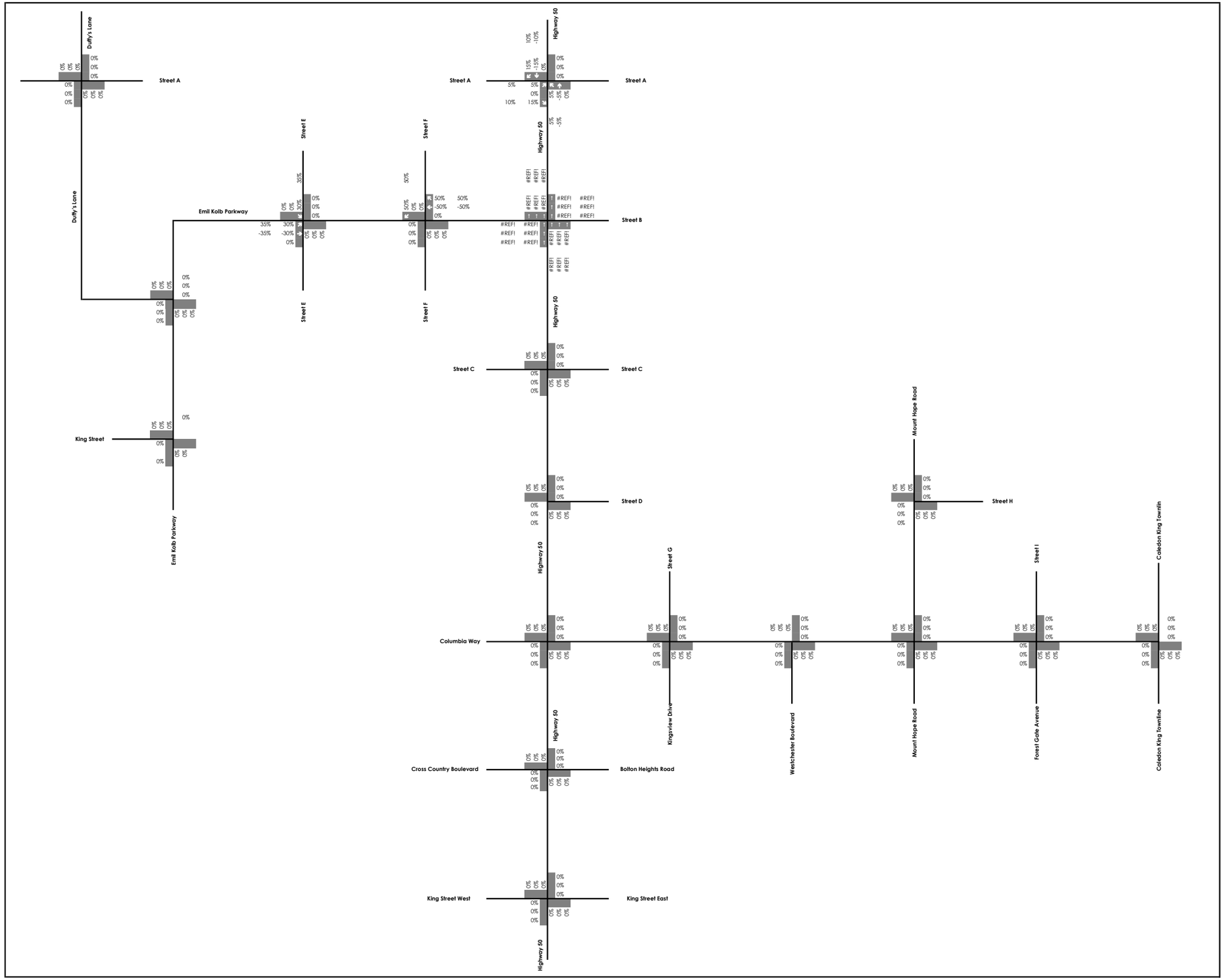
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K14
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone D Commercial Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



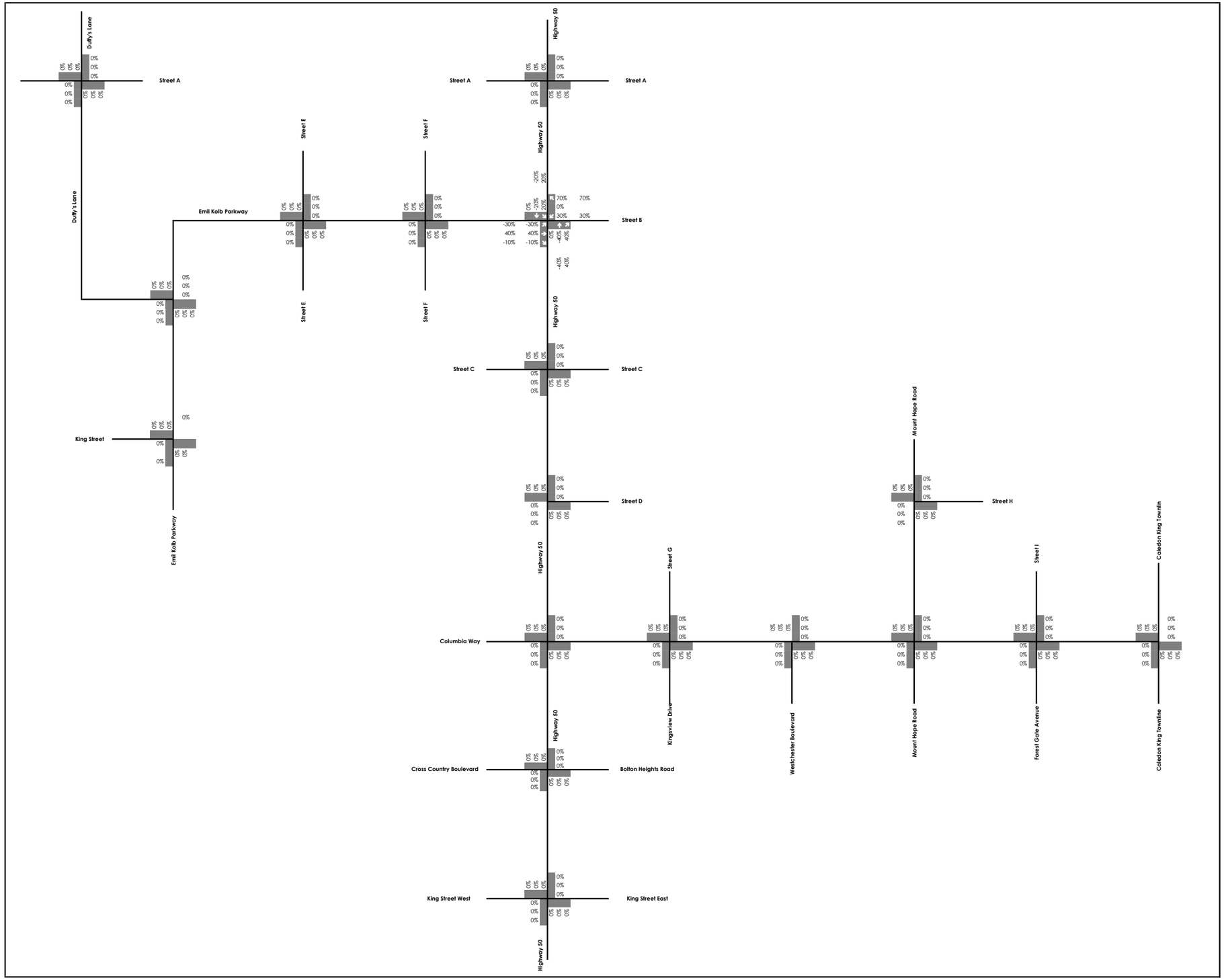
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K15
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone J Commercial Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



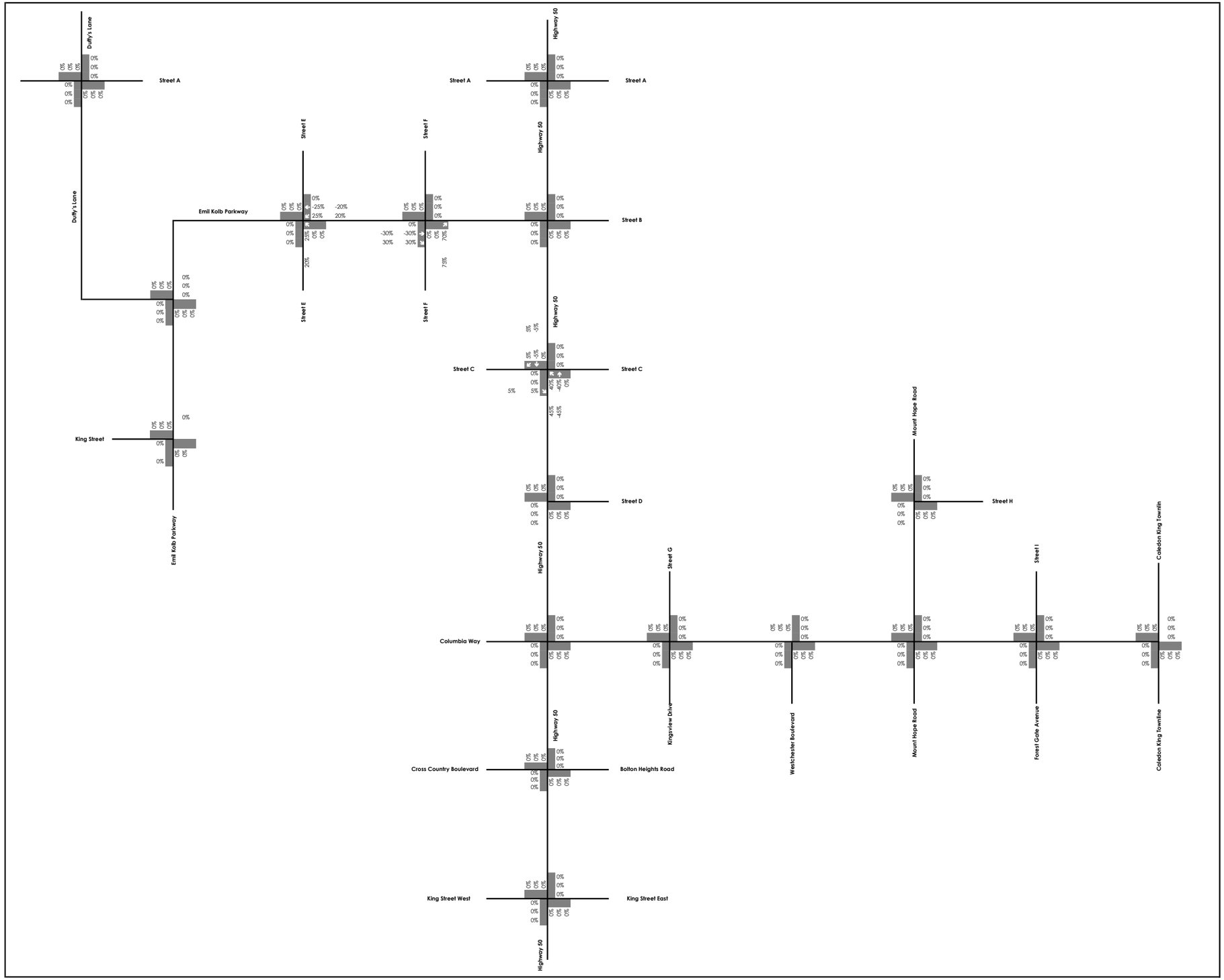
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K16
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	2031 Traffic Analysis Zone B Pass-By Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



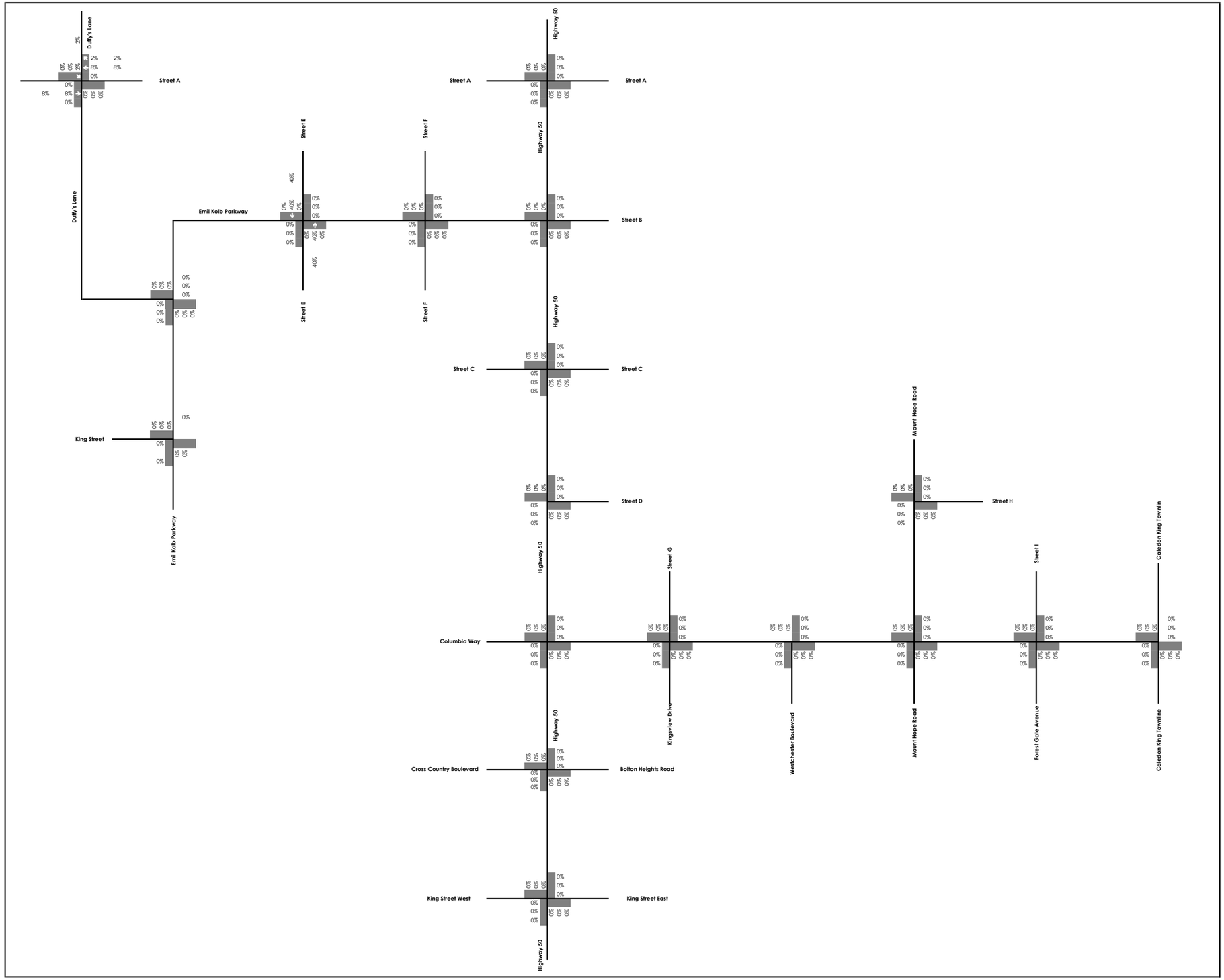
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K17
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	2041 & 2051 Traffic Analysis Zone B Pass-By Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



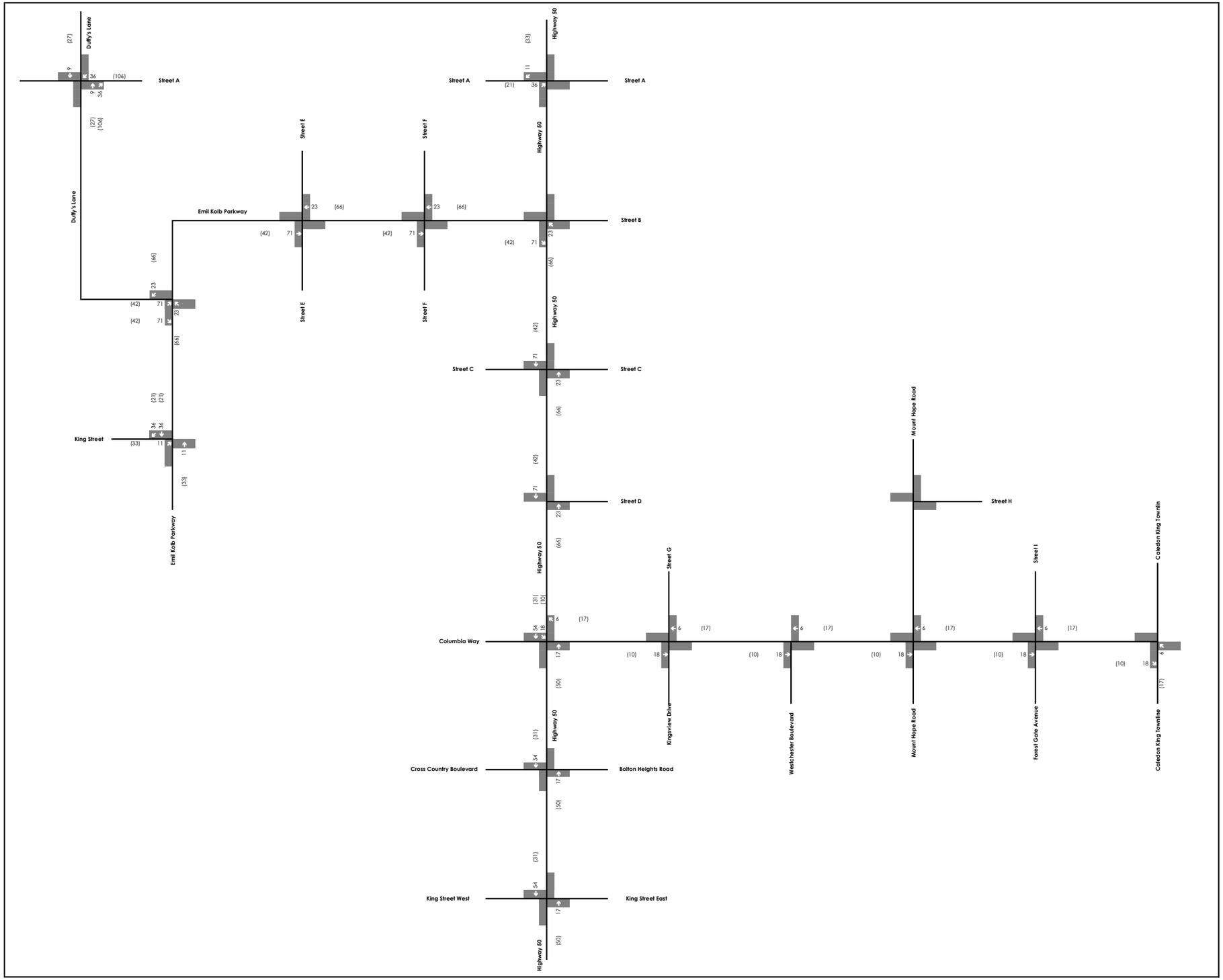
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K18
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone D Pass-By Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



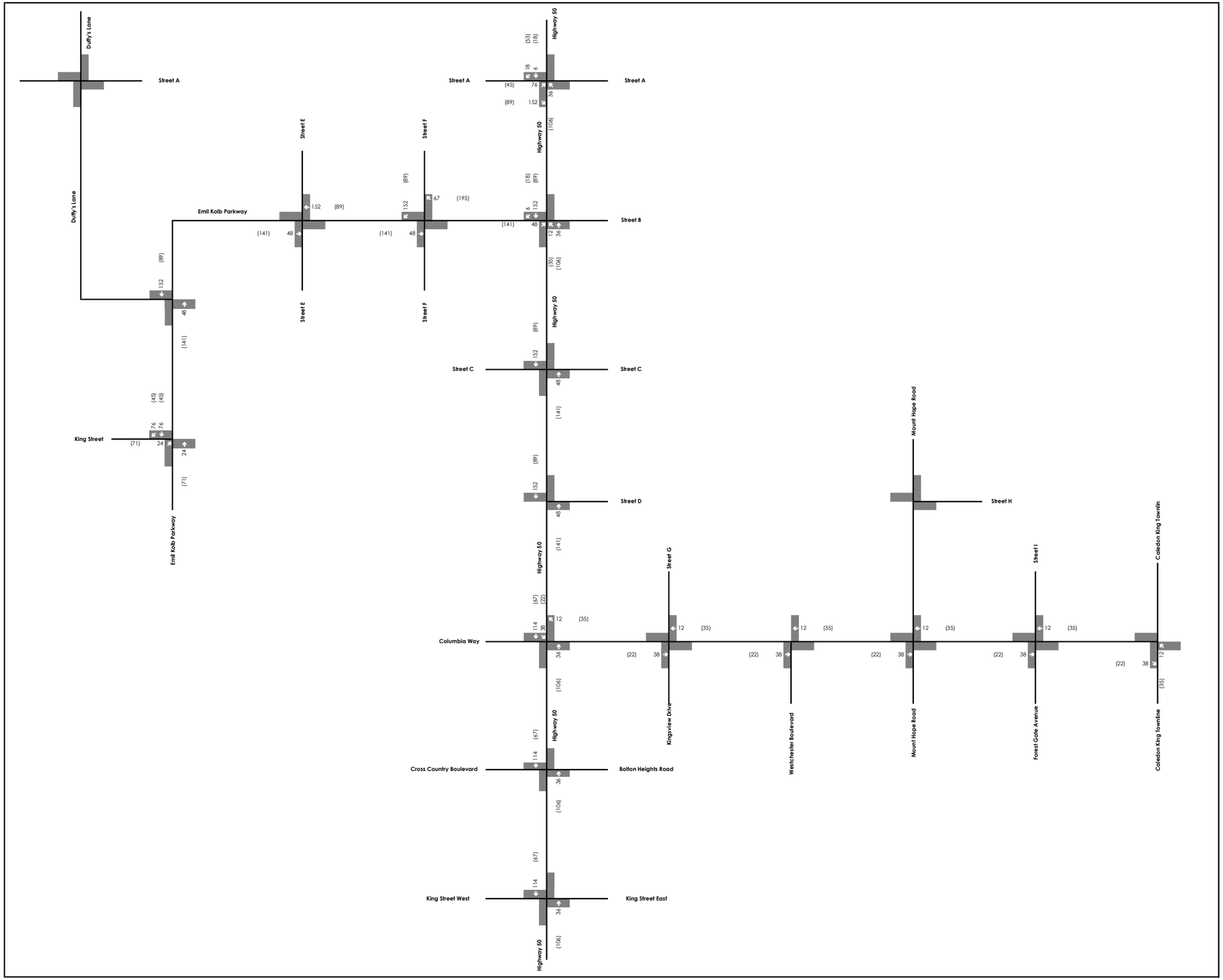
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K19
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone J Pass-By Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



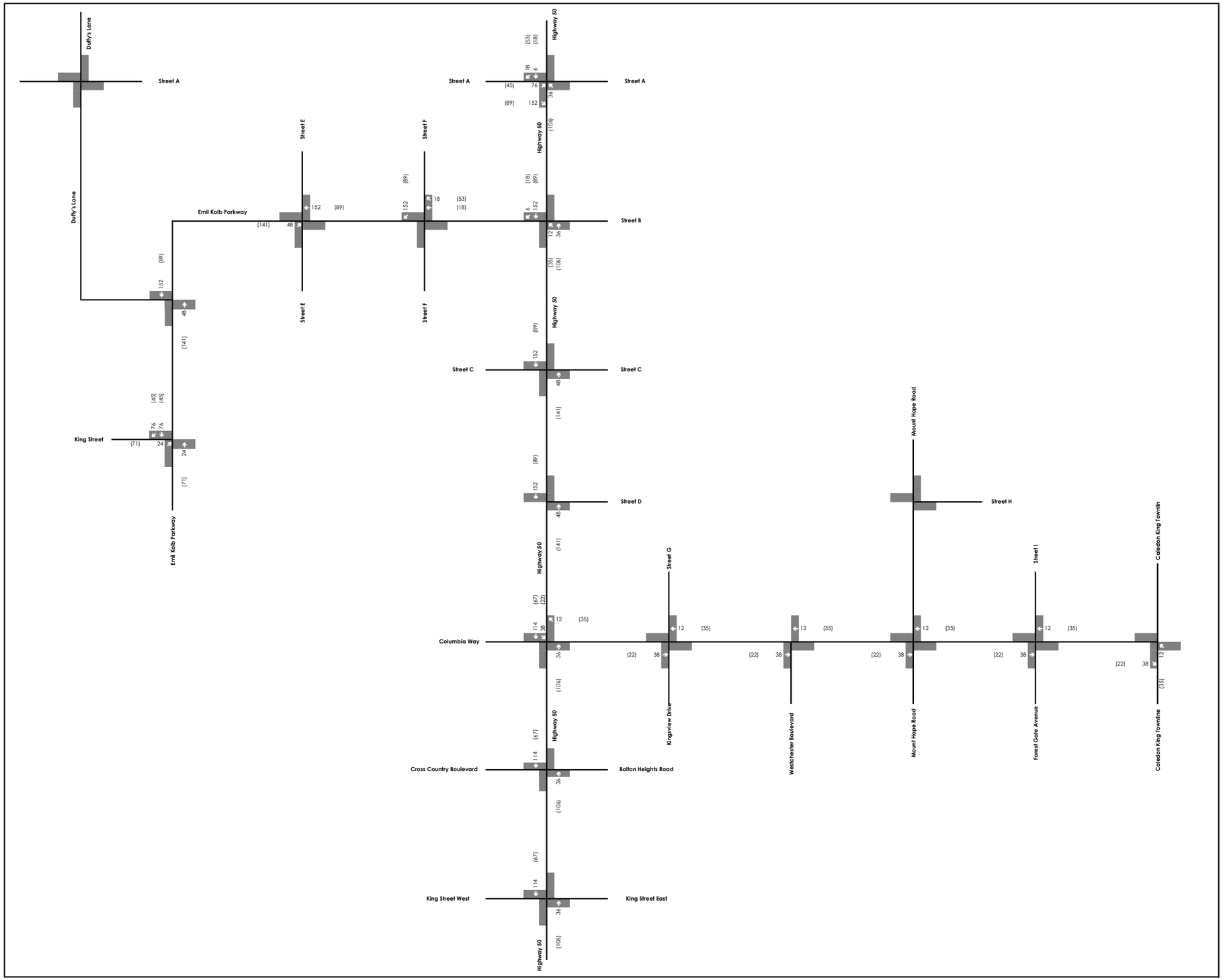
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K20
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone I School Trip Distribution		Project No. 708-3446 Date: February 2026 Analyst: AK



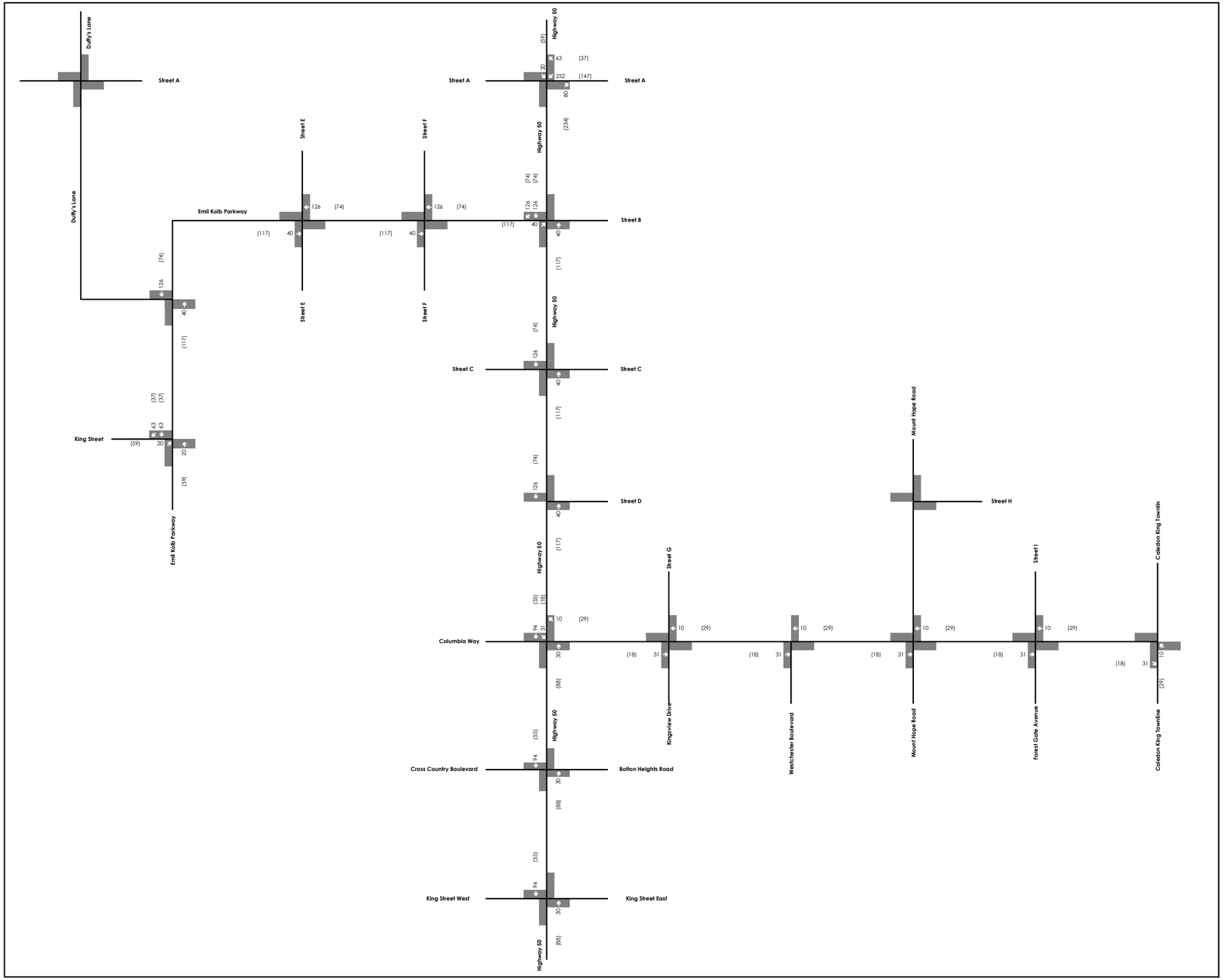
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K21
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone A Trip Assignment		Project No. 708-3446 Date: June 2024 Analyst: AK



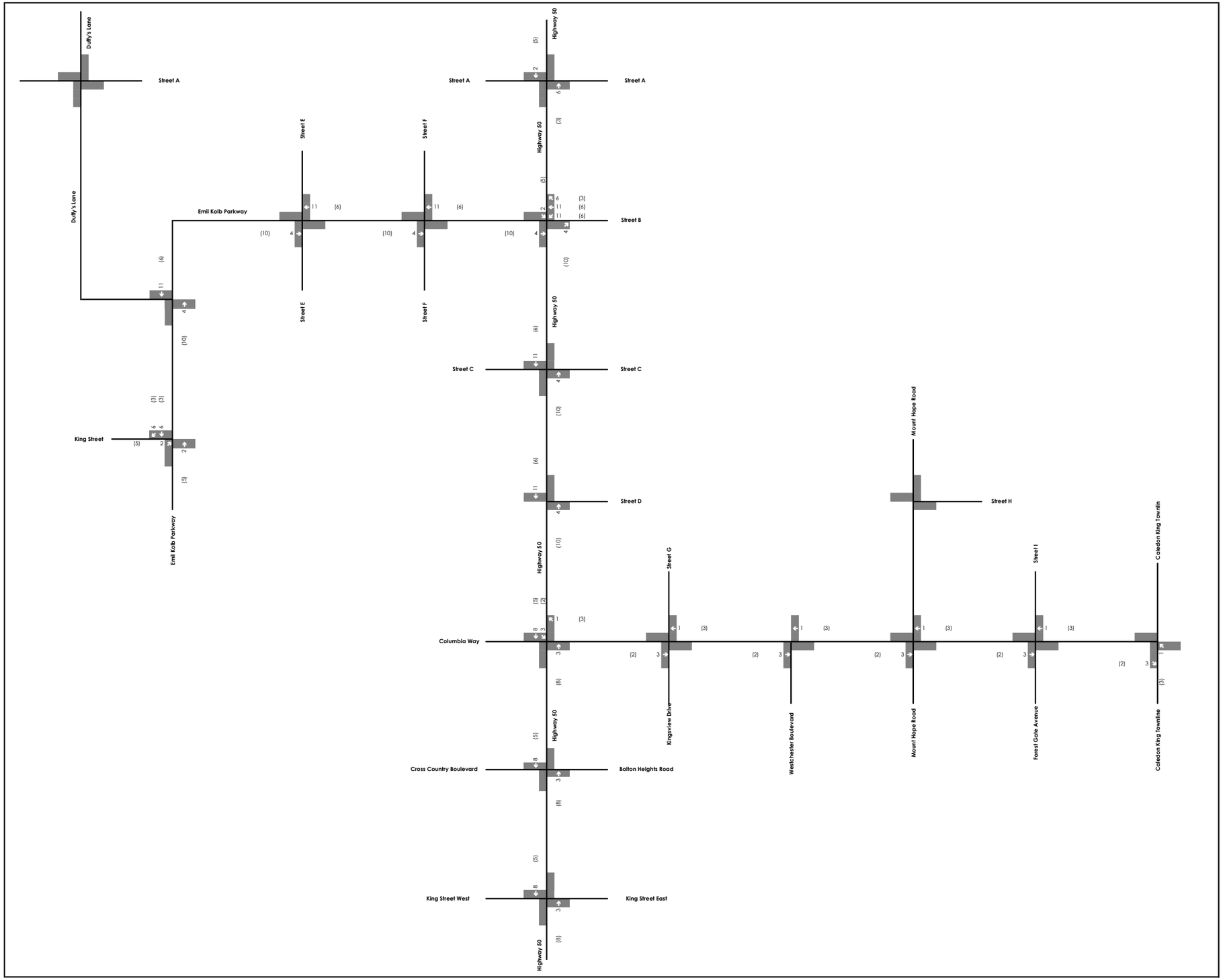
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K22
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	2031 Traffic Analysis Zone B Trip Assignment		Project No. 708-3446 Date. June 2024 Analyst. AK



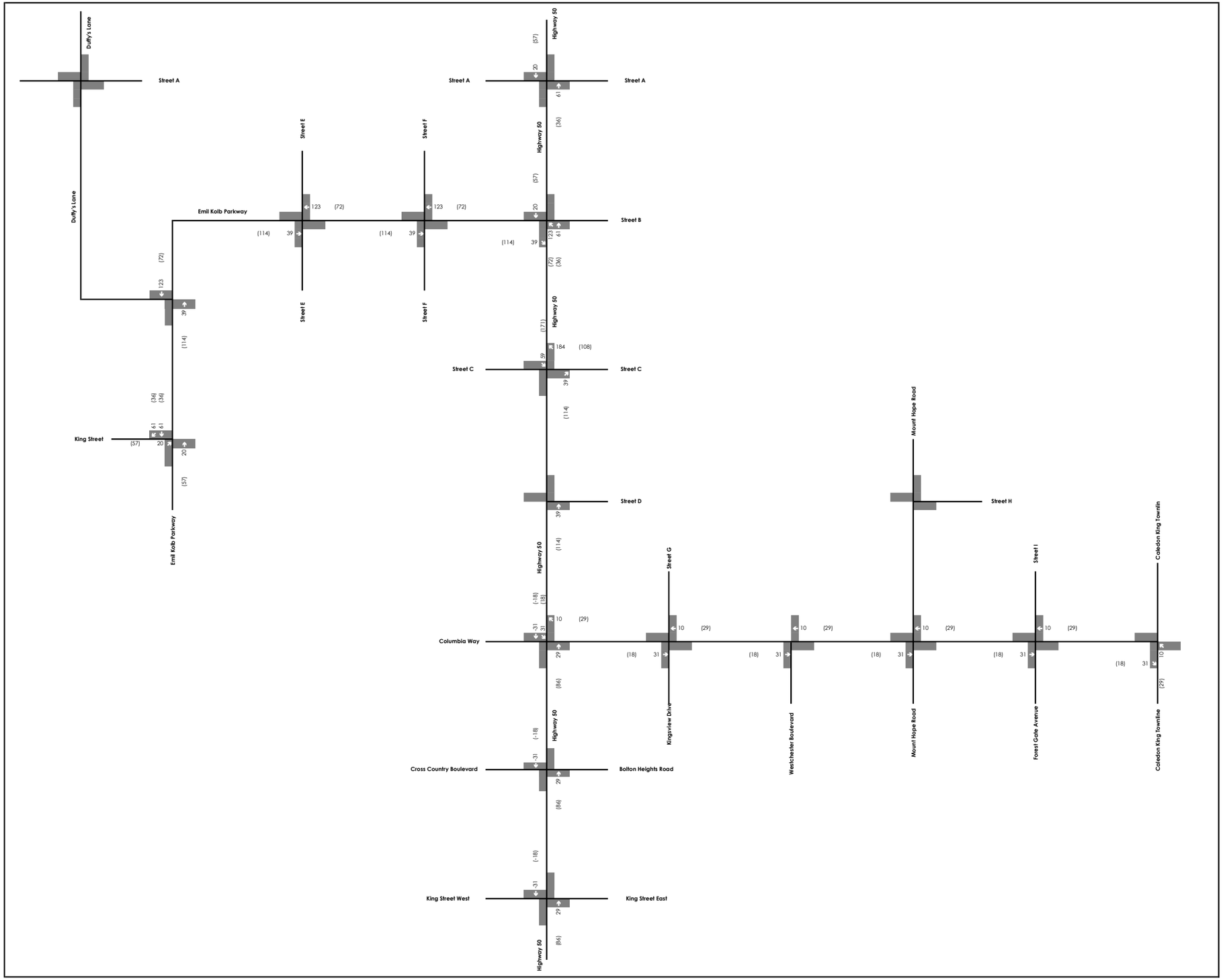
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K23
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	2041 & 2051 Traffic Analysis Zone B Trip Assignment		Project No. 708-3446 Date: June 2024 Analyst: AK



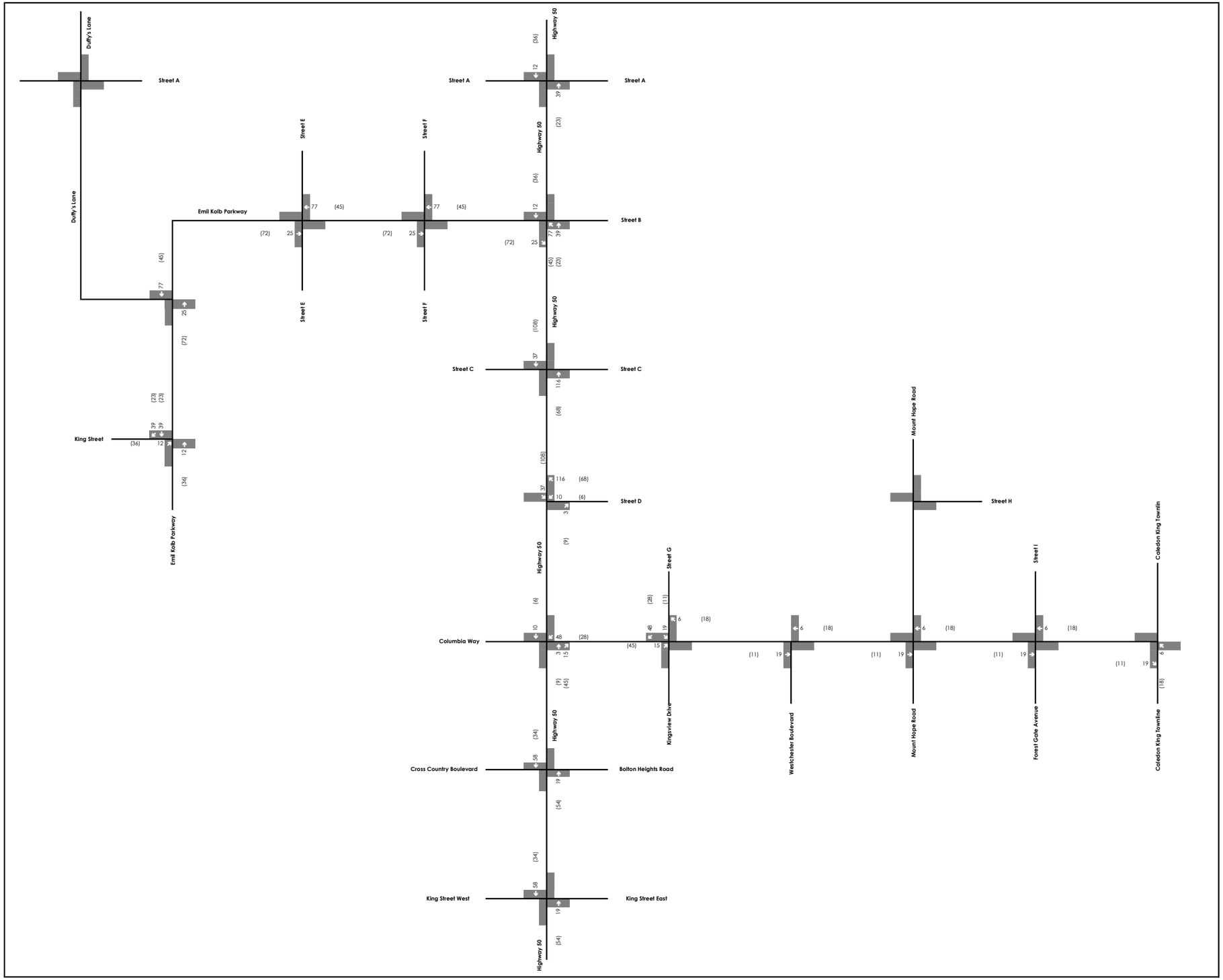
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K24
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone C Trip Assignment		Project No. 708-3446 Date: June 2024 Analyst: AK



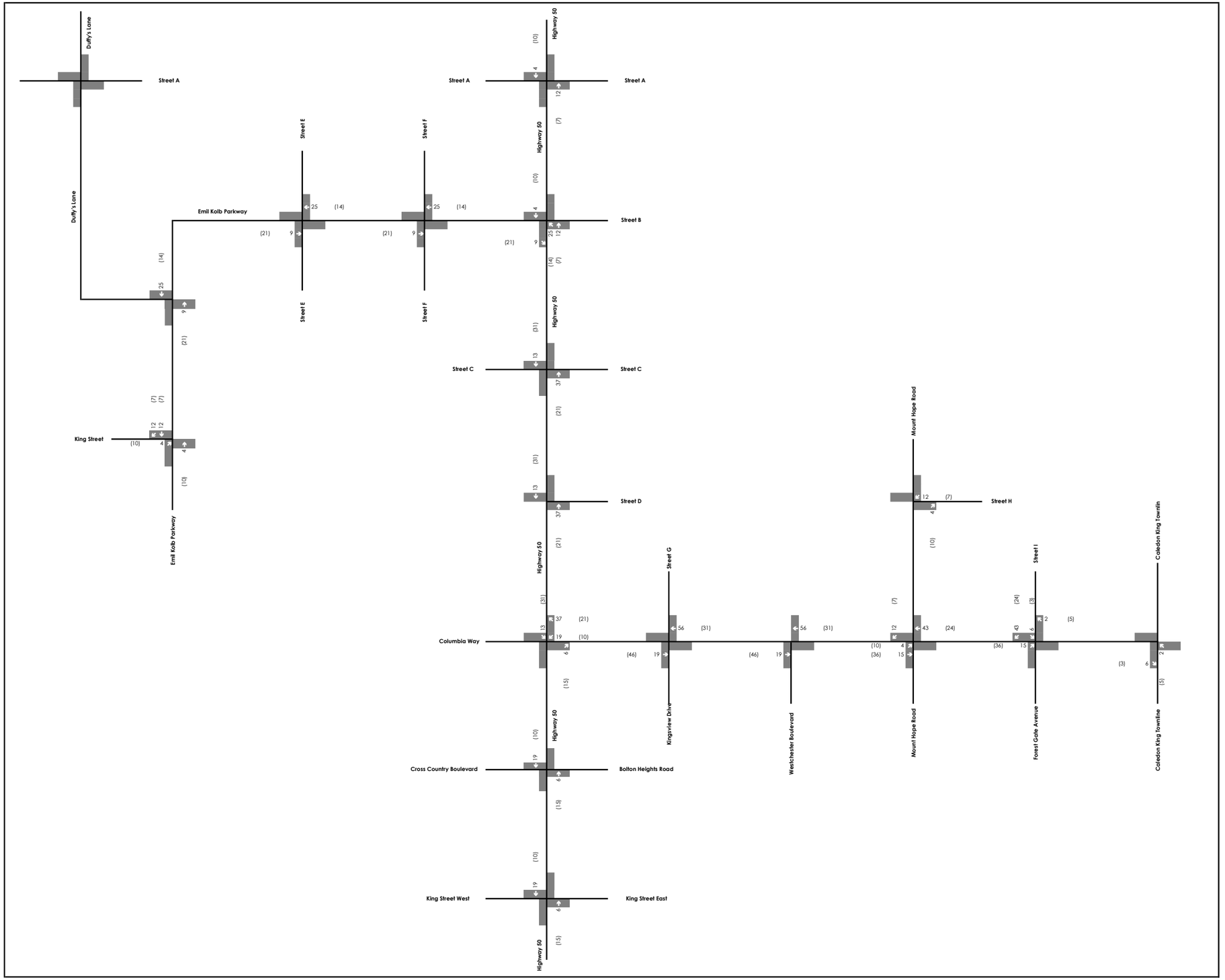
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K25
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone D Trip Assignment		Project No. 708-3446 Date: June 2024 Analyst: AK



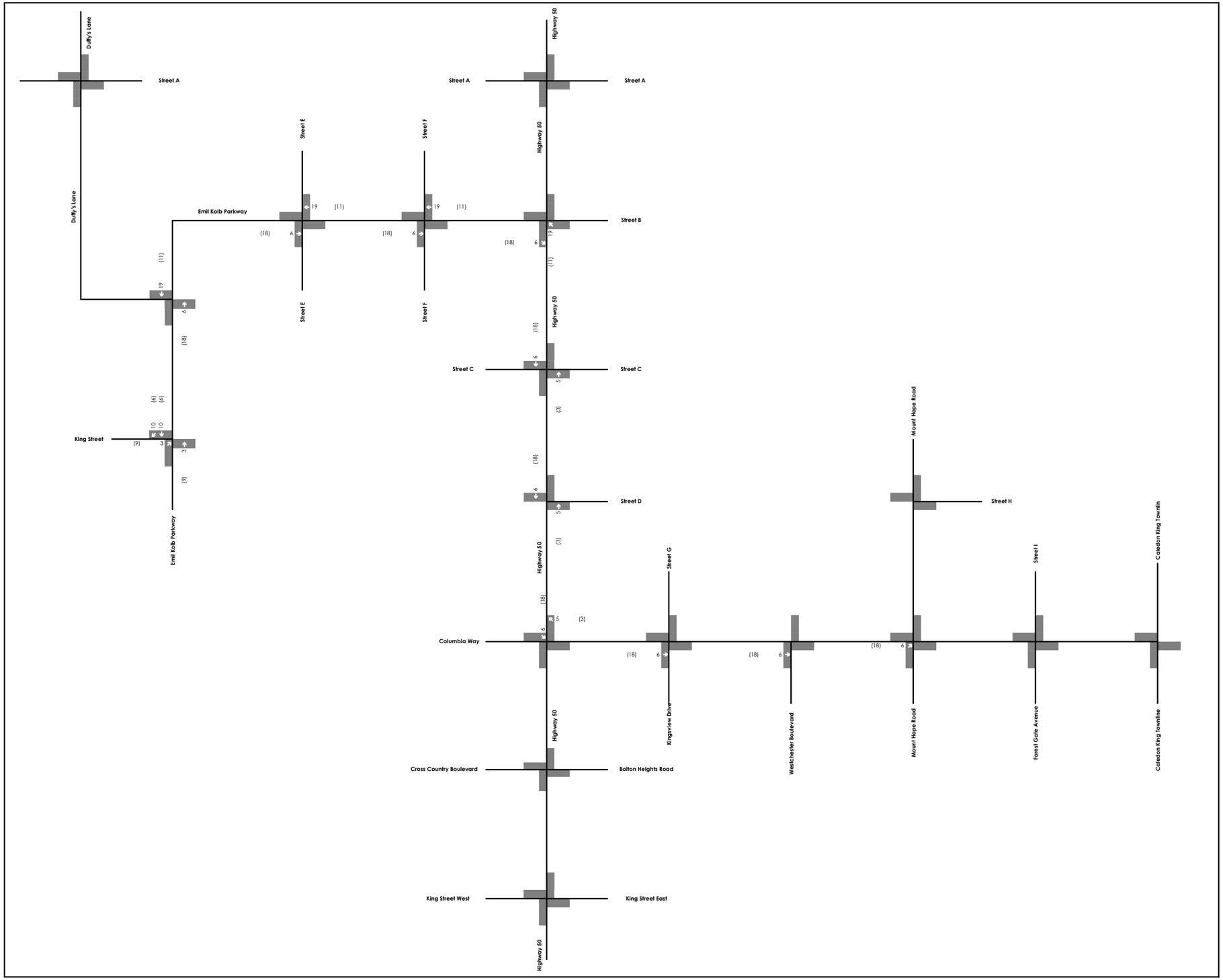
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K26
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone E Trip Assignment		Project No. 708-3446 Date: June 2024 Analyst: AK



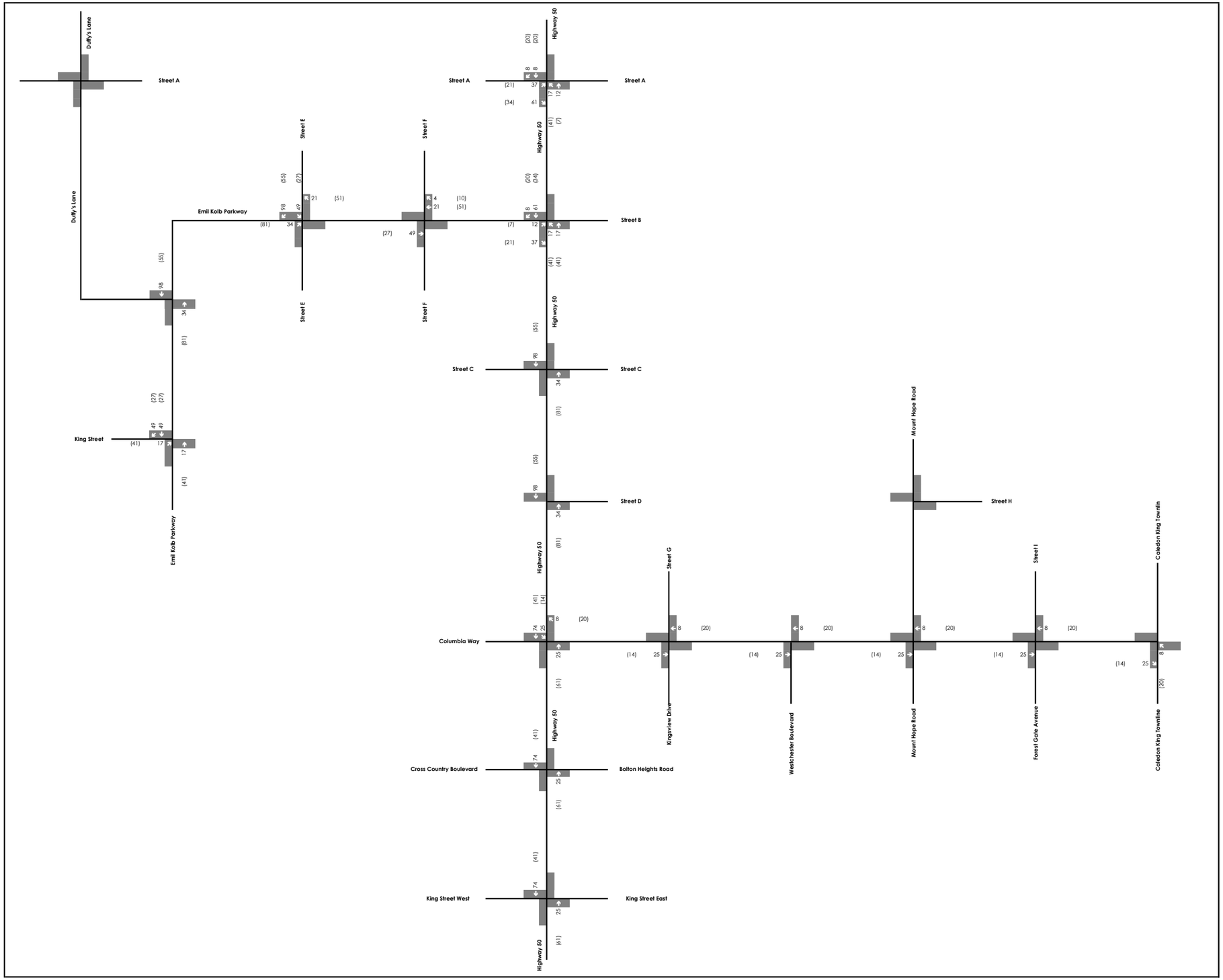
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K27
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone F Trip Assignment		Project No. 708-3446 Date: June 2024 Analyst: AK



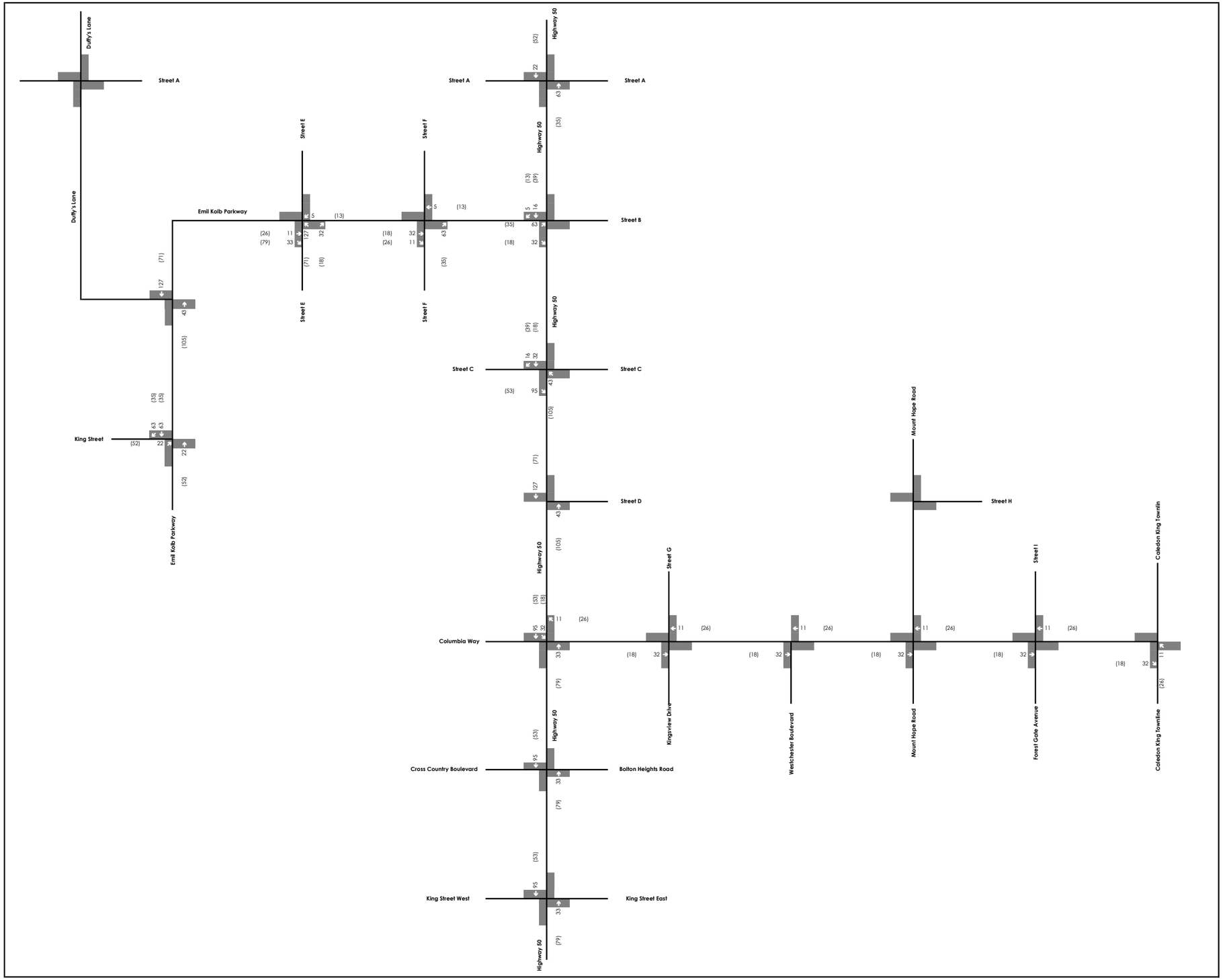
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K28
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone G Trip Assignment		Project No. 708-3446 Date: June 2024 Analyst: AK



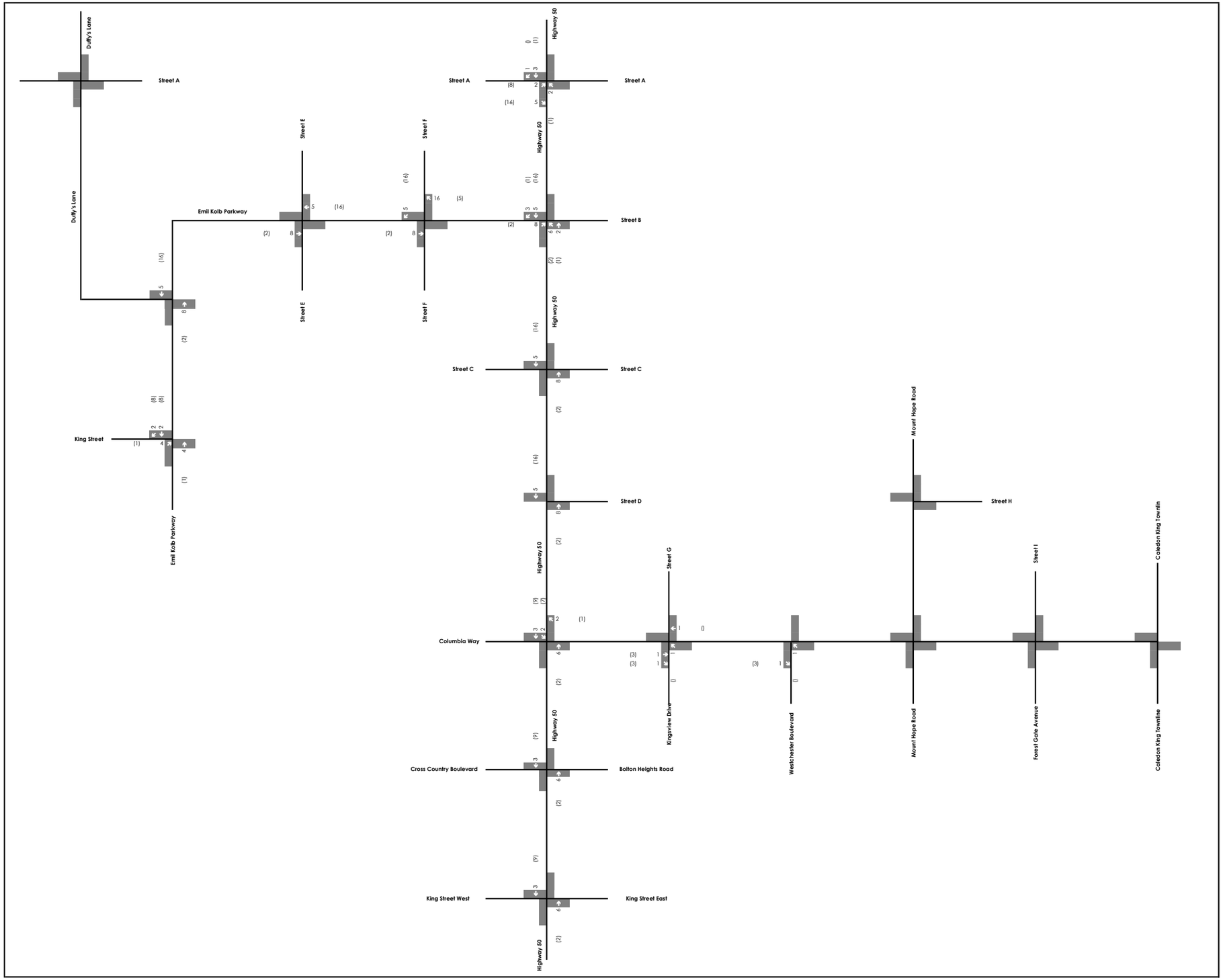
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K29
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone H Trip Assignment		Project No. 708-3446 Date: June 2024 Analyst: AK



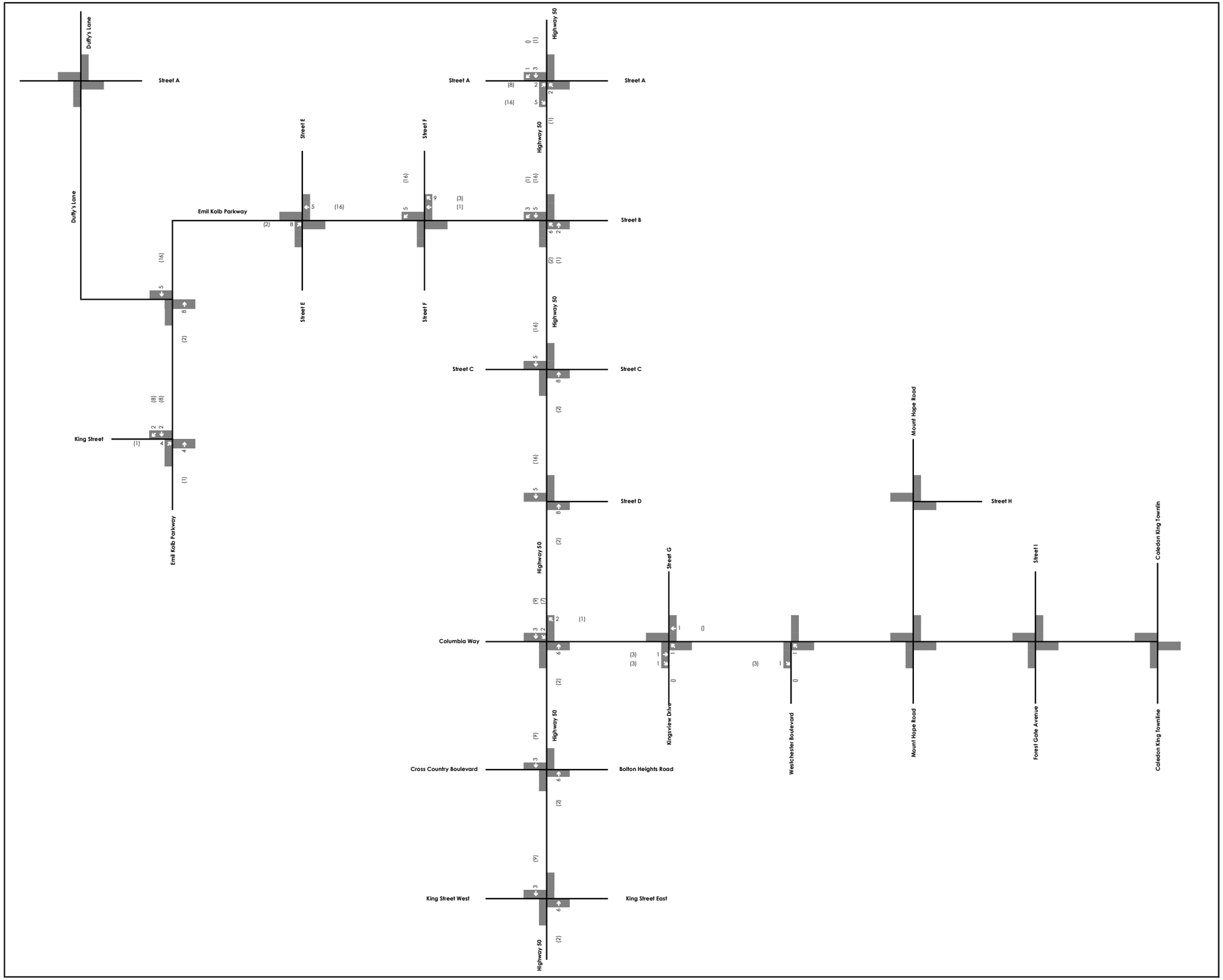
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K30
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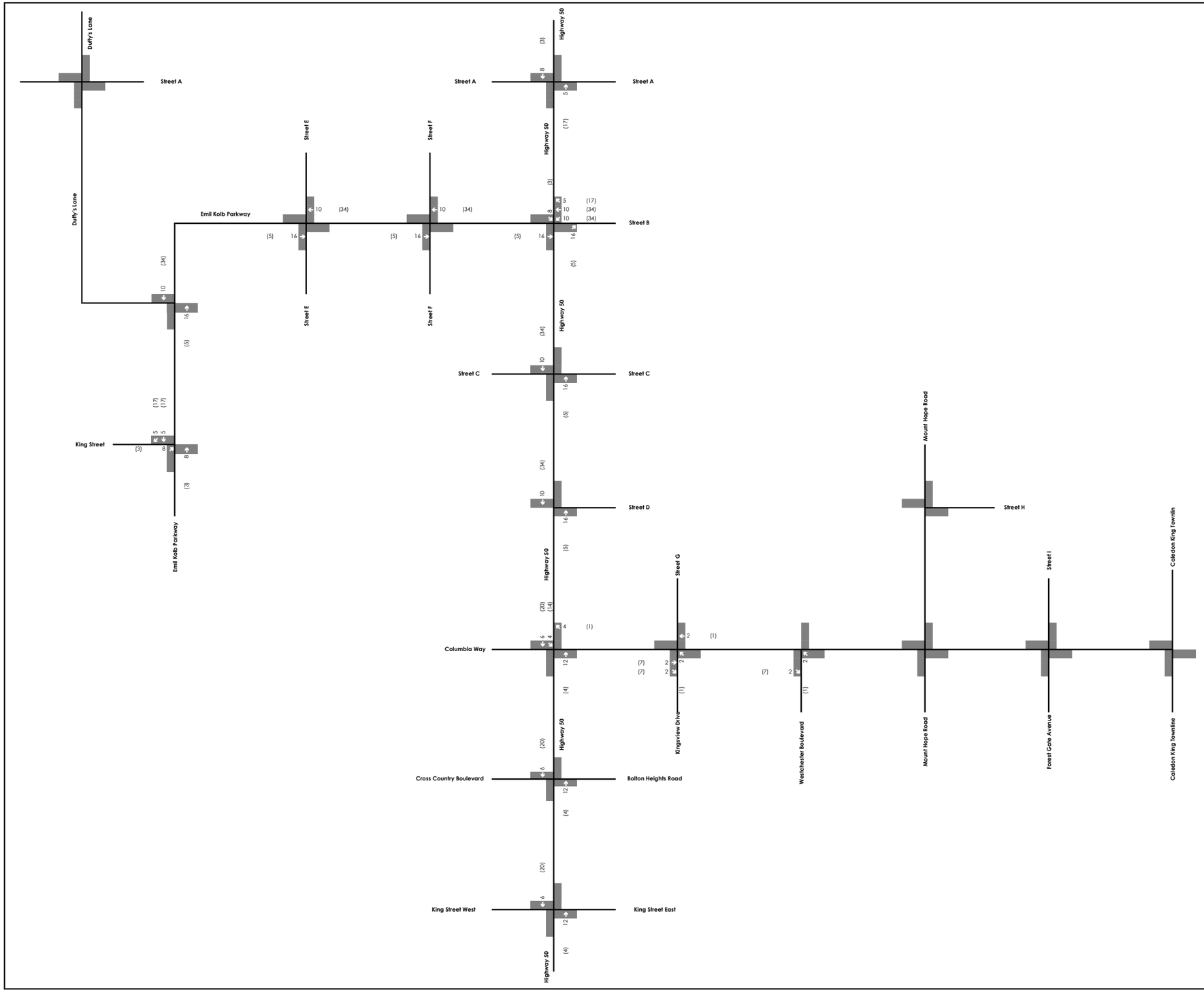
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K31
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone J Trip Assignment		Project No. 708-3446 Date: June 2024 Analyst: AK



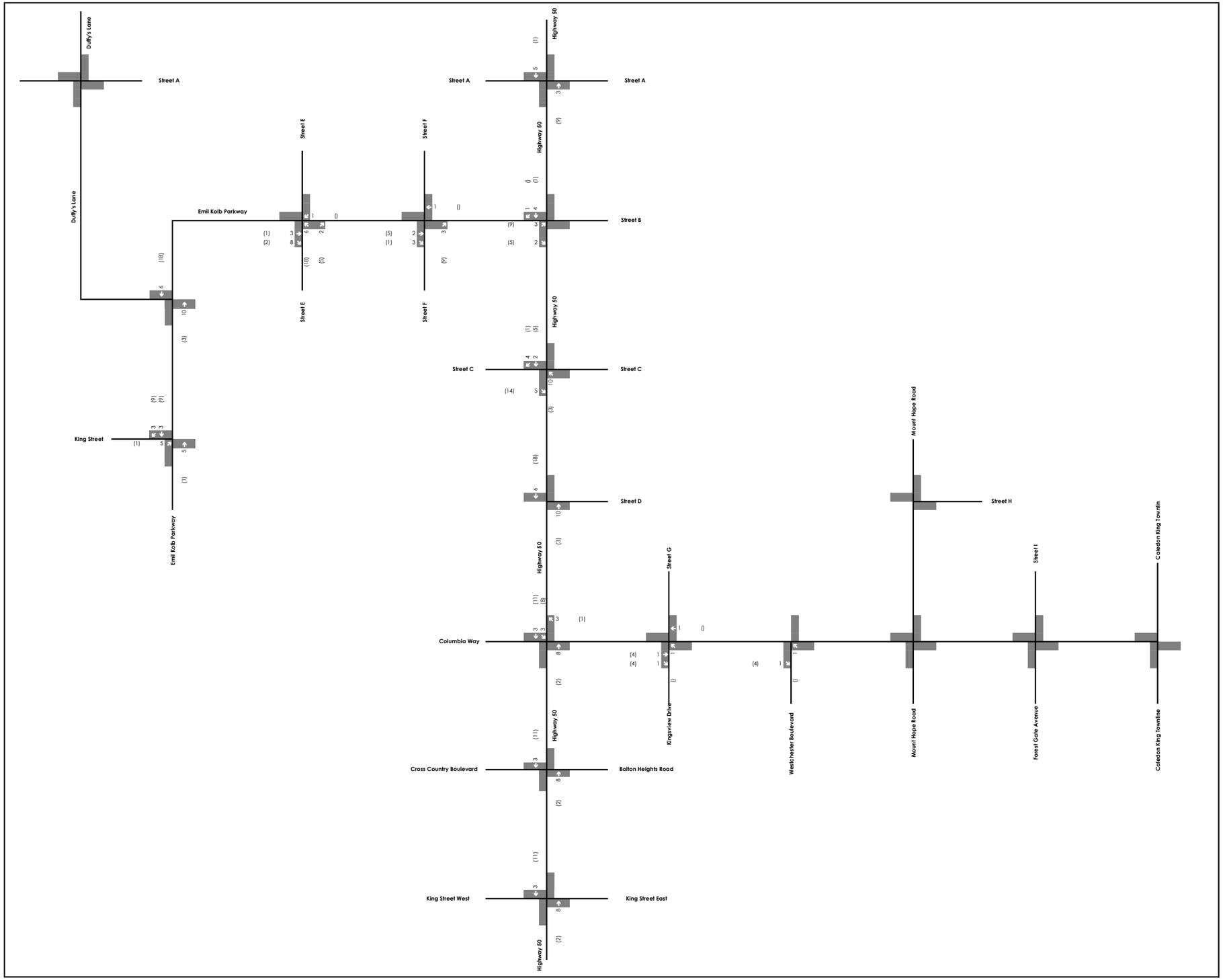
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K32
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	2031 Traffic Analysis Zone B Commercial Trip Assignment		Project No. 708-3446 Date: June 2024 Analyst: AK



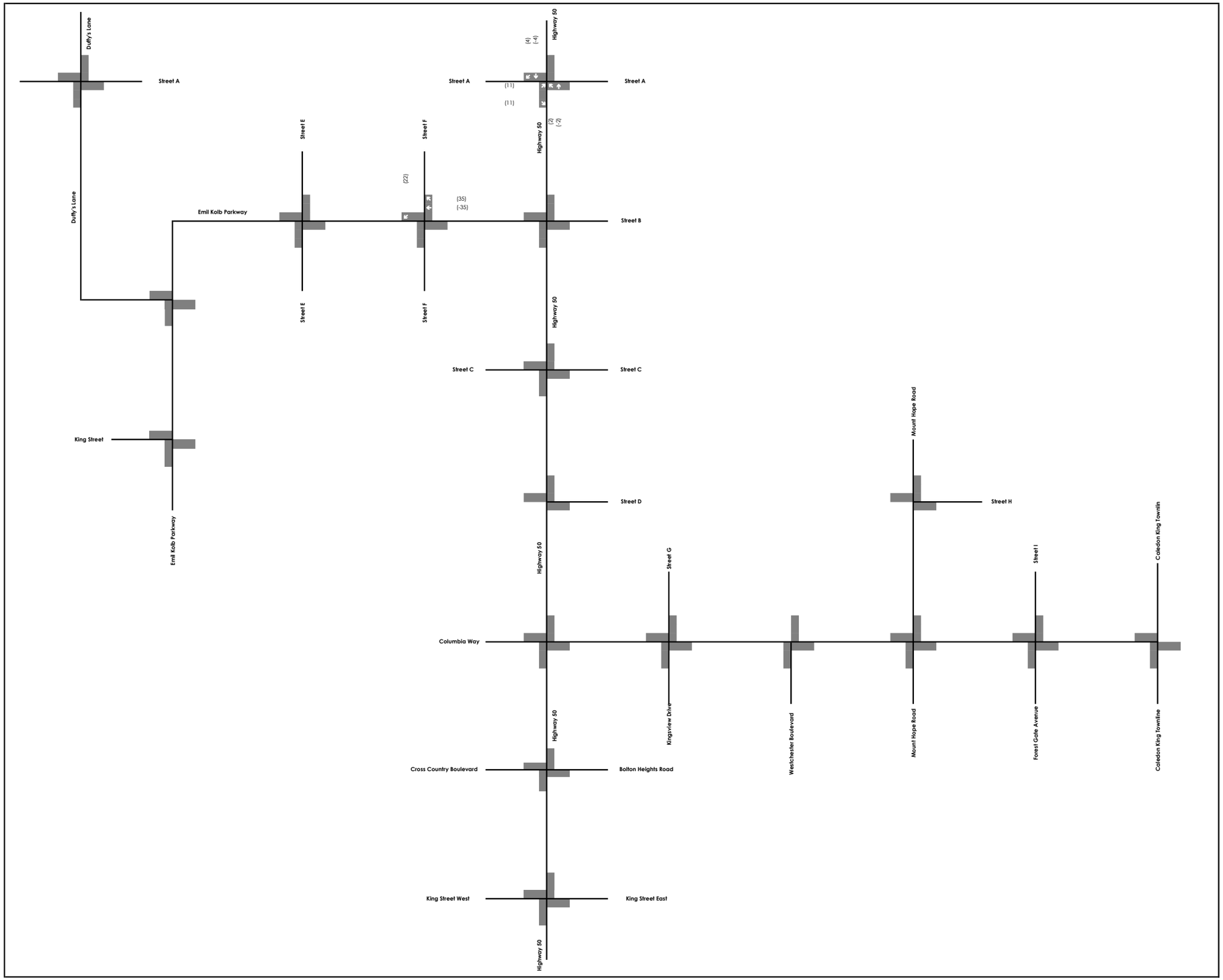
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K33
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	2041 & 2051 Traffic Analysis Zone B Commercial Trip Assignment		Project No. 708-3446 Date: June 2024 Analyst: AK



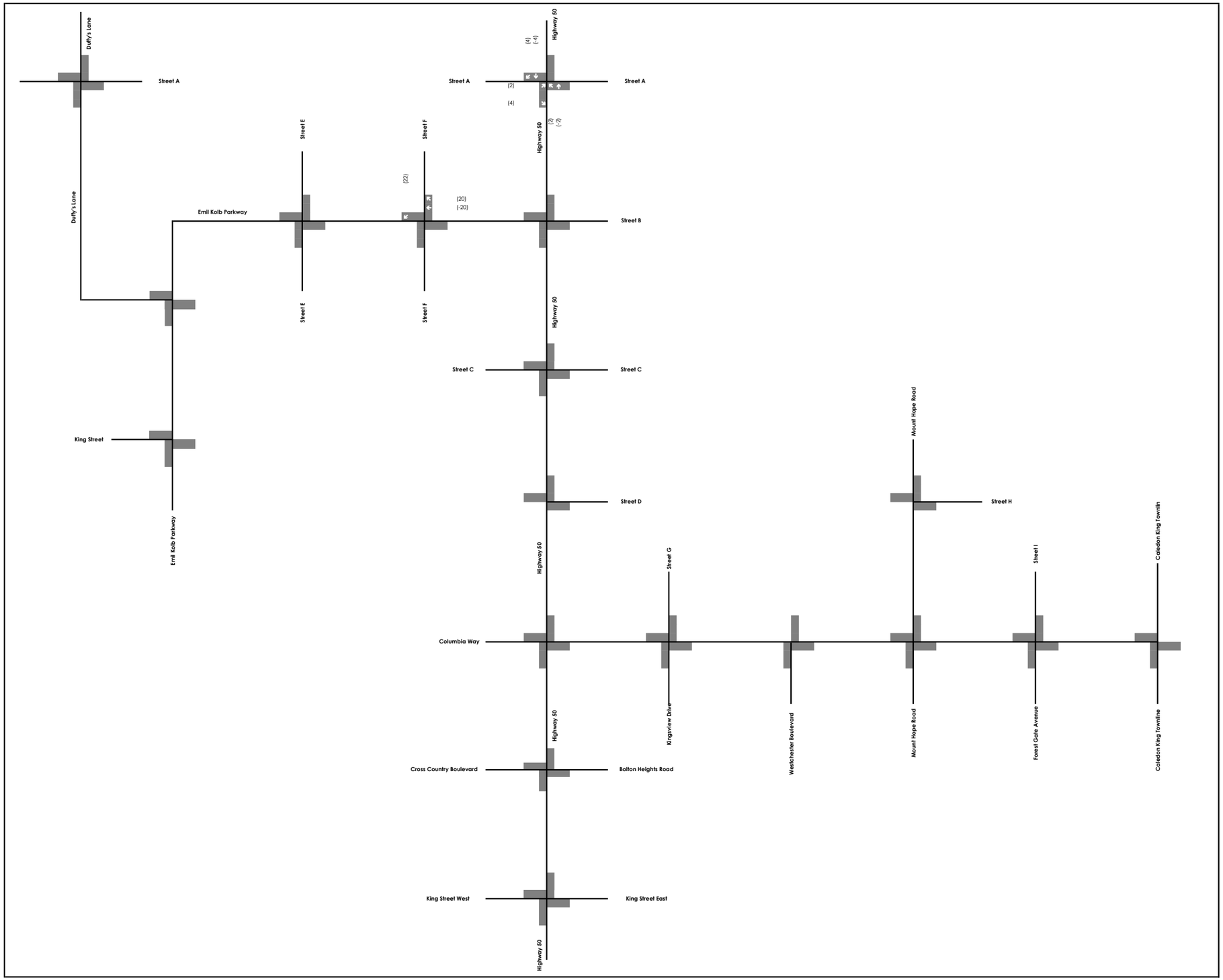
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K34
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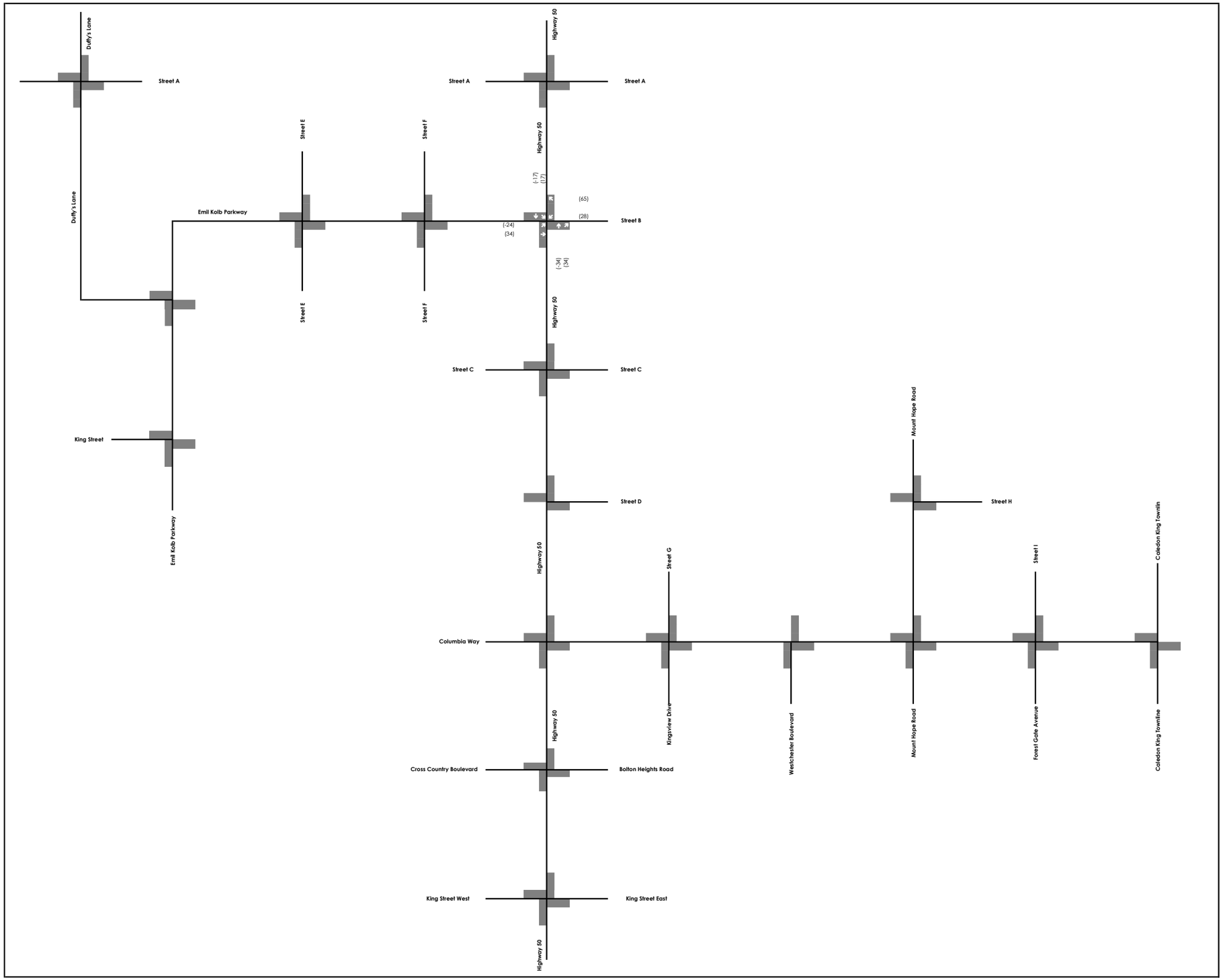
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K35
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone J Commercial Trip Assignment		Project No. 708-3446 Date: June 2024 Analyst: AK



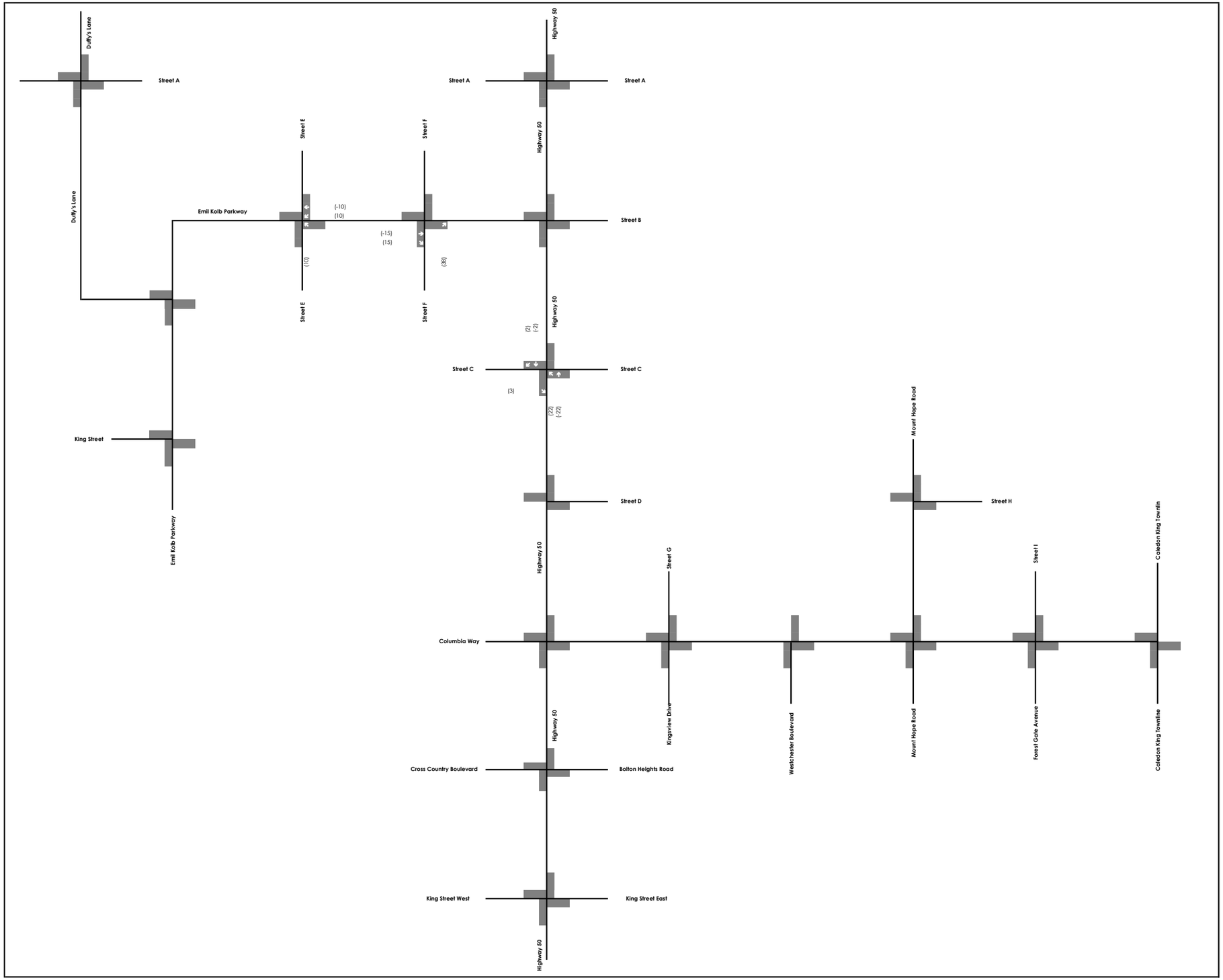
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K36
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	2031 Traffic Analysis Zone B Pass-By Trip Assignment		Project No. 708-3446 Date. June 2024 Analyst. AK



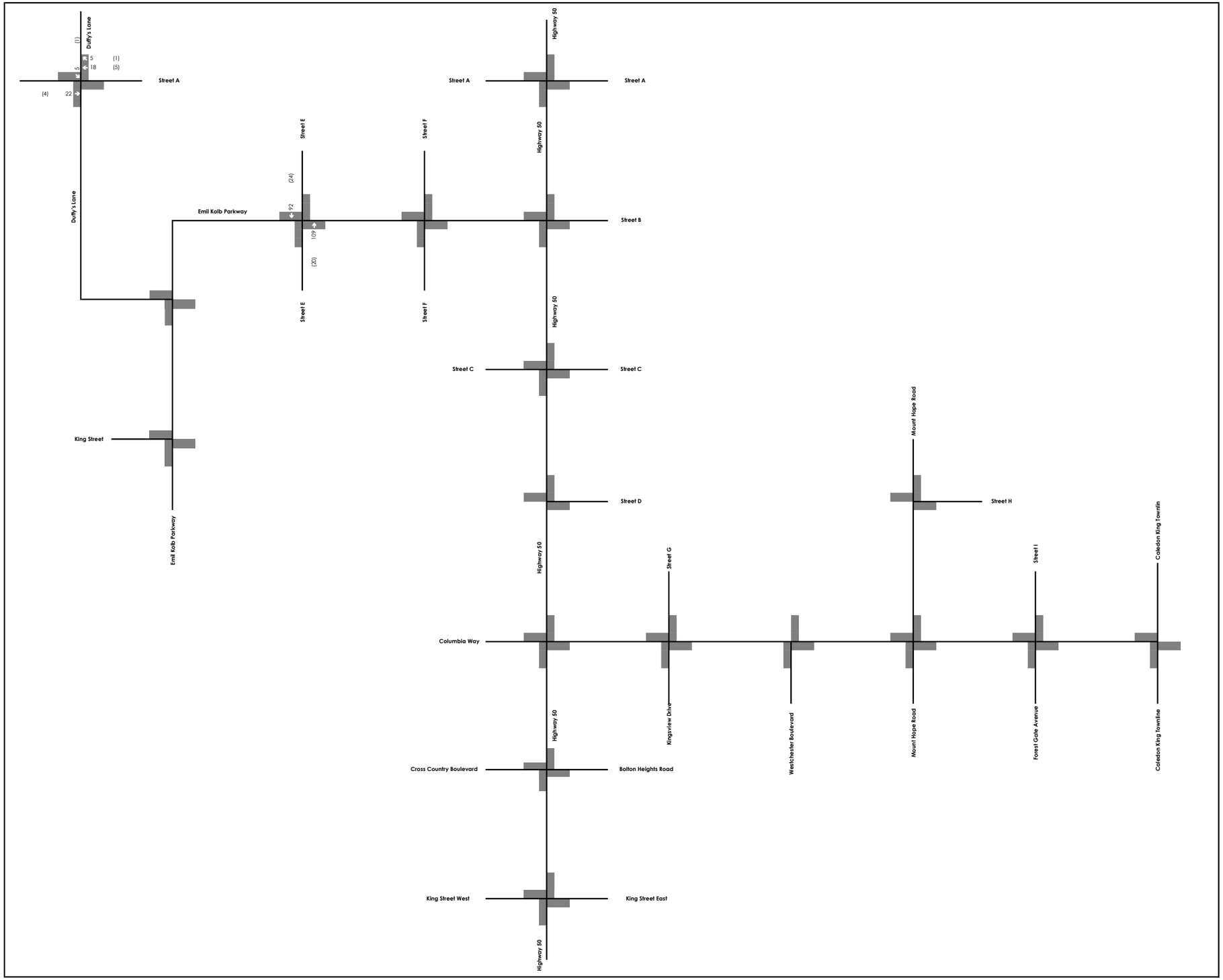
Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K37
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	2041 & 2051 Traffic Analysis Zone B Pass-By Trip Assignment		Project No. 708-3446 Date: June 2024 Analyst: AK



Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K38
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone D Pass-By Trip Assignment		Project No. 708-3446 Date: June 2024 Analyst: AK



Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K39
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone J Pass-By Trip Assignment		Project No. 708-3446 Date: June 2024 Analyst: AK



Legend	Bolton North Hill	CROZIER CONSULTING ENGINEERS	Appendix K40
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Traffic Analysis Zone I School Trip Assignment		Project No. 708-3446 Date: June 2024 Analyst: AK

APPENDIX L

Signal Warrant Analysis Worksheets

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2051 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Caledon King Townline	**Direction**	North/South
Minor Street	Columbia Way	**Direction**	East/West

Intersection Details for Warrant Parameters

Flow Conditions	Free Flow (Rural)	**Number of Lanes**	2+
T-Intersection?	Yes	**Intersection Type**	Existing

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Caledon King Townline						Minor: Columbia Way						Pedestrians Crossing Major Street
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	150	138	0	0	621	25	41	0	679	0	0	0	0
PM	350	576	0	0	249	365	88	0	187	0	0	0	0
AHV	125	179	0	0	218	98	32	0	217	0	0	0	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	869	144.8%	138.3%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	180	255	180	255	249	138.3%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	620	103.3%	64.0%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	32	64.0%	
Applicable Threshold				X				

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 138.3%
Percentage Required to be Justified: 120%

Signal Justification 7 Met: [X] **Yes** [ ] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2051 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Emil Kolb Parkway	**Direction**	North/South
Minor Street	Duffy's Lane	**Direction**	East/West

Intersection Details for Warrant Parameters

Flow Conditions	Free Flow (Rural)	**Number of Lanes**	2+
T-Intersection?	Yes	**Intersection Type**	Existing

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Emil Kolb Parkway						Minor: Duffy's Lane						Pedestrians Crossing Major Street
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	49	504	0	0	1239	33	84	0	125	0	0	0	0
PM	145	1243	0	0	652	72	50	0	65	0	0	0	0
AHV	49	437	0	0	473	26	34	0	48	0	0	0	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	1067	177.8%	45.6%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	180	255	180	255	82	45.6%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	985	164.2%	68.0%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	34	68.0%	
Applicable Threshold				X				

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 68.0%
Percentage Required to be Justified: 120%

Signal Justification 7 Met: [ ] **Yes** [X] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2051 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Duffy's Lane	**Direction**	North/South
Minor Street	Street A	**Direction**	East/West

Intersection Details for Warrant Parameters

Flow Conditions	Restricted Flow (Urban)	**Number of Lanes**	1
T-Intersection?	No	**Intersection Type**	New

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Duffy's Lane						Minor: Street A						Pedestrians Crossing Major Street
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	22	11	22	6	31	0	0	42	62	62	26	5	0
PM	52	26	52	1	18	0	0	15	35	35	21	2	0
AHV	19	9	19	2	12	0	0	14	24	24	12	2	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	137	19.0%	19.0%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	120	170	120	170	76	44.7%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	61	8.5%	8.5%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	38	50.7%	
Applicable Threshold			X					

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 19.0%
Percentage Required to be Justified: 150%

Signal Justification 7 Met: [ ] **Yes** [X] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2051 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Columbia Way	**Direction**	East/West
Minor Street	Mount Hope Road	**Direction**	North/South

Intersection Details for Warrant Parameters

Flow Conditions	Free Flow (Rural)	**Number of Lanes**	2+
T-Intersection?	No	**Intersection Type**	Existing

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Columbia Way						Minor: Mount Hope Road						Pedestrians Crossing Major Street
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
AM	96	464	15	4	259	27	35	7	16	159	6	87	0
PM	59	309	38	22	517	149	20	7	11	46	9	50	0
AHV	39	193	13	7	194	44	14	4	7	51	4	34	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	604	100.7%	95.0%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	120	170	120	170	114	95.0%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	490	81.7%	81.7%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	69	138.0%	
Applicable Threshold				X				

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 95.0%
Percentage Required to be Justified: 120%

Signal Justification 7 Met: [ ] **Yes** [X] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2051 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Highway 50	**Direction**	North/South
Minor Street	Street A	**Direction**	East/West

Intersection Details for Warrant Parameters

Flow Conditions	Free Flow (Rural)	**Number of Lanes**	2+
T-Intersection?	No	**Intersection Type**	New

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Highway 50						Minor: Street A						Pedestrians Crossing Major Street
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	44	614	52	13	963	36	128	0	165	151	0	38	0
PM	145	1129	125	32	684	108	59	0	74	85	0	22	0
AHV	47	436	44	11	412	36	47	0	60	59	0	15	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	1167	194.5%	150.8%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	120	170	120	170	181	150.8%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	986	164.3%	164.3%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	106	212.0%	
Applicable Threshold				X				

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 164.3%
Percentage Required to be Justified: 150%

Signal Justification 7 Met: [X] **Yes** [ ] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2051 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Highway 50	**Direction**	North/South
Minor Street	Street C	**Direction**	East/West

Intersection Details for Warrant Parameters

Flow Conditions	Free Flow (Rural)	**Number of Lanes**	2+
T-Intersection?	No	**Intersection Type**	New

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Highway 50						Minor: Street C						Pedestrians Crossing Major Street
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	54	703	28	41	1049	21	0	0	100	0	0	119	0
PM	130	1129	66	98	786	43	0	0	70	0	0	67	0
AHV	46	458	24	35	459	16	0	0	43	0	0	47	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	1128	188.0%	75.0%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	120	170	120	170	90	75.0%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	1038	173.0%	0.0%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	0	0.0%	
Applicable Threshold				X				

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 75.0%
Percentage Required to be Justified: 150%

Signal Justification 7 Met: [ ] **Yes** [X] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2051 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Highway 50	**Direction**	North/South
Minor Street	Street D	**Direction**	East/West

Intersection Details for Warrant Parameters

Flow Conditions	Free Flow (Rural)	**Number of Lanes**	2+
T-Intersection?	Yes	**Intersection Type**	New

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Highway 50						Minor: Street D						Pedestrians Crossing Major Street
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	0	602	4	48	1102	0	0	0	0	91	0	138	0
PM	0	1221	10	114	742	0	0	0	0	51	0	77	0
AHV	0	456	4	41	461	0	0	0	0	36	0	54	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	1052	175.3%	50.0%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	180	255	180	255	90	50.0%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	962	160.3%	72.0%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	36	72.0%	
Applicable Threshold				X				

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 72.0%
Percentage Required to be Justified: 150%

Signal Justification 7 Met: [ ] **Yes** [X] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2051 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Emil Kolb Parkway	**Direction**	East/West
Minor Street	Street E	**Direction**	North/South

Intersection Details for Warrant Parameters

Flow Conditions	Free Flow (Rural)	**Number of Lanes**	2+
T-Intersection?	No	**Intersection Type**	New

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Emil Kolb Parkway						Minor: Street E						Pedestrians Crossing Major Street
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
AM	76	470	41	7	1039	21	133	109	34	50	93	99	0
PM	260	950	81	24	625	102	100	20	23	15	24	0	0
AHV	84	355	31	8	416	31	58	32	14	16	29	25	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	1099	183.2%	145.0%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	120	170	120	170	174	145.0%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	925	154.2%	154.2%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	106	212.0%	
Applicable Threshold				X				

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 154.2%
Percentage Required to be Justified: 150%

Signal Justification 7 Met: [X] **Yes** [ ] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2051 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Emil Kolb Parkway	**Direction**	East/West
Minor Street	Street F	**Direction**	North/South

Intersection Details for Warrant Parameters

Flow Conditions	Free Flow (Rural)	**Number of Lanes**	2+
T-Intersection?	No	**Intersection Type**	New

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Emil Kolb Parkway						Minor: Street F						Pedestrians Crossing Major Street
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
AM	0	539	14	0	963	26	0	0	67	0	0	104	0
PM	0	945	42	0	661	74	0	0	83	0	0	91	0
AHV	0	371	14	0	406	25	0	0	38	0	0	49	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	903	150.5%	72.5%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	120	170	120	170	87	72.5%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	816	136.0%	0.0%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	0	0.0%	
Applicable Threshold				X				

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 72.5%
Percentage Required to be Justified: 150%

Signal Justification 7 Met: [ ] **Yes** [X] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2051 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Mount Hope Road	**Direction**	North/South
Minor Street	Street H	**Direction**	East/West

Intersection Details for Warrant Parameters

Flow Conditions	Restricted Flow (Urban)	**Number of Lanes**	1
T-Intersection?	Yes	**Intersection Type**	New

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Mount Hope Road						Minor: Street H						Pedestrians Crossing Major Street
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	0	35	5	0	66	0	0	0	0	13	0	0	0
PM	0	29	11	0	45	0	0	0	0	7	0	0	0
AHV	0	16	4	0	28	0	0	0	0	5	0	0	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	53	7.4%	2.0%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	180	255	180	255	5	2.0%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	48	6.7%	6.7%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	5	6.7%	
Applicable Threshold			X					

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 6.7%
Percentage Required to be Justified: 150%

Signal Justification 7 Met: [ ] **Yes** [X] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2051 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Columbia Way	**Direction**	East/West
Minor Street	Street I/Forest Gate Avenue	**Direction**	North/South

Intersection Details for Warrant Parameters

Flow Conditions	Free Flow (Rural)	**Number of Lanes**	2+
T-Intersection?	No	**Intersection Type**	New

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Columbia Way						Minor: Street I/Forest Gate Avenue						Pedestrians Crossing Major Street
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
AM	15	622	3	4	168	3	77	0	92	7	0	44	0
PM	36	260	68	52	659	6	4	0	12	4	0	25	0
AHV	13	221	18	14	207	2	20	0	26	3	0	17	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	541	90.2%	55.0%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	120	170	120	170	66	55.0%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	475	79.2%	46.0%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	23	46.0%	
Applicable Threshold				X				

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 55.0%
Percentage Required to be Justified: 150%

Signal Justification 7 Met: [ ] **Yes** [X] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2051 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Columbia Way	**Direction**	East/West
Minor Street	Westchester Boulevard	**Direction**	North/South

Intersection Details for Warrant Parameters

Flow Conditions	Free Flow (Rural)	**Number of Lanes**	2+
T-Intersection?	Yes	**Intersection Type**	Existing

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Columbia Way						Minor: Westchester Boulevard						Pedestrians Crossing Major Street
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
AM	0	375	52	35	326	0	68	0	42	0	0	0	0
PM	0	284	106	47	340	0	40	0	23	0	0	0	0
AHV	0	165	40	21	167	0	27	0	16	0	0	0	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	436	72.7%	23.9%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	180	255	180	255	43	23.9%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	393	65.5%	54.0%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	27	54.0%	
Applicable Threshold				X				

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 54.0%
Percentage Required to be Justified: 120%

Signal Justification 7 Met: [ ] **Yes** [X] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2041 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Caledon King Townline	**Direction**	North/South
Minor Street	Columbia Way	**Direction**	East/West

Intersection Details for Warrant Parameters

Flow Conditions	Free Flow (Rural)	**Number of Lanes**	2+
T-Intersection?	Yes	**Intersection Type**	Existing

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Caledon King Townline						Minor: Columbia Way						Pedestrians Crossing Major Street
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	135	125	0	0	562	23	39	0	627	0	0	0	0
PM	309	522	0	0	226	362	87	0	162	0	0	0	0
AHV	111	162	0	0	197	96	32	0	197	0	0	0	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	795	132.5%	127.2%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	180	255	180	255	229	127.2%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	566	94.3%	64.0%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	32	64.0%	
Applicable Threshold				X				

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 127.2%
Percentage Required to be Justified: 120%

Signal Justification 7 Met: [X] **Yes** [ ] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2041 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Highway 50	**Direction**	North/South
Minor Street	Street A	**Direction**	East/West

Intersection Details for Warrant Parameters

Flow Conditions	Free Flow (Rural)	**Number of Lanes**	2+
T-Intersection?	No	**Intersection Type**	New

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Highway 50						Minor: Street A						Pedestrians Crossing Major Street
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	44	530	52	13	894	36	128	0	165	151	0	38	0
PM	145	1037	125	32	610	108	59	0	74	85	0	22	0
AHV	47	392	44	11	376	36	47	0	60	59	0	15	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	1087	181.2%	150.8%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	120	170	120	170	181	150.8%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	906	151.0%	151.0%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	106	212.0%	
Applicable Threshold				X				

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 151.0%
Percentage Required to be Justified: 150%

Signal Justification 7 Met: [X] **Yes** [ ] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2041 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Emil Kolb Parkway	**Direction**	East/West
Minor Street	Street E	**Direction**	North/South

Intersection Details for Warrant Parameters

Flow Conditions	Free Flow (Rural)	**Number of Lanes**	2+
T-Intersection?	No	**Intersection Type**	New

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Emil Kolb Parkway						Minor: Street E						Pedestrians Crossing Major Street
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
AM	76	438	0	0	989	21	0	109	0	50	93	99	0
PM	260	868	0	10	603	102	11	20	0	15	24	0	0
AHV	84	327	0	3	398	31	3	32	0	16	29	25	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	948	158.0%	87.5%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	120	170	120	170	105	87.5%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	843	140.5%	102.0%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	51	102.0%	
Applicable Threshold				X				

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 102.0%
Percentage Required to be Justified: 150%

Signal Justification 7 Met: [ ] **Yes** [X] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2031 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Caledon King Townline	**Direction**	North/South
Minor Street	Columbia Way	**Direction**	East/West

Intersection Details for Warrant Parameters

Flow Conditions	Free Flow (Rural)	**Number of Lanes**	1
T-Intersection?	Yes	**Intersection Type**	Existing

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Caledon King Townline						Minor: Columbia Way						Pedestrians Crossing Major Street
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	119	113	0	0	509	22	38	0	575	0	0	0	0
PM	248	472	0	0	204	360	85	0	148	0	0	0	0
AHV	92	146	0	0	178	96	31	0	181	0	0	0	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	724	150.8%	117.8%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	180	255	180	255	212	117.8%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	512	106.7%	62.0%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	31	62.0%	
Applicable Threshold		**X**						

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 117.8%
Percentage Required to be Justified: 120%

Signal Justification 7 Met: [ ] **Yes** [X] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2031 Future Total	**Analyst**	AK

Study Intersection Summary

Major Street	Highway 50	**Direction**	North/South
Minor Street	Street A	**Direction**	East/West

Intersection Details for Warrant Parameters

Flow Conditions	Free Flow (Rural)	**Number of Lanes**	1
T-Intersection?	No	**Intersection Type**	New

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Highway 50						Minor: Street A						Pedestrians Crossing Major Street
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	28	501	52	13	847	21	71	0	104	151	0	38	0
PM	64	992	125	32	549	51	48	0	74	85	0	22	0
AHV	23	373	44	11	349	18	30	0	45	59	0	15	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	967	201.5%	124.2%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	120	170	120	170	149	124.2%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	818	170.4%	170.4%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	89	178.0%	
Applicable Threshold		X						

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

Percent Compliance: 170.4%
Percentage Required to be Justified: 150%

Signal Justification 7 Met: [X] **Yes** [ ] **No**

TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)
PER OTM BOOK 12

Project and Scenario Summary

Project	Bolton North Hill	**Project Number**	708-3446
		Date	2026-02-26
Horizon	2051 Future Background	**Analyst**	AK

Study Intersection Summary

Major Street	Caledon King Townline	**Direction**	North/South
Minor Street	Columbia Way	**Direction**	East/West

Intersection Details for Warrant Parameters

Flow Conditions	Free Flow (Rural)	**Number of Lanes**	2+
T-Intersection?	Yes	**Intersection Type**	Existing

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Caledon King Townline						Minor: Columbia Way						Pedestrians Crossing Major Street
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	86	138	0	0	621	25	41	0	493	0	0	0	0
PM	177	576	0	0	249	365	88	0	97	0	0	0	0
AHV	66	179	0	0	218	98	32	0	148	0	0	0	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 **or** Peak2phv/2.

Justification 7 - OTM Book 12

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
						Sectional		Entire Percentage
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	741	123.5%	100.0%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	180	255	180	255	180	100.0%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	561	93.5%	64.0%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	32	64.0%	
Applicable Threshold				X				

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.
Existing Intersections Require 120% Justification
New/Proposed Intersections Require 150% Justification

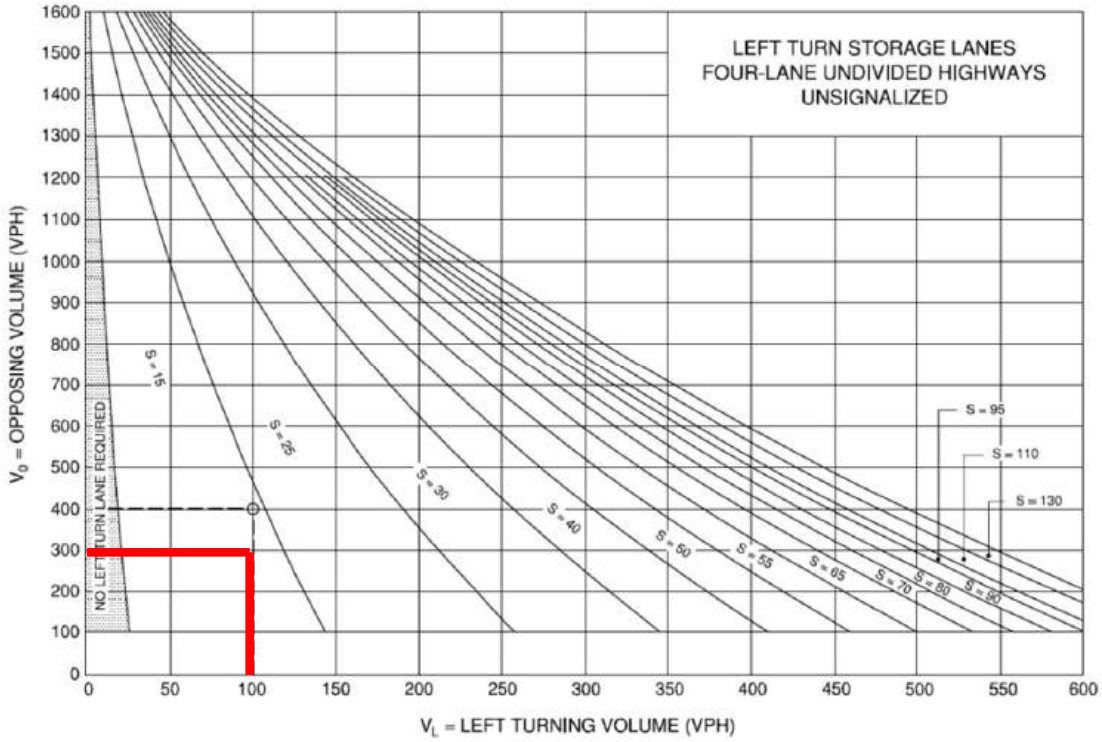
Percent Compliance: 100.0%
Percentage Required to be Justified: 120%

Signal Justification 7 Met: [ ] **Yes** [X] **No**

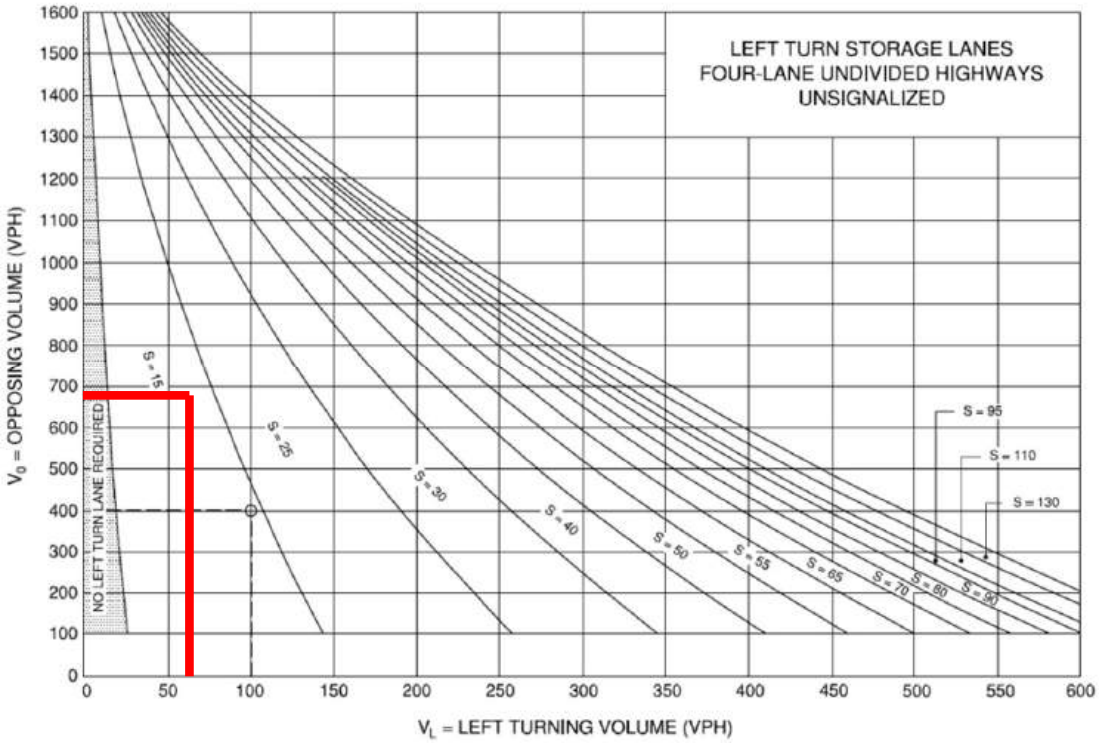
APPENDIX M

Left-Turn Lane Warrant Analysis Worksheets

AM Peak Hour



PM Peak Hour

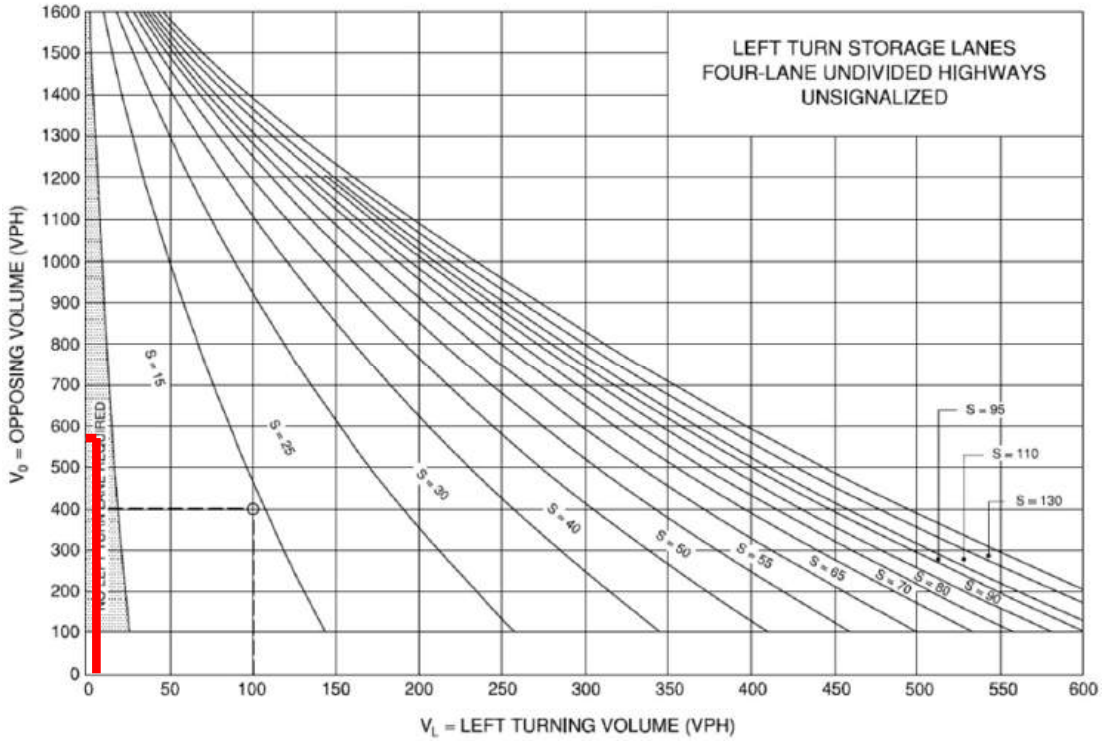


Eastbound Left-Turn Lane Warrant

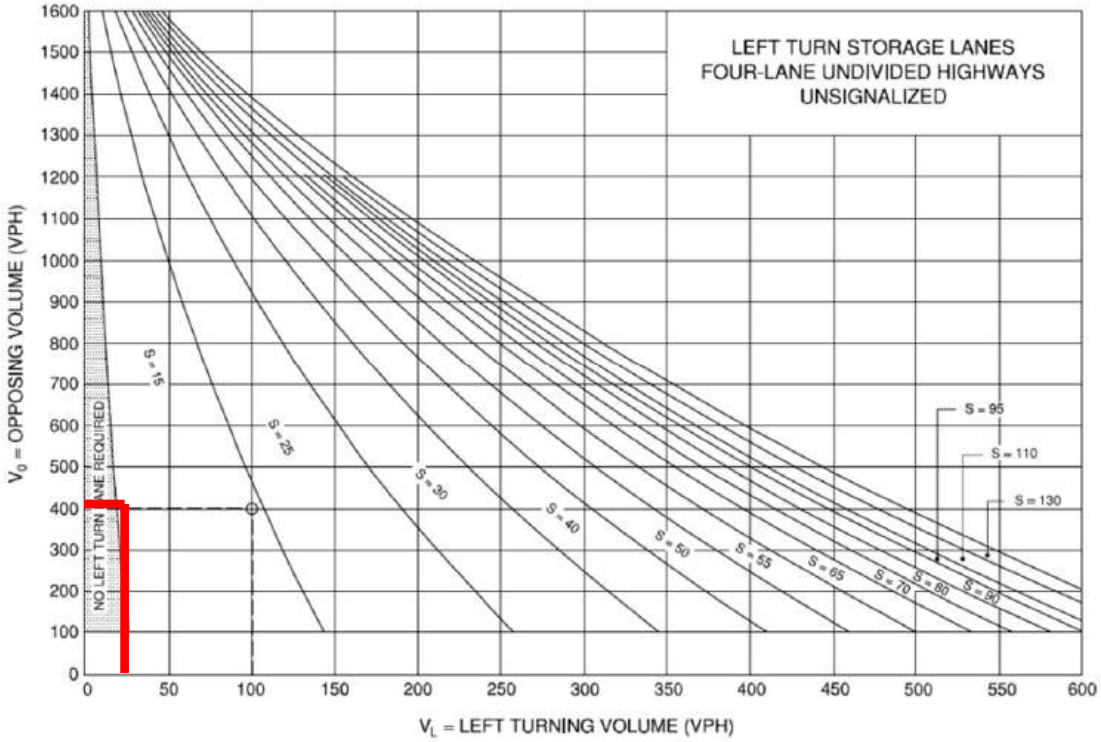
2051 Future Total Horizon Year

Mount Hope Road & Columbia Way

AM Peak Hour

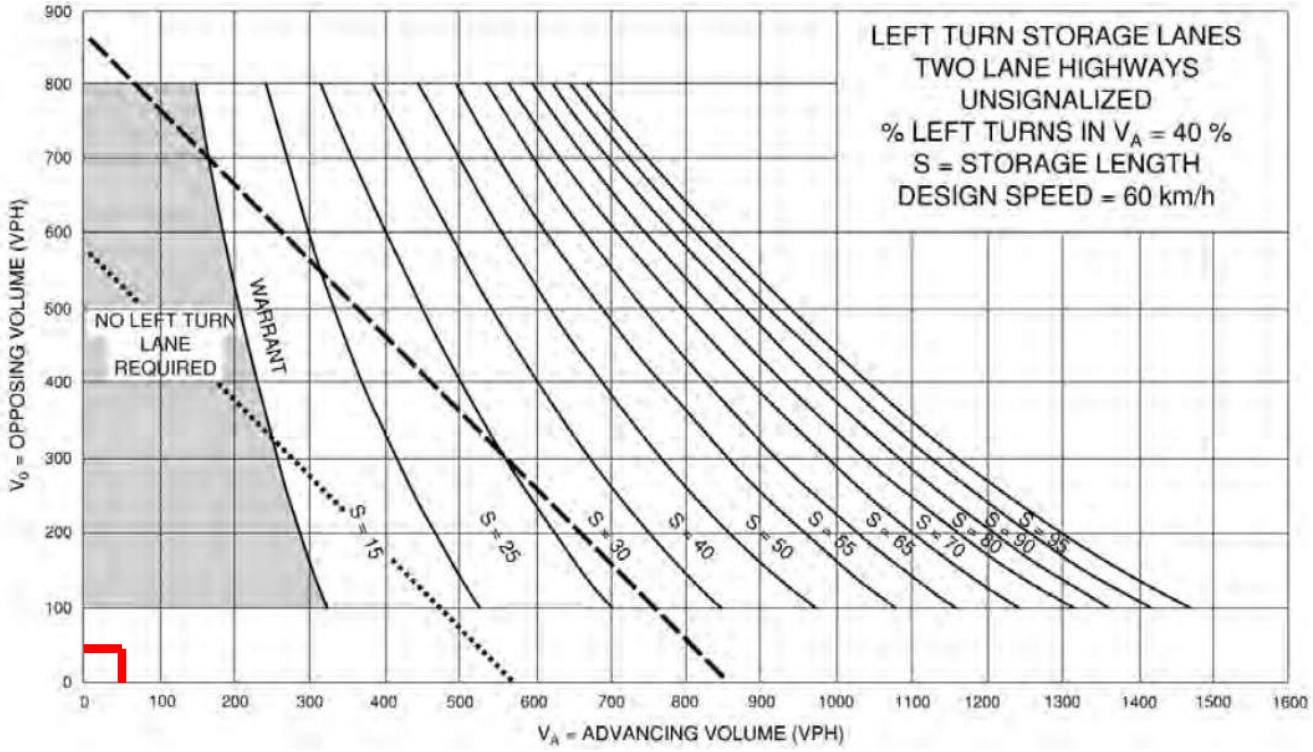


PM Peak Hour

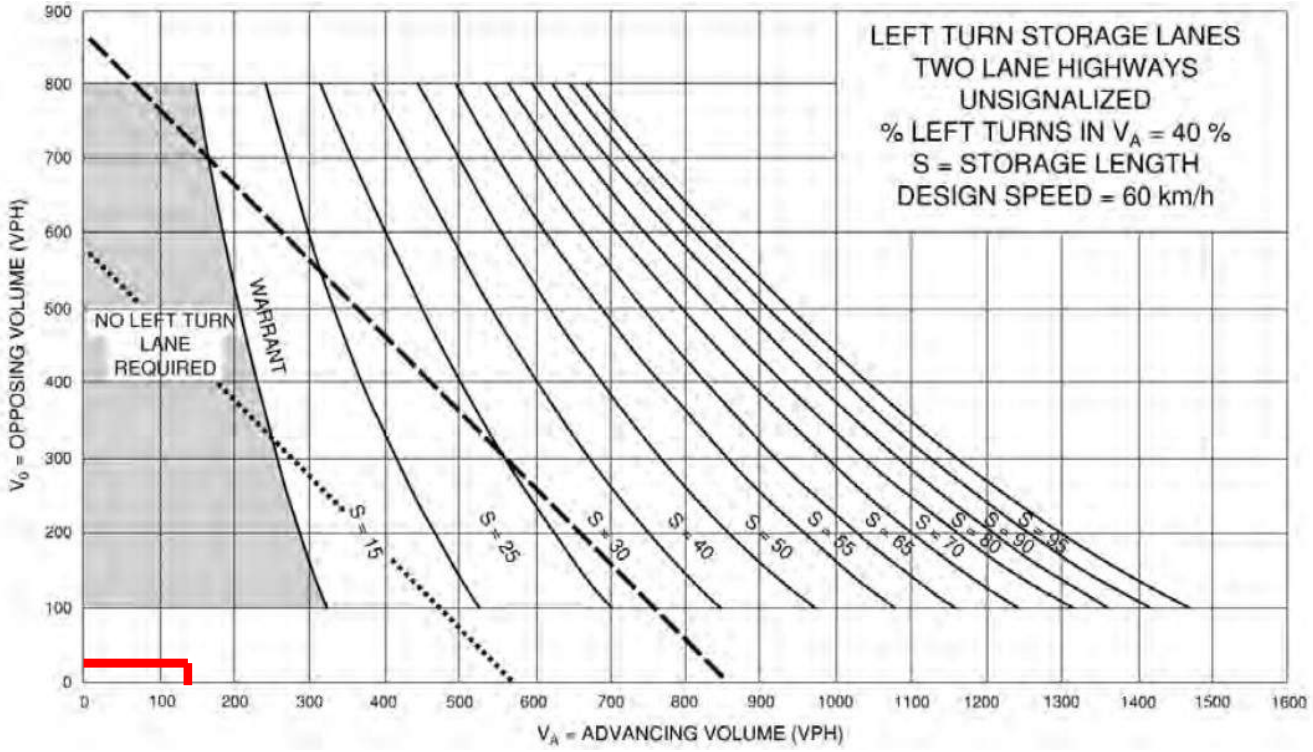


Westbound Left-Turn Lane Warrant
2051 Future Total Horizon Year
Mount Hope Road & Columbia Way

AM Peak Hour



PM Peak Hour

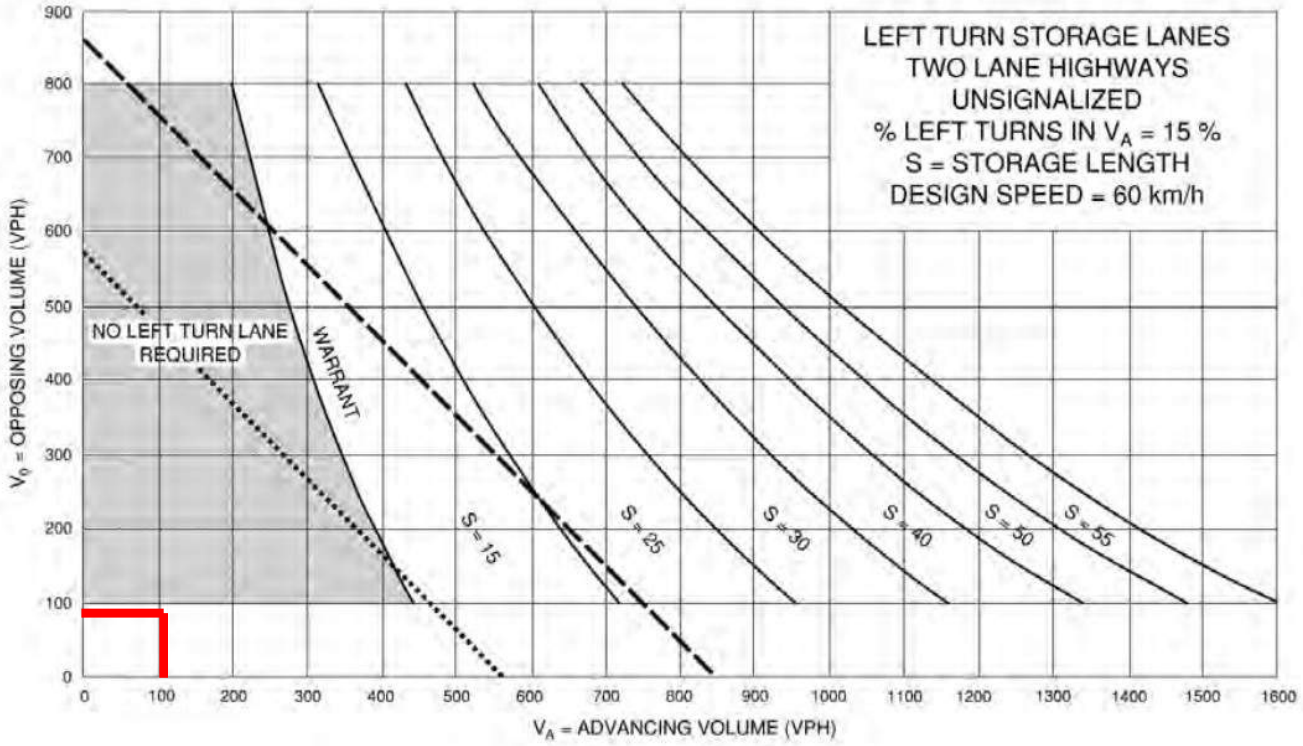


Northbound Left-Turn Lane Warrant

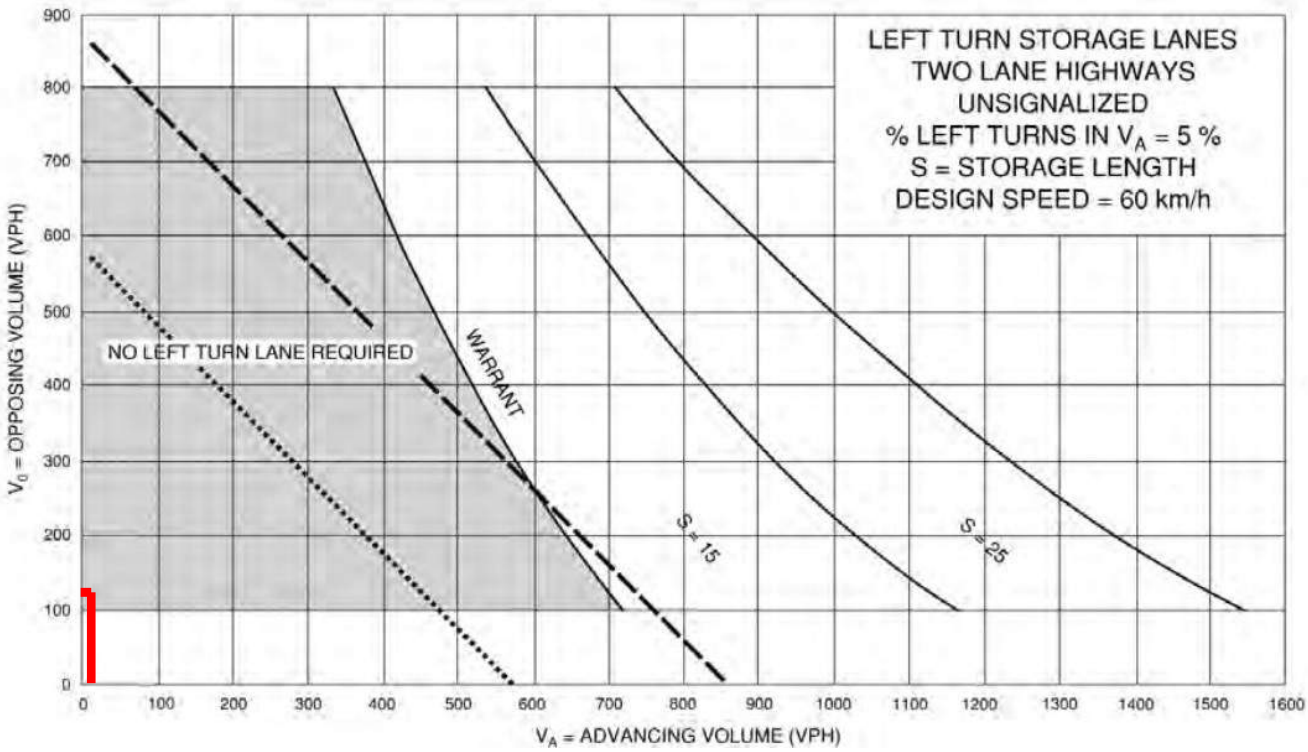
2051 Future Total Horizon Year

Street A & Duffy's Lane

AM Peak Hour



PM Peak Hour

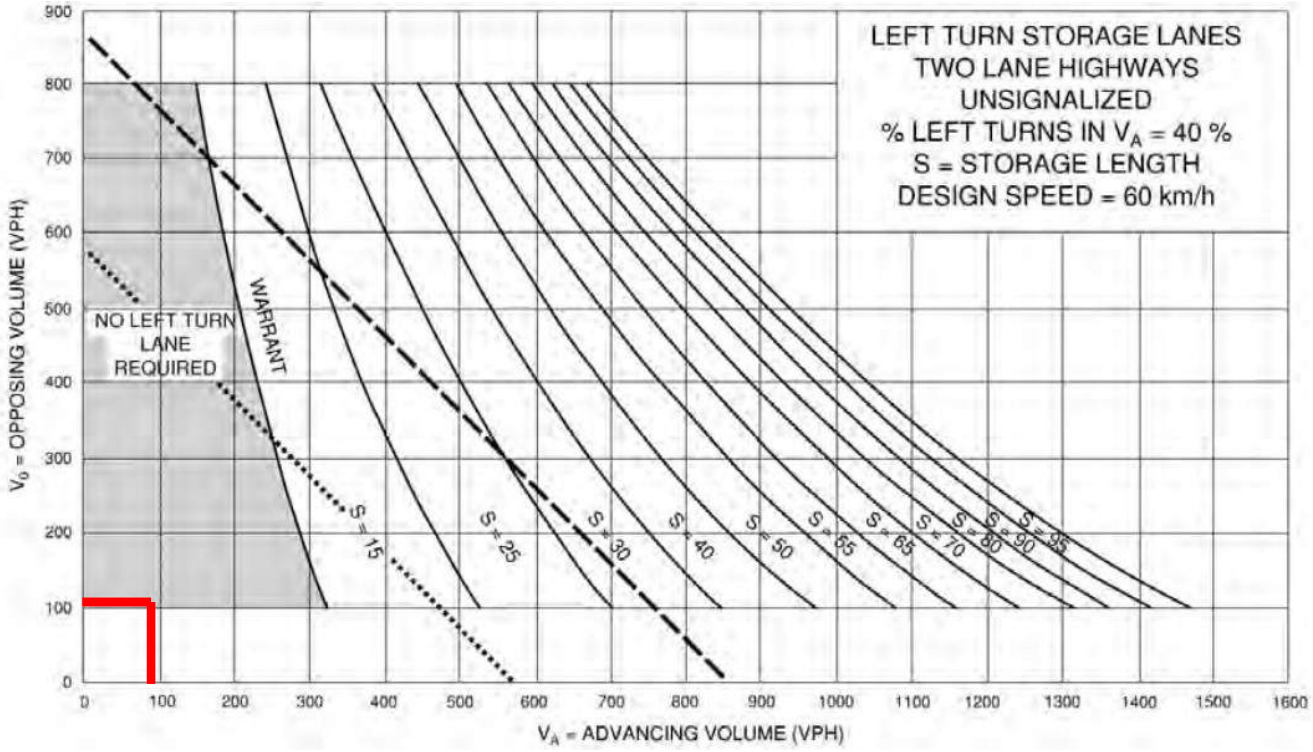


Southbound Left-Turn Lane Warrant

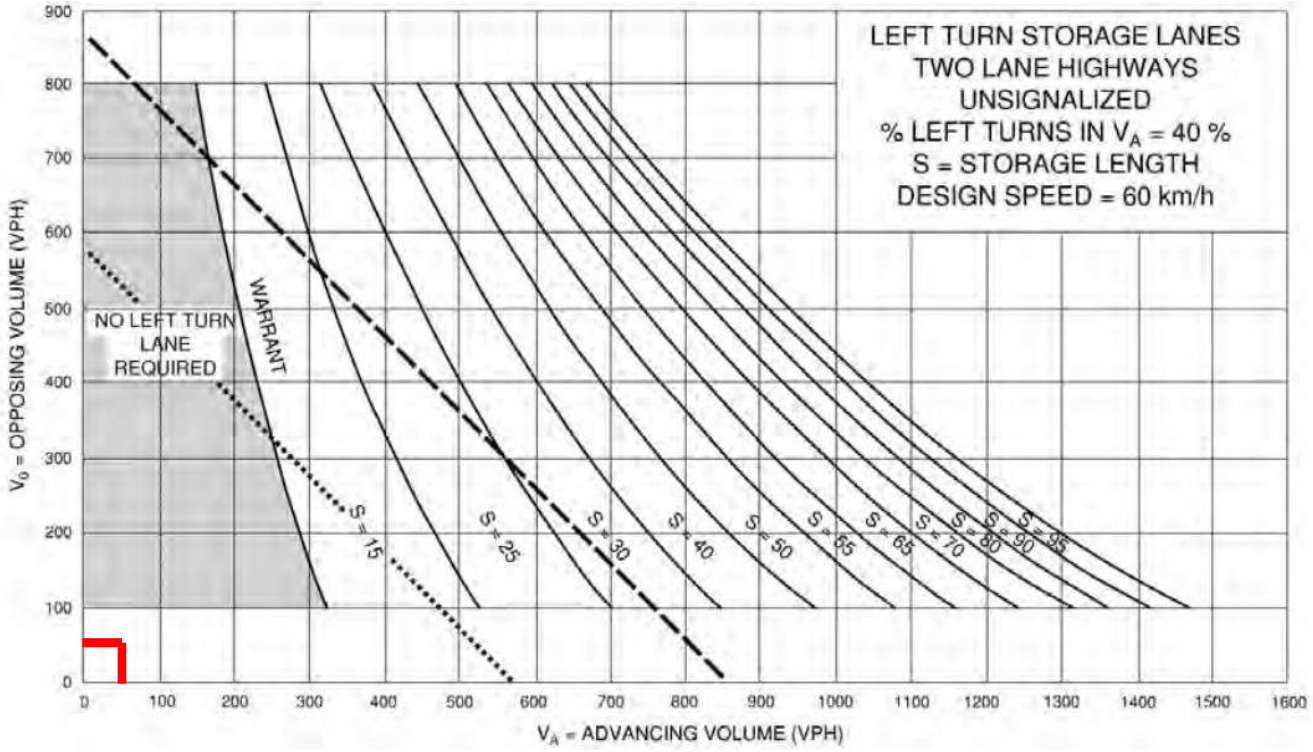
2051 Future Total Horizon Year

Street A & Duffy's Lane

AM Peak Hour



PM Peak Hour

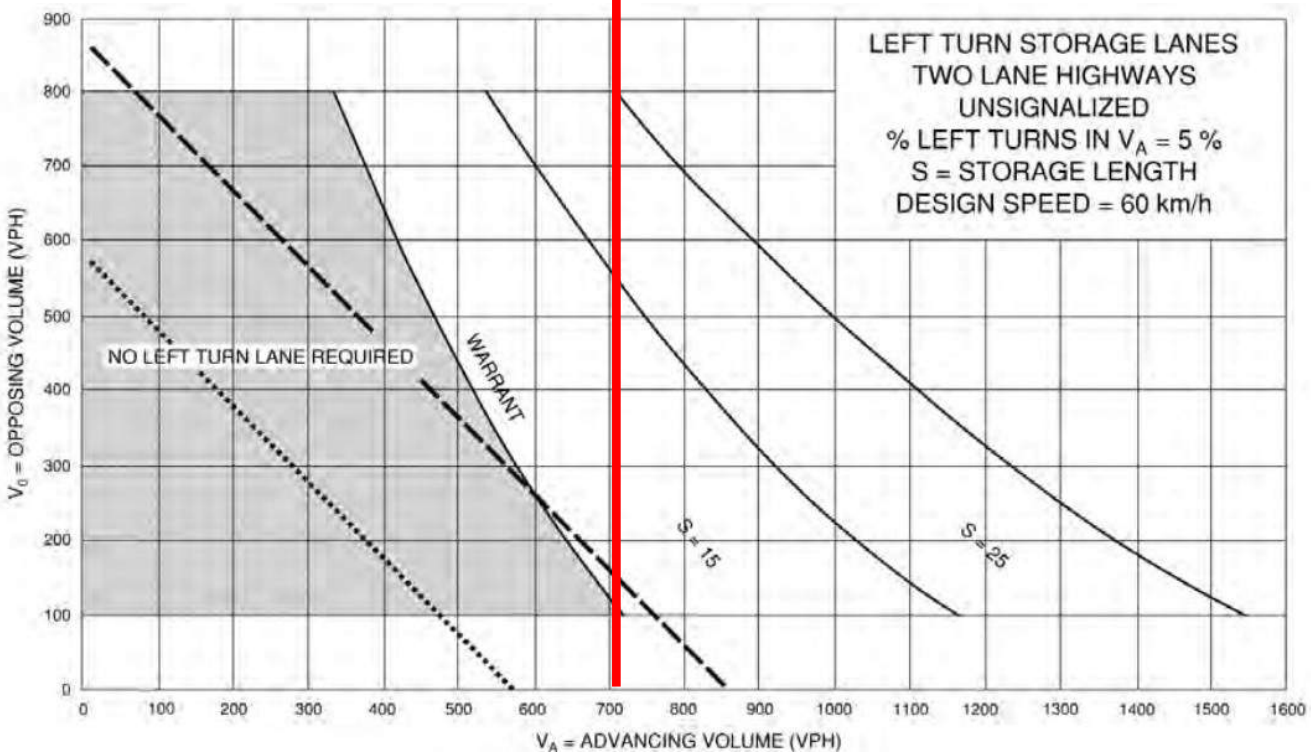


Westbound Left-Turn Lane Warrant

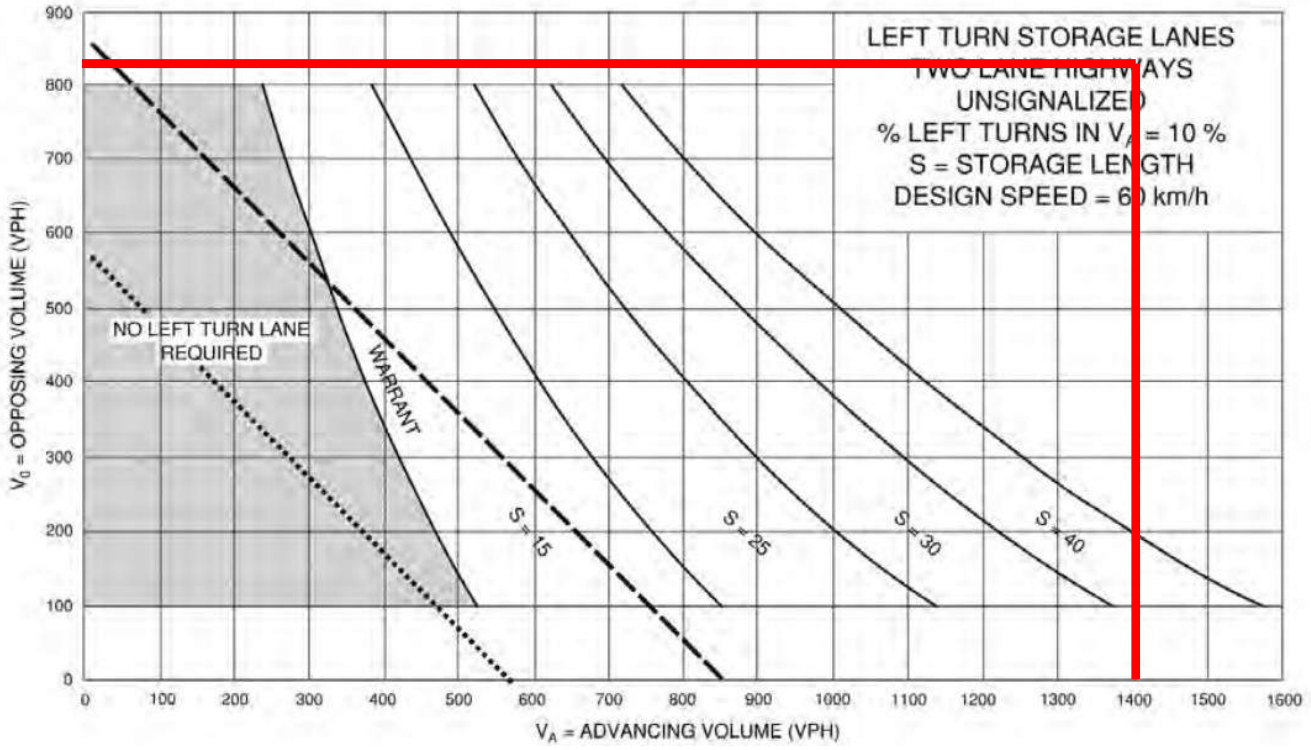
2051 Future Total Horizon Year

Street A & Duffy's Lane

AM Peak Hour

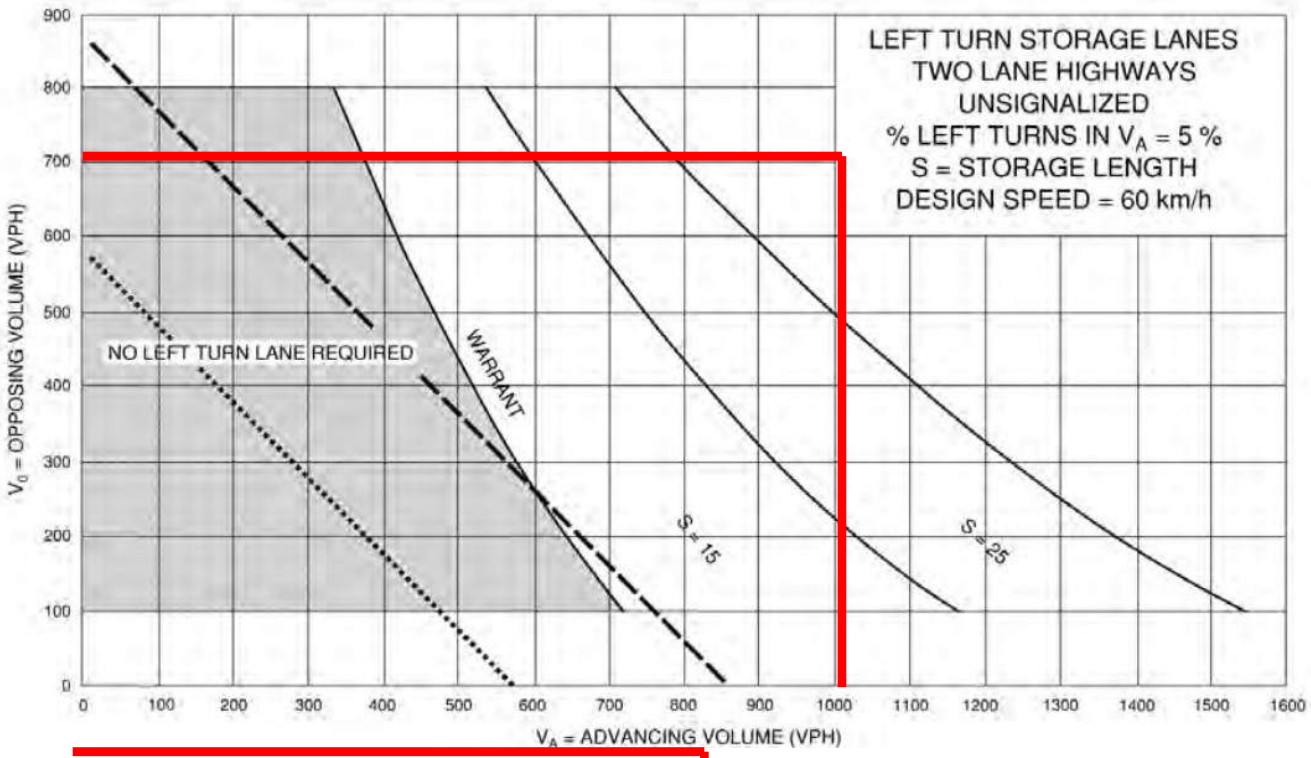


PM Peak Hour

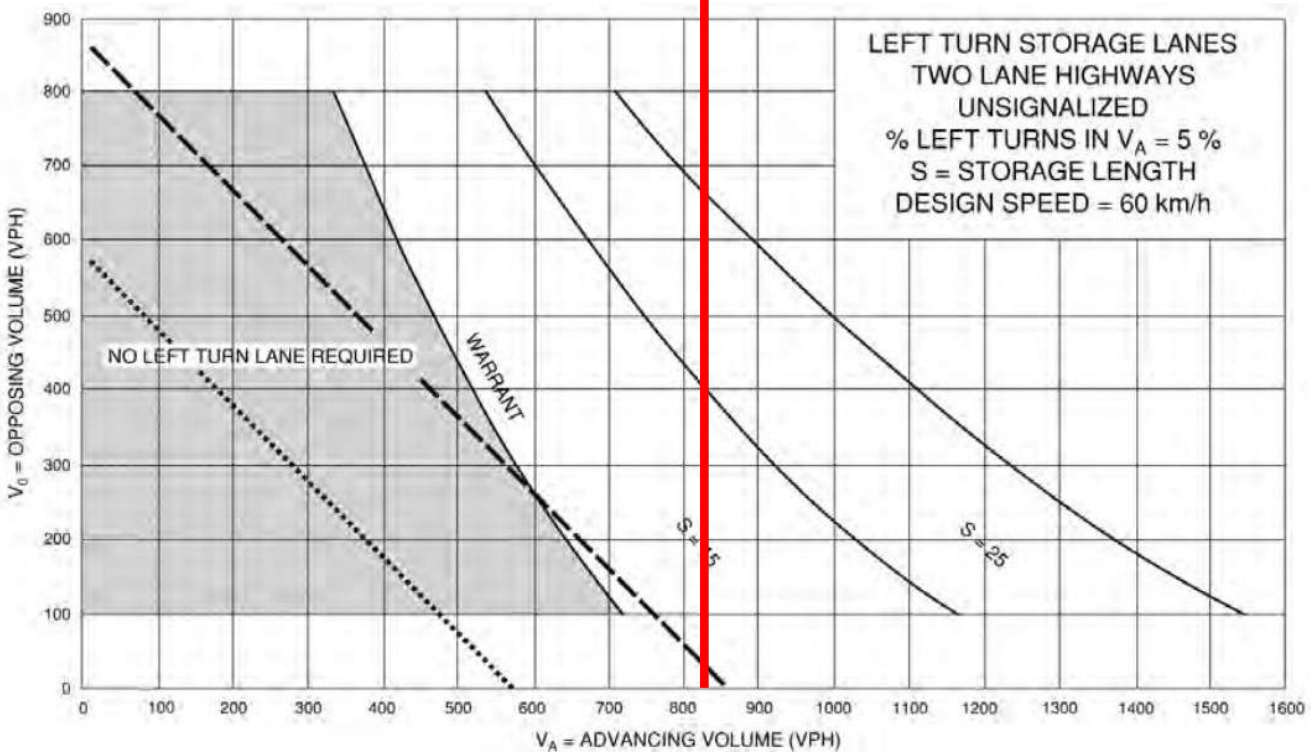


Northbound Left-Turn Lane Warrant
2051 Future Total Horizon Year
Street A & Highway 50

AM Peak Hour



PM Peak Hour

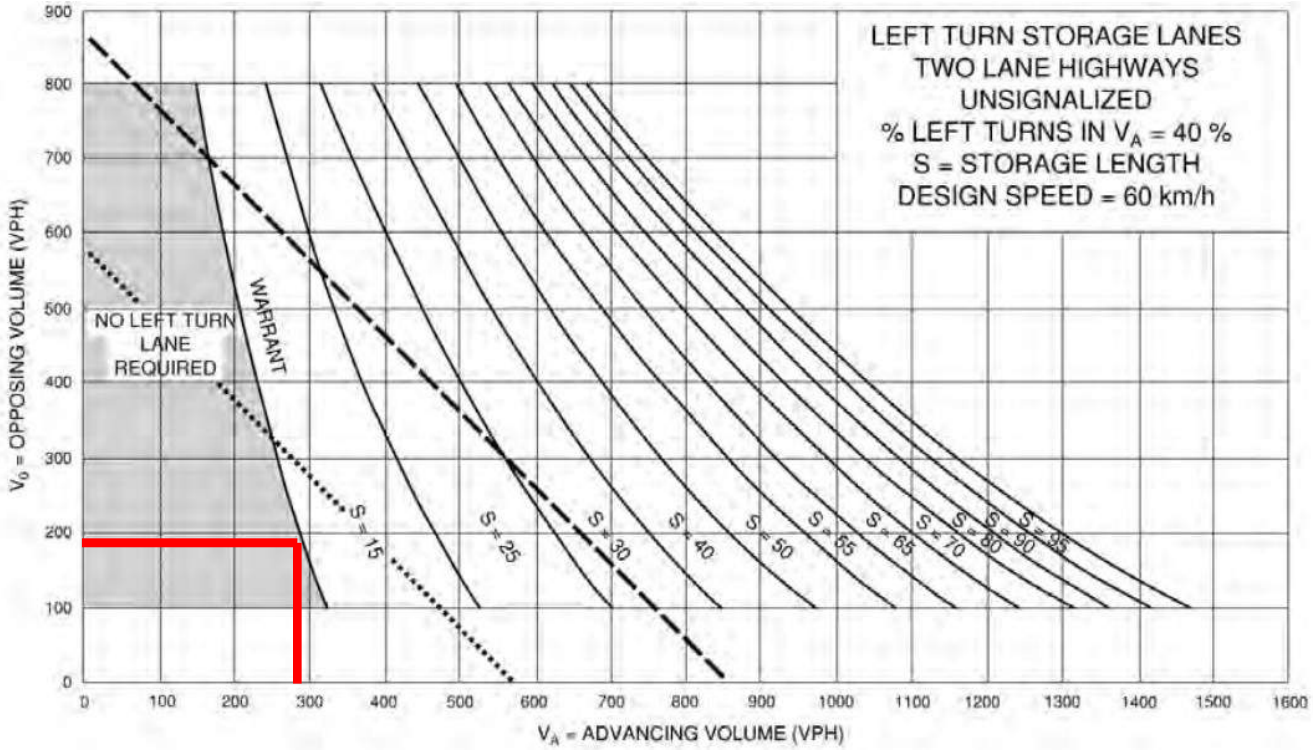


Southbound Left-Turn Lane Warrant

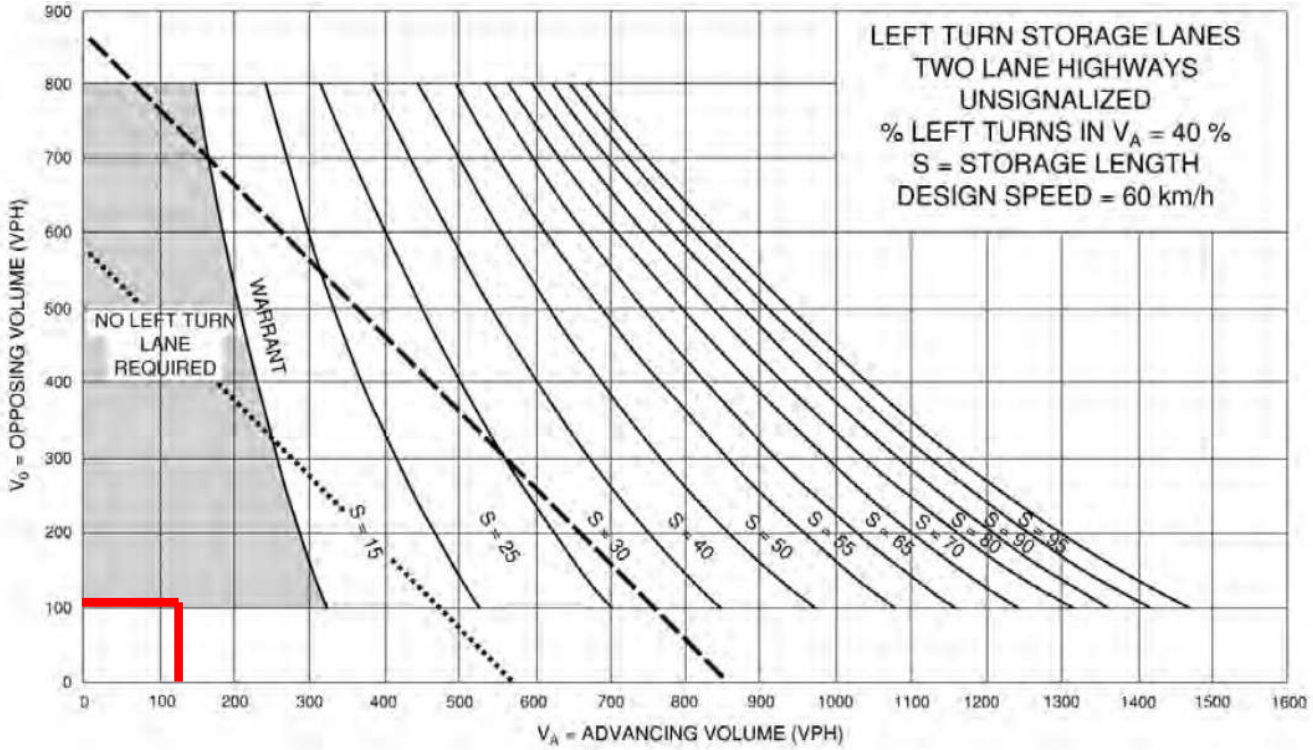
2051 Future Total Horizon Year

Street A & Highway 50

AM Peak Hour



PM Peak Hour

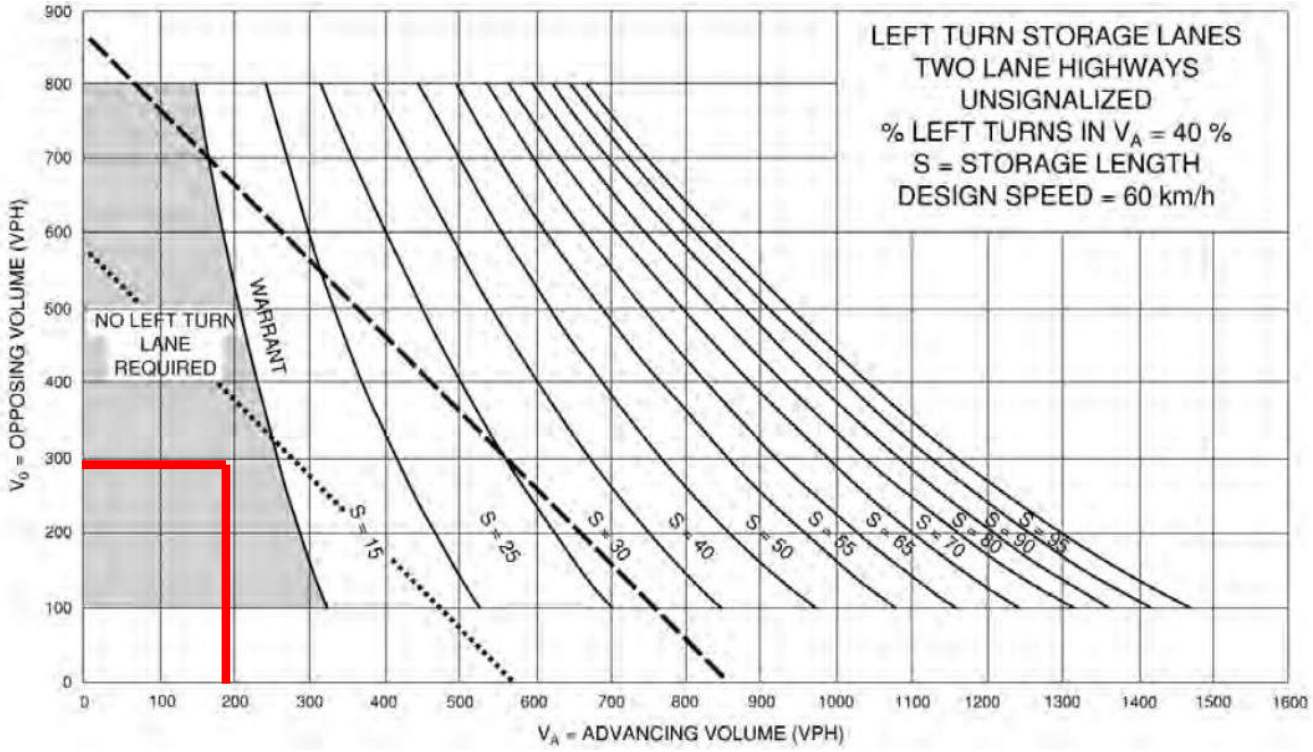


Eastbound Left-Turn Lane Warrant

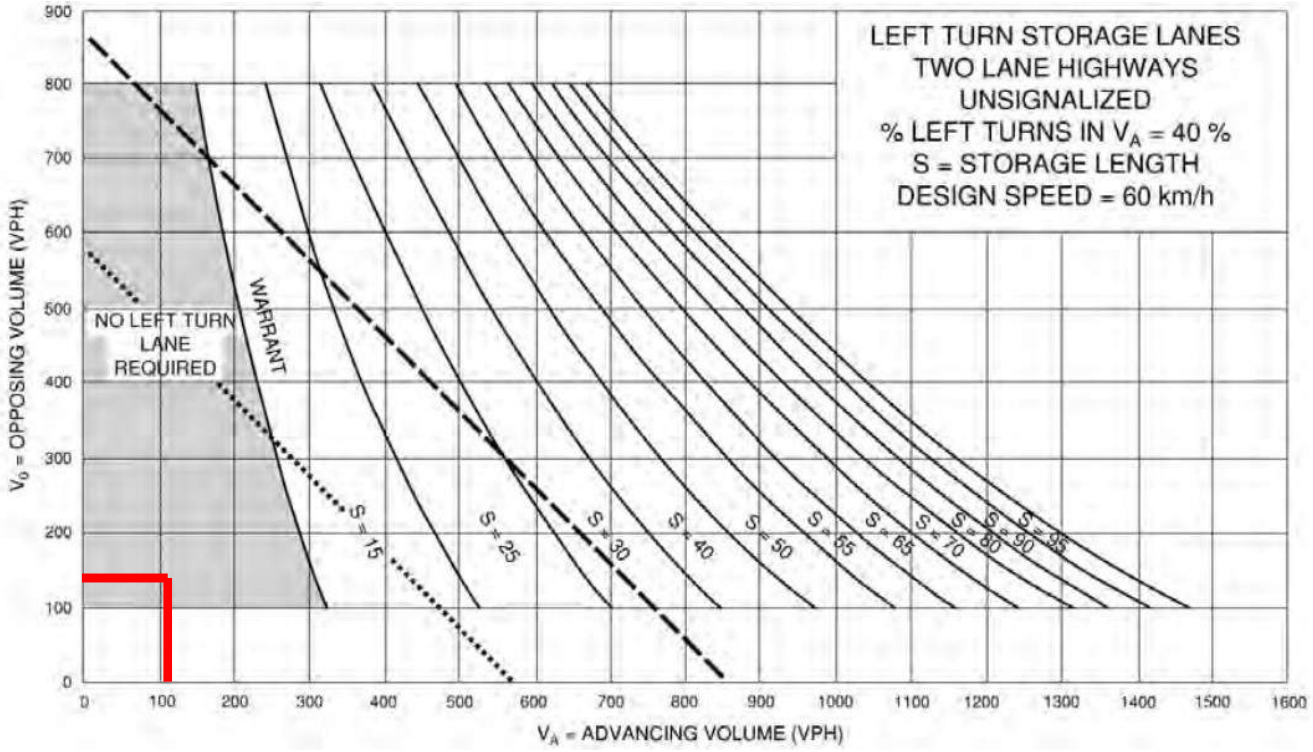
2051 Future Total Horizon Year

Street A & Highway 50

AM Peak Hour



PM Peak Hour

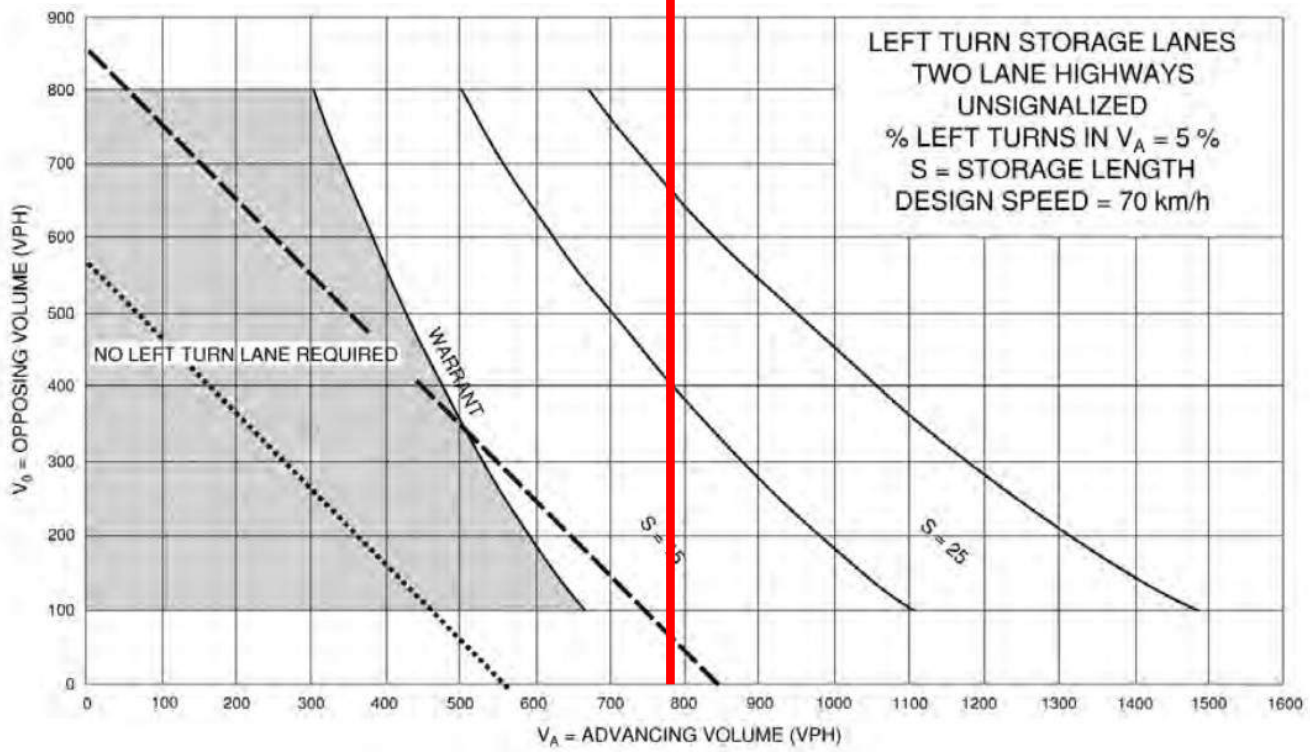


Westbound Left-Turn Lane Warrant

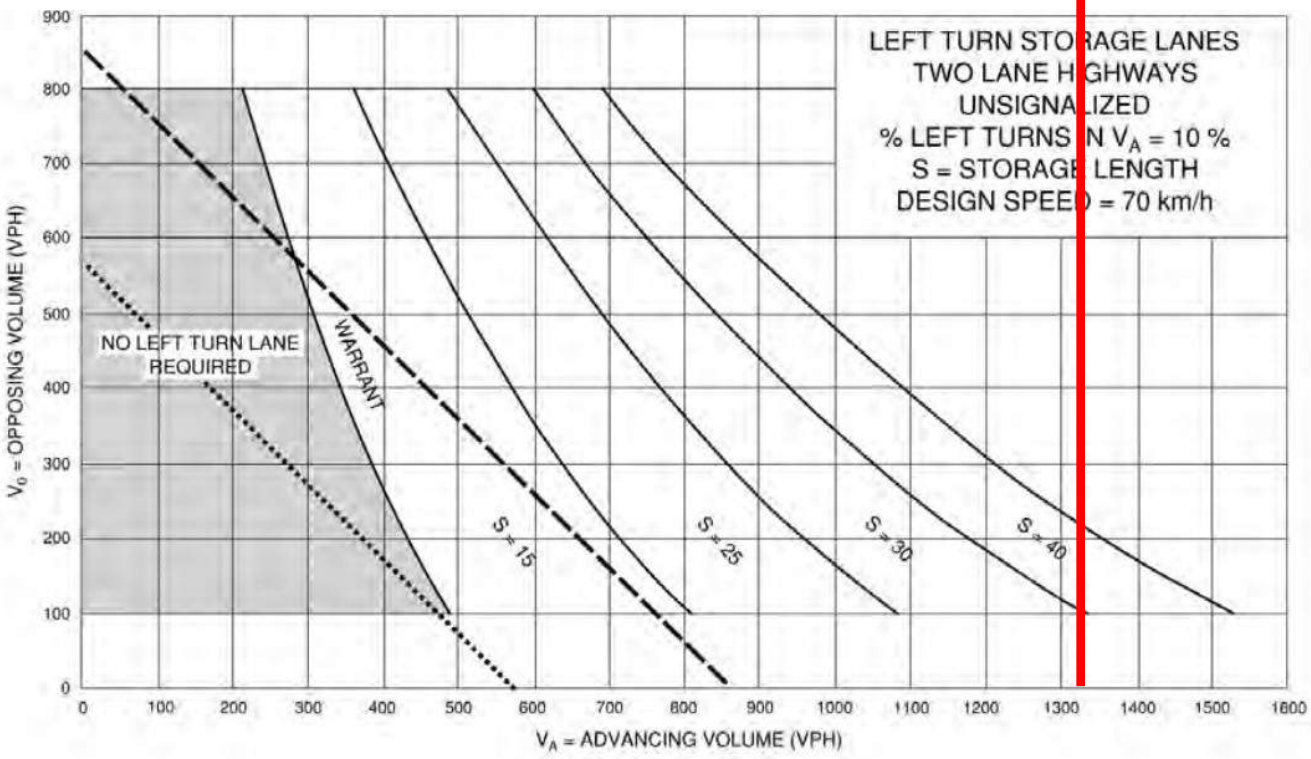
2051 Future Total Horizon Year

Street A & Highway 50

AM Peak Hour



PM Peak Hour

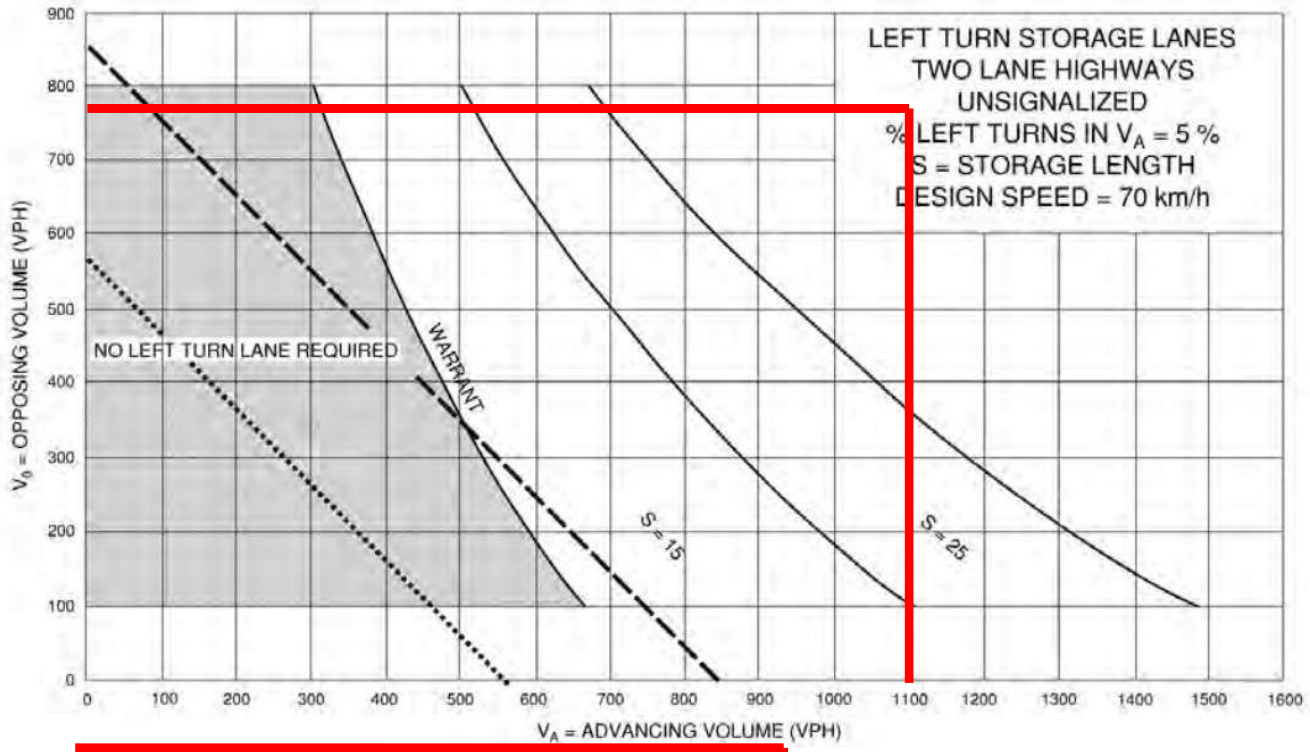


Northbound Left-Turn Lane Warrant

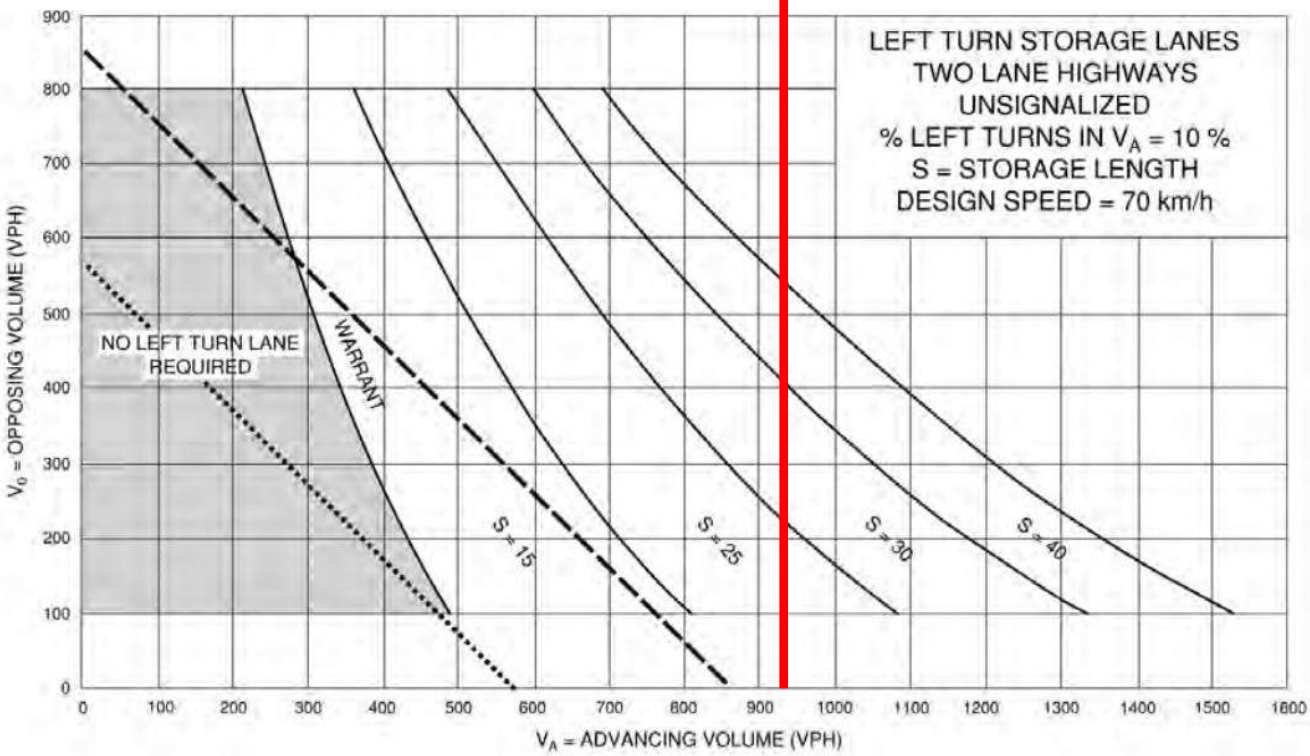
2051 Future Total Horizon Year

Street C & Highway 50

AM Peak Hour



PM Peak Hour

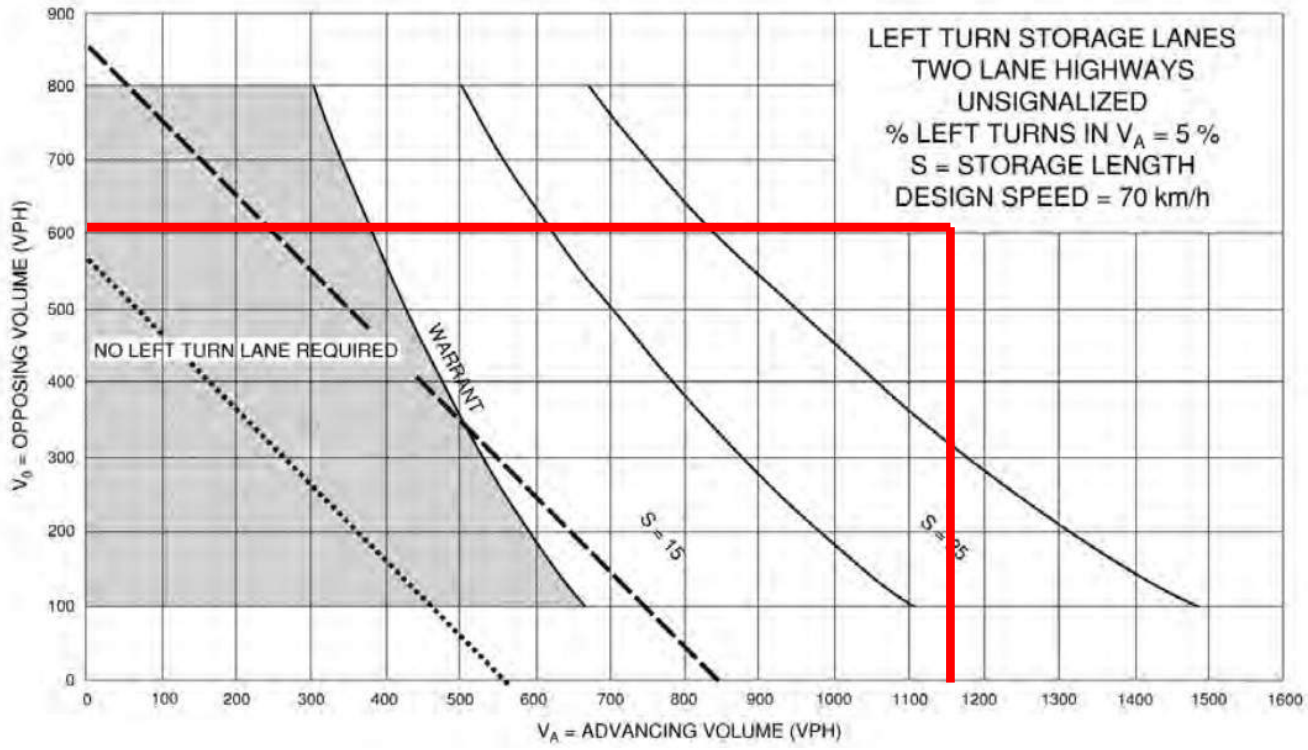


Southbound Left-Turn Lane Warrant

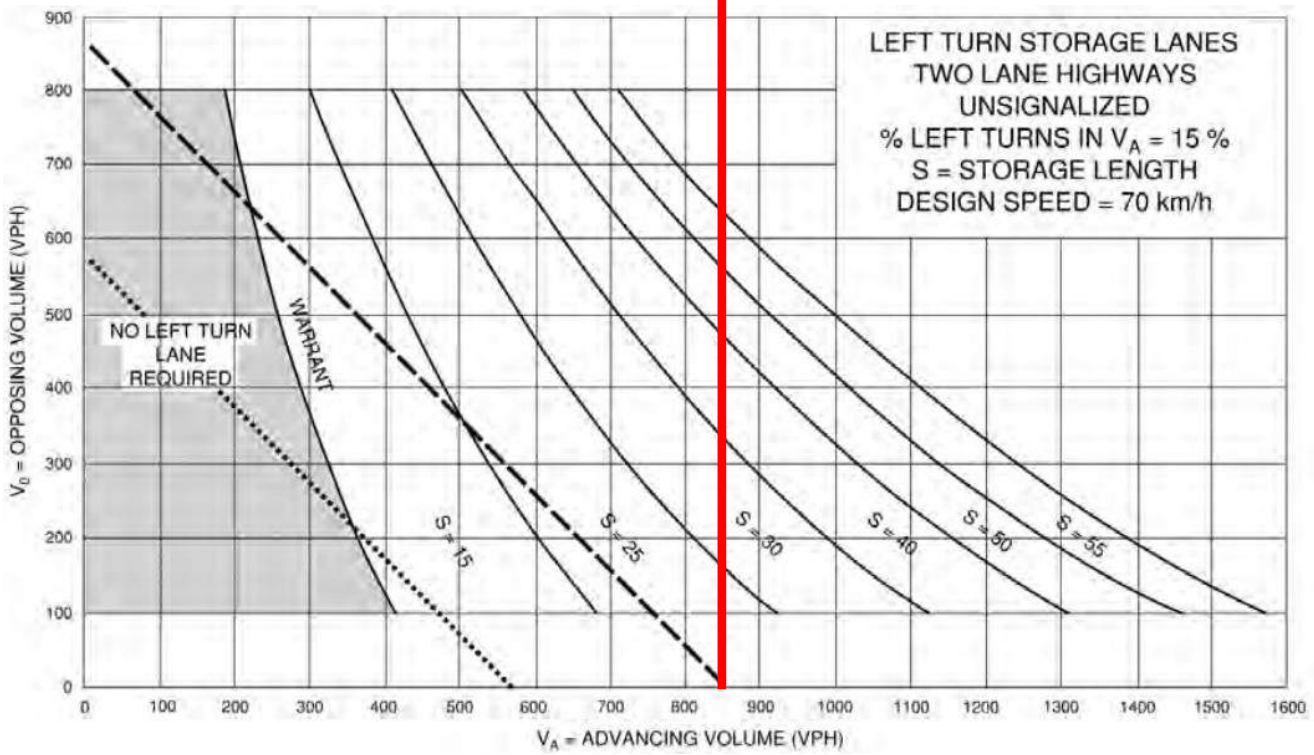
2051 Future Total Horizon Year

Street C & Highway 50

AM Peak Hour

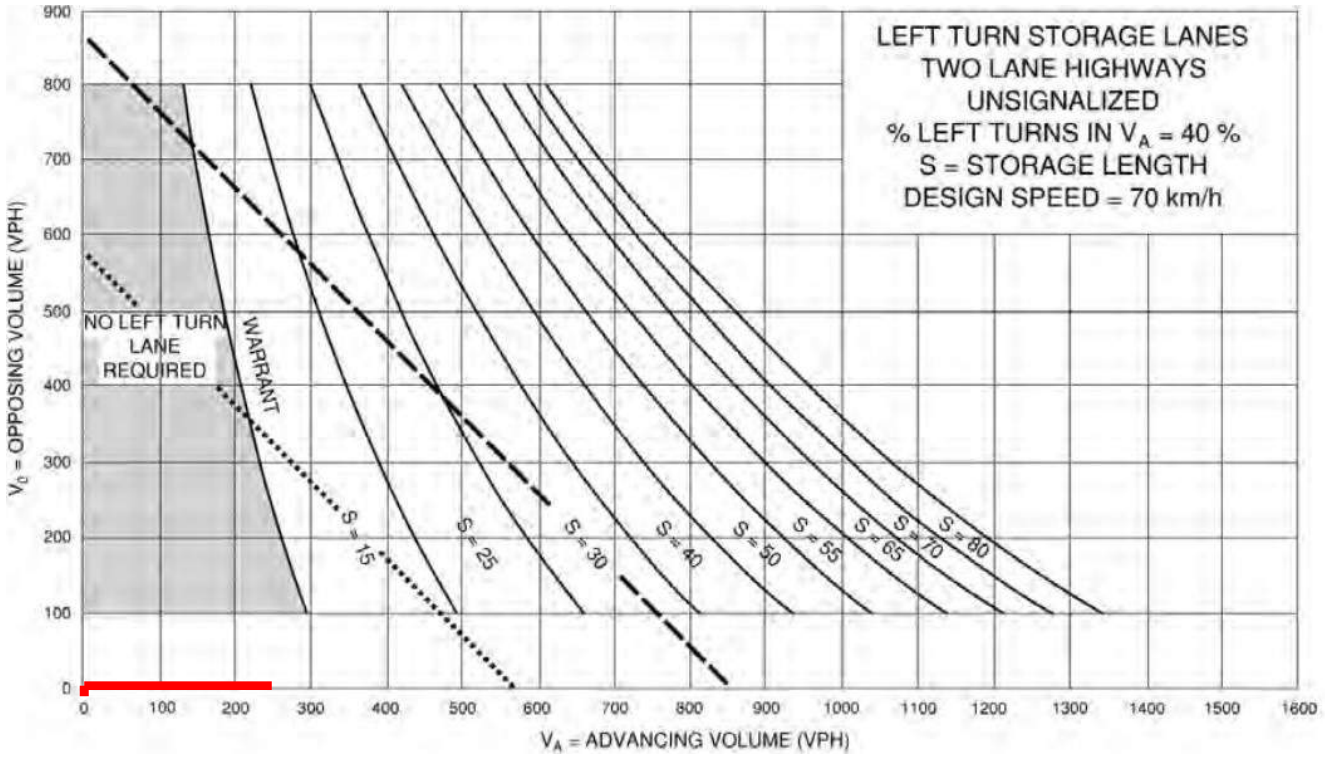


PM Peak Hour

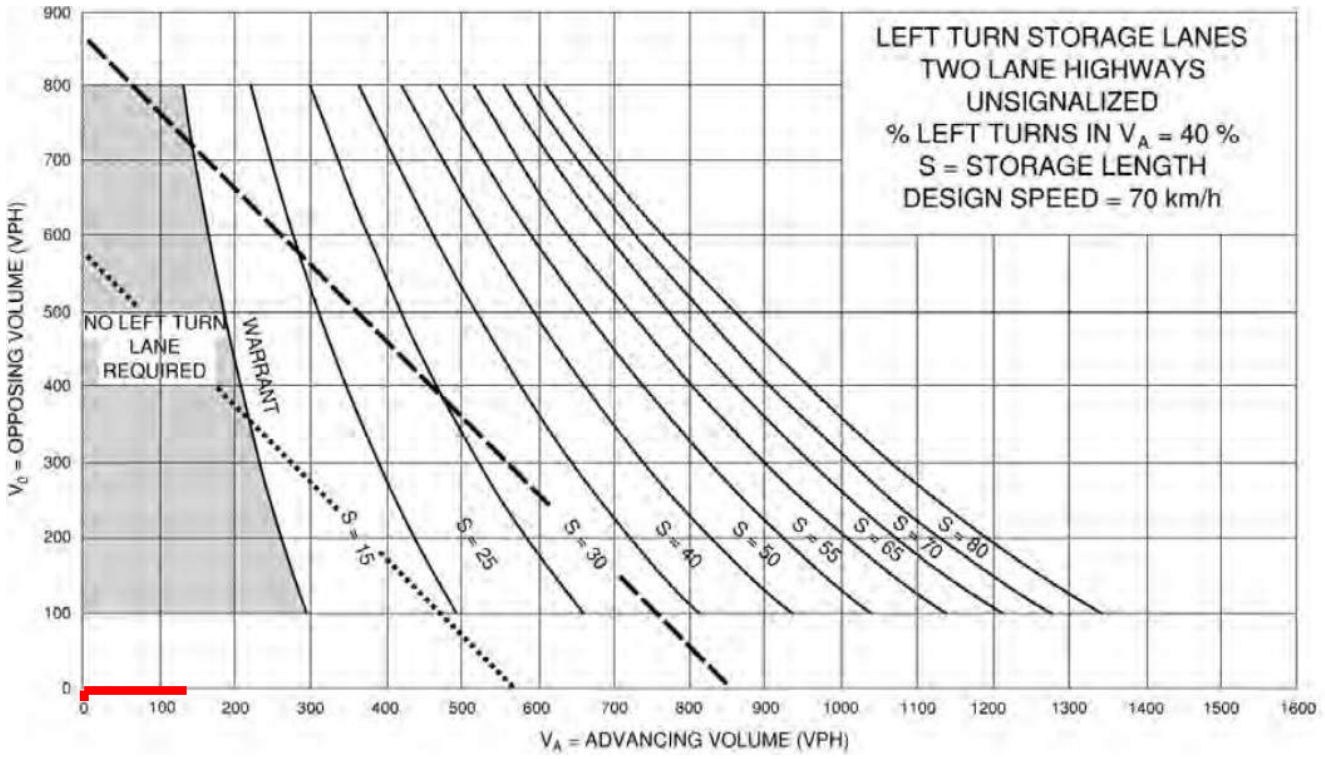


Southbound Left-Turn Lane Warrant
2051 Future Total Horizon Year
Street D & Highway 50

AM Peak Hour



PM Peak Hour

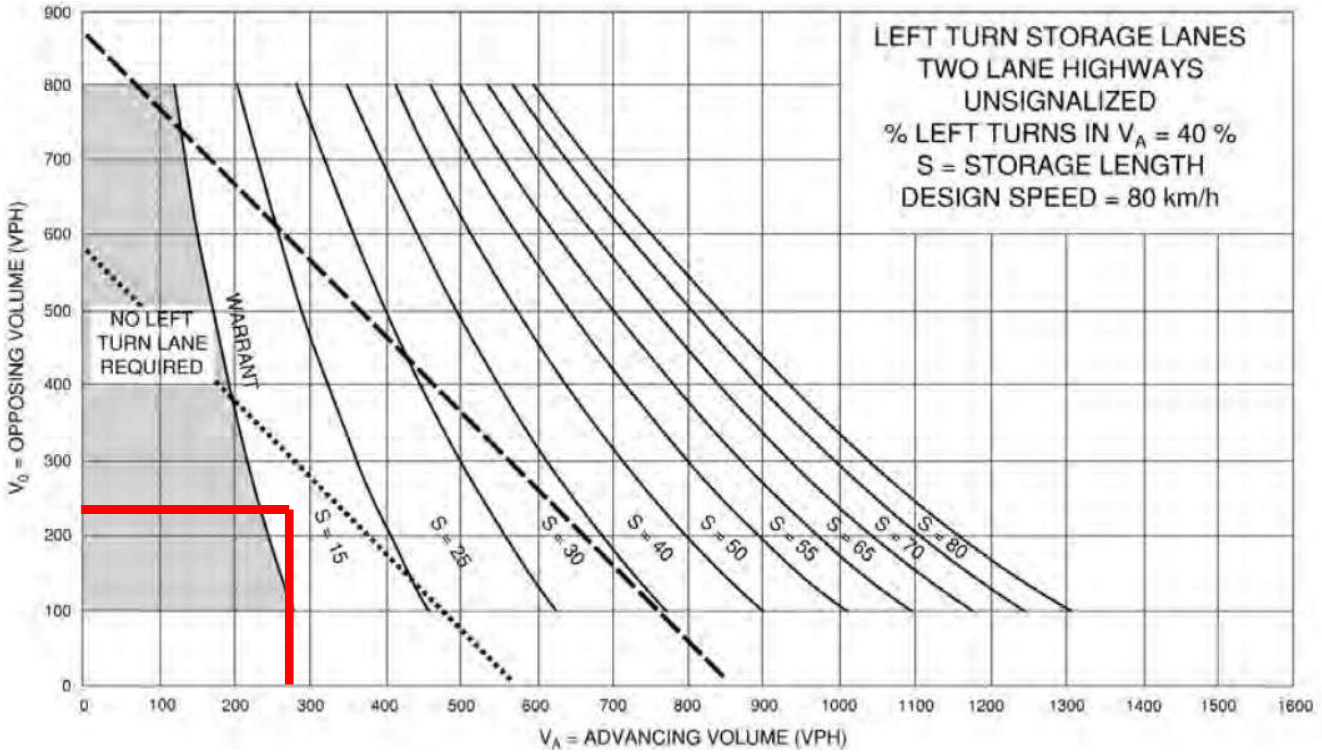


Westbound Left-Turn Lane Warrant

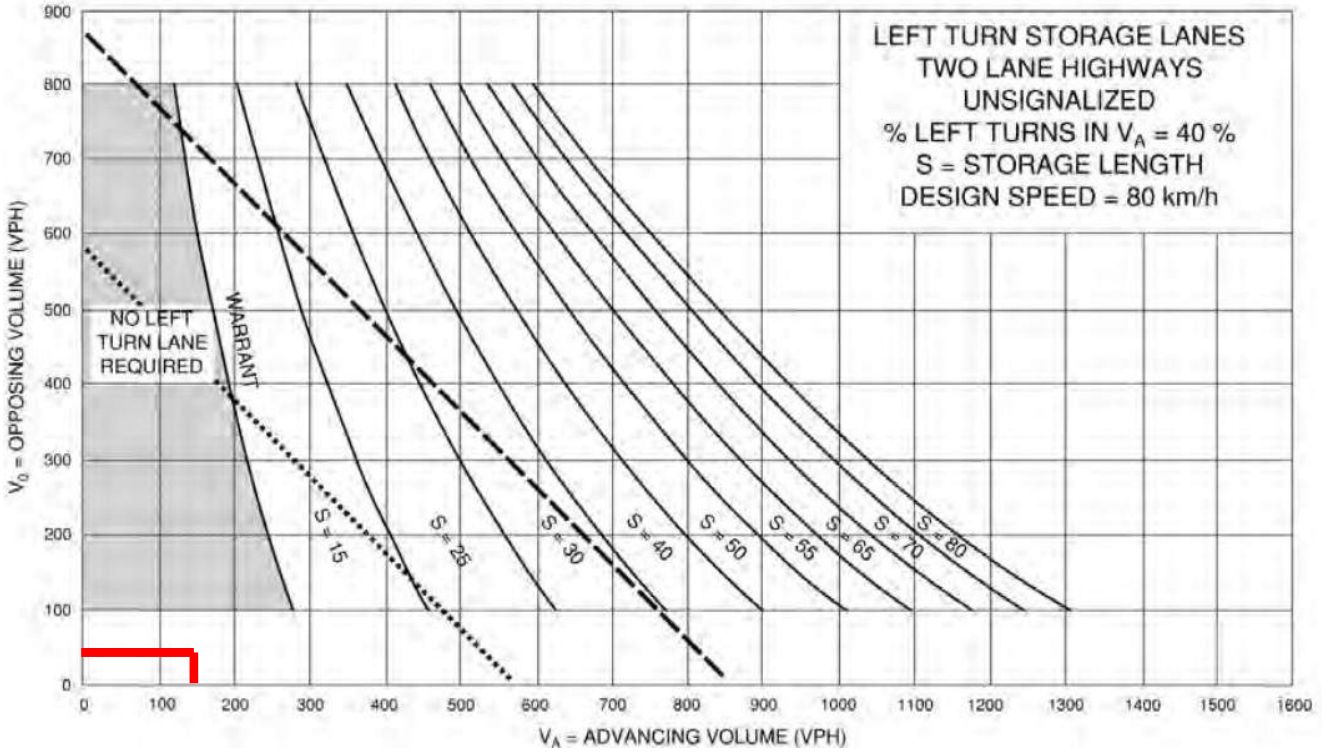
2051 Future Total Horizon Year

Street D & Highway 50

AM Peak Hour



PM Peak Hour

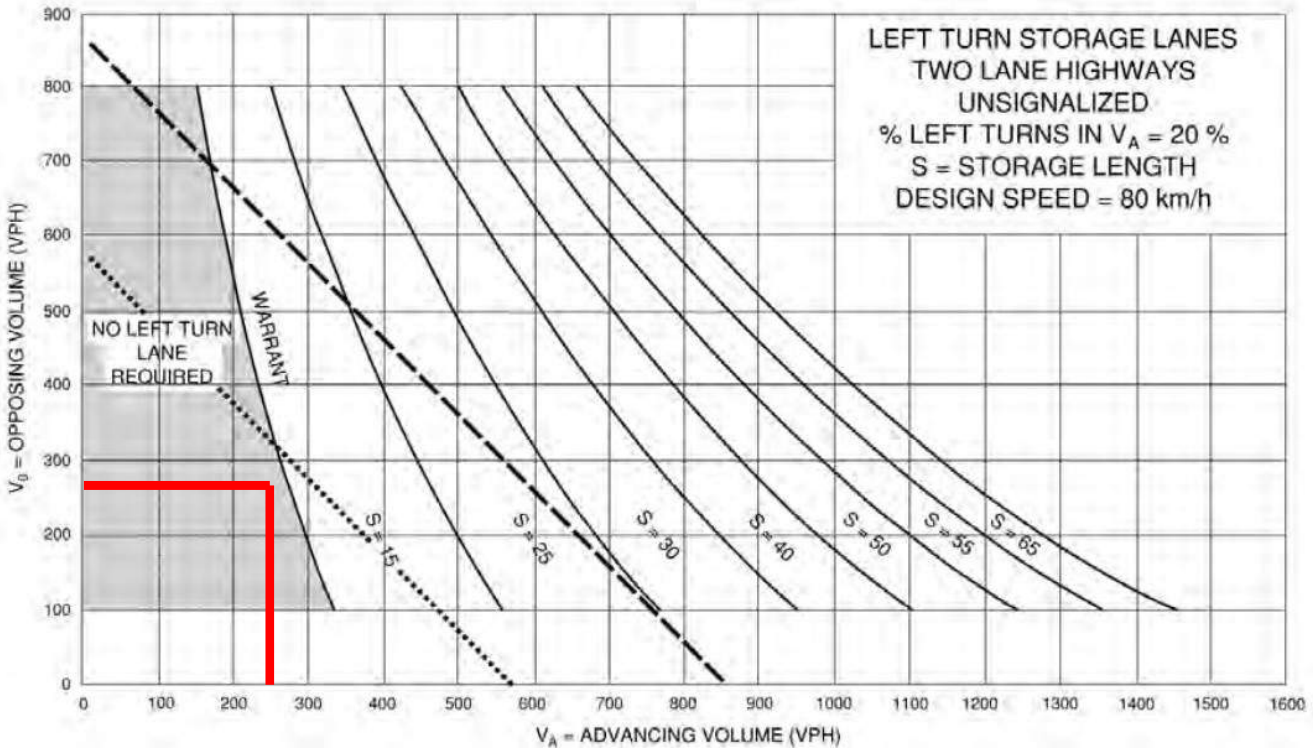


Northbound Left-Turn Lane Warrant

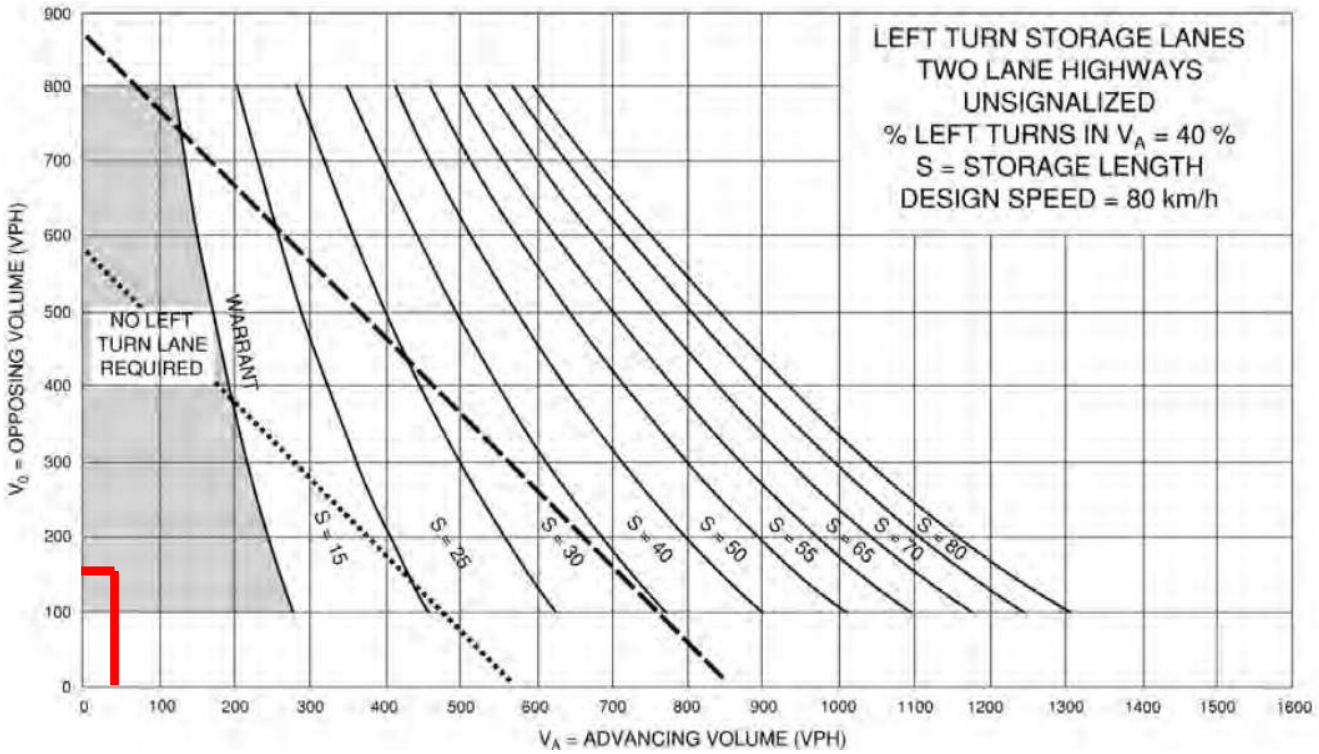
2051 Future Total Horizon Year

Street E & Emil Kolb Parkway

AM Peak Hour



PM Peak Hour

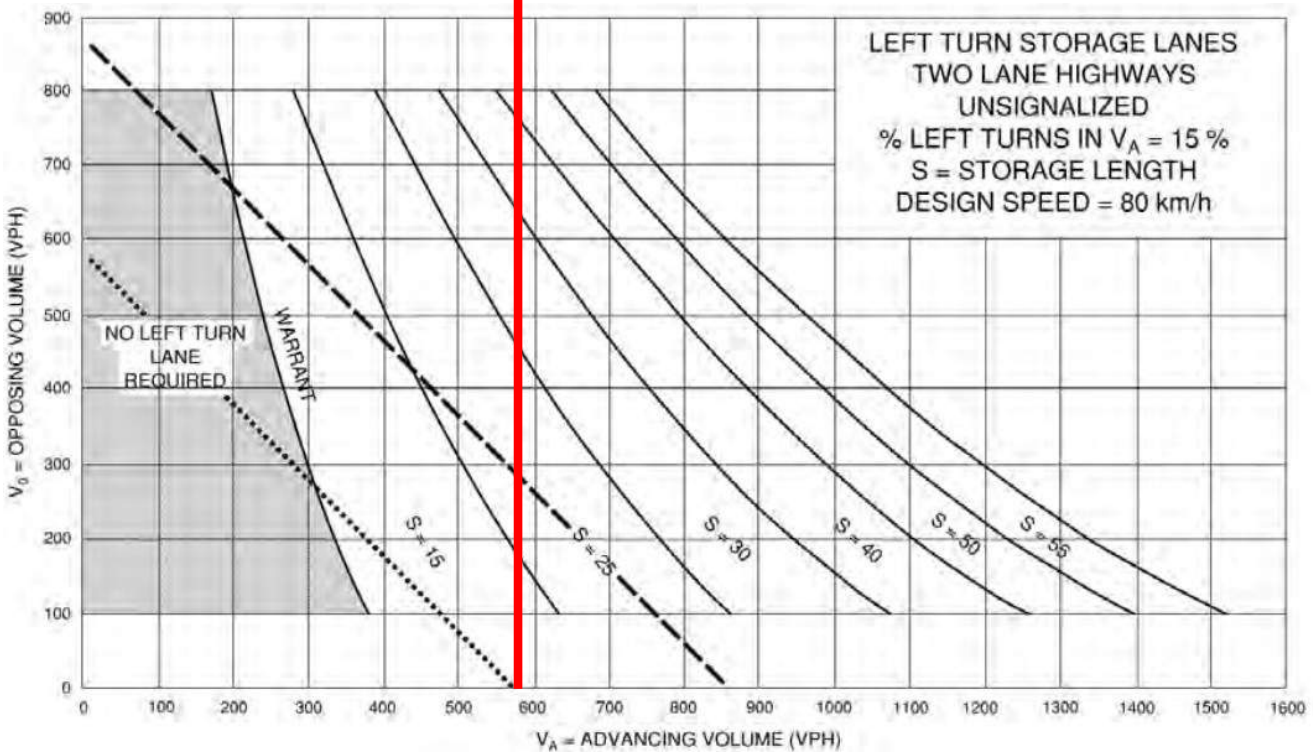


Southbound Left-Turn Lane Warrant

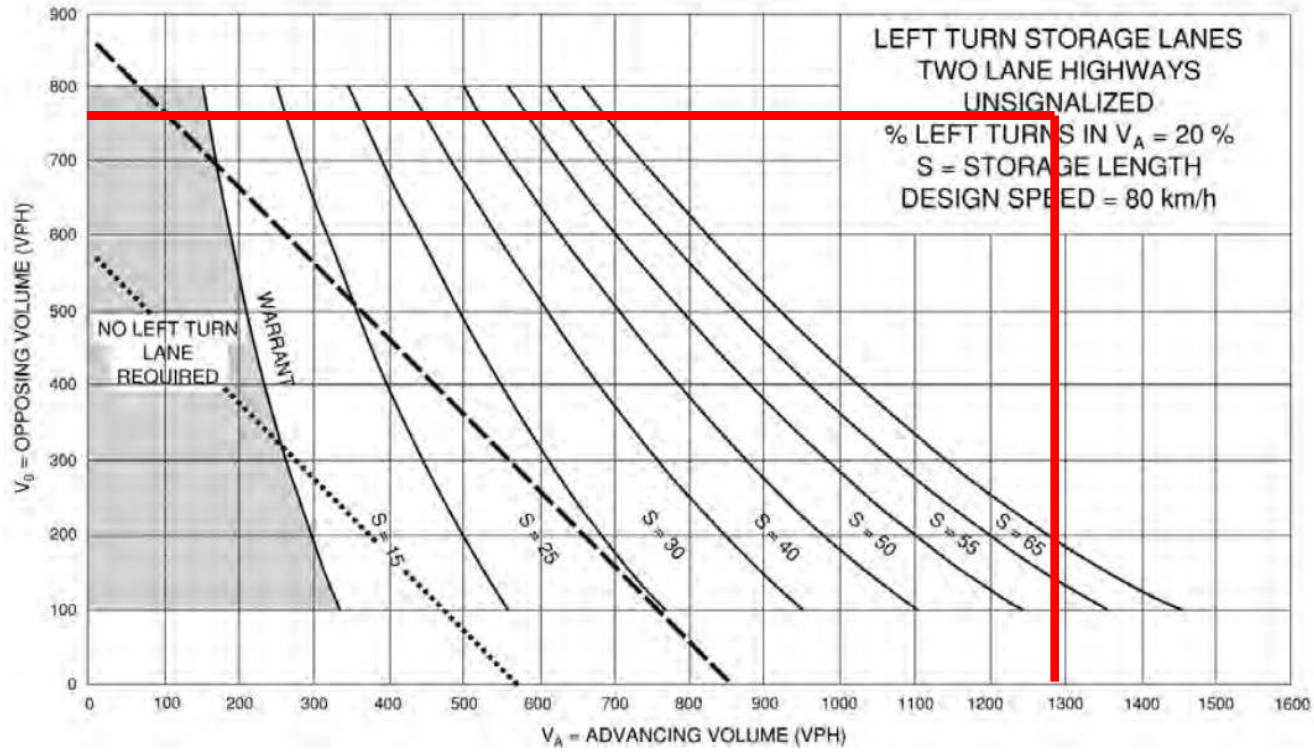
2051 Future Total Horizon Year

Street E & Emil Kolb Parkway

AM Peak Hour

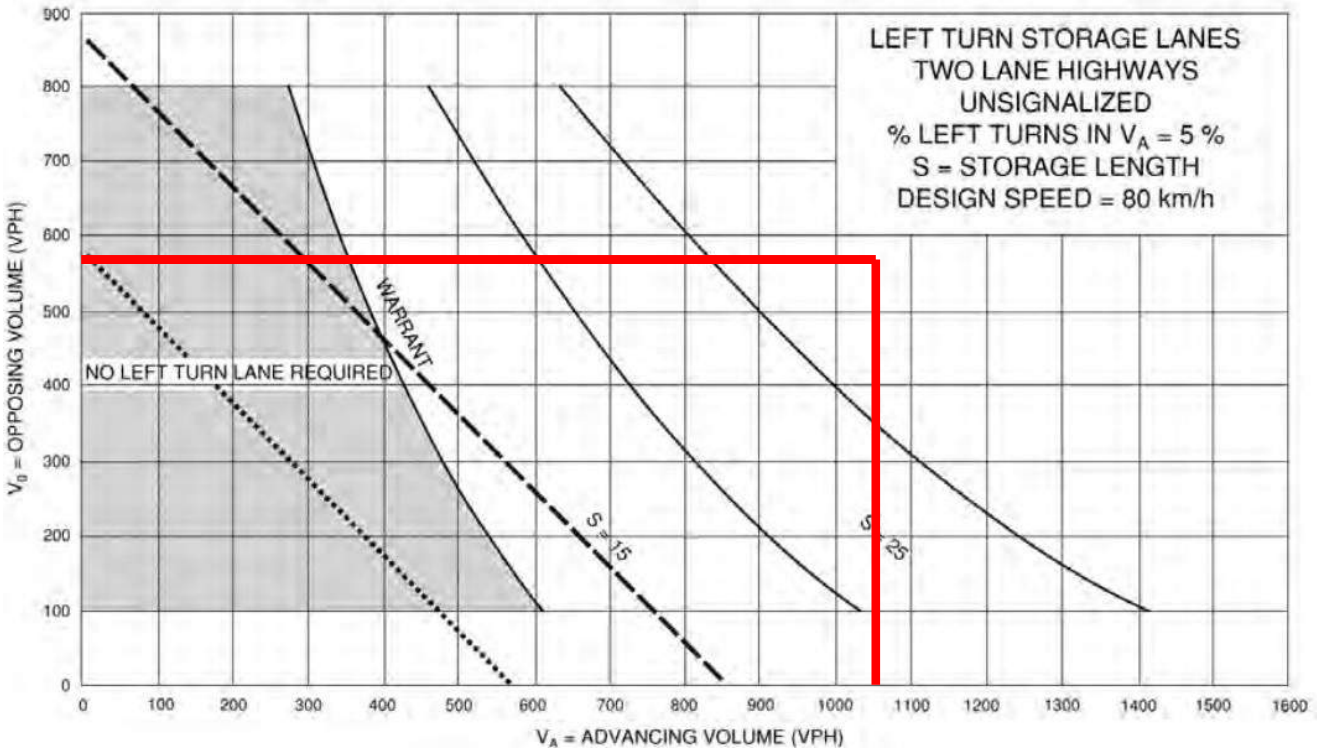


PM Peak Hour

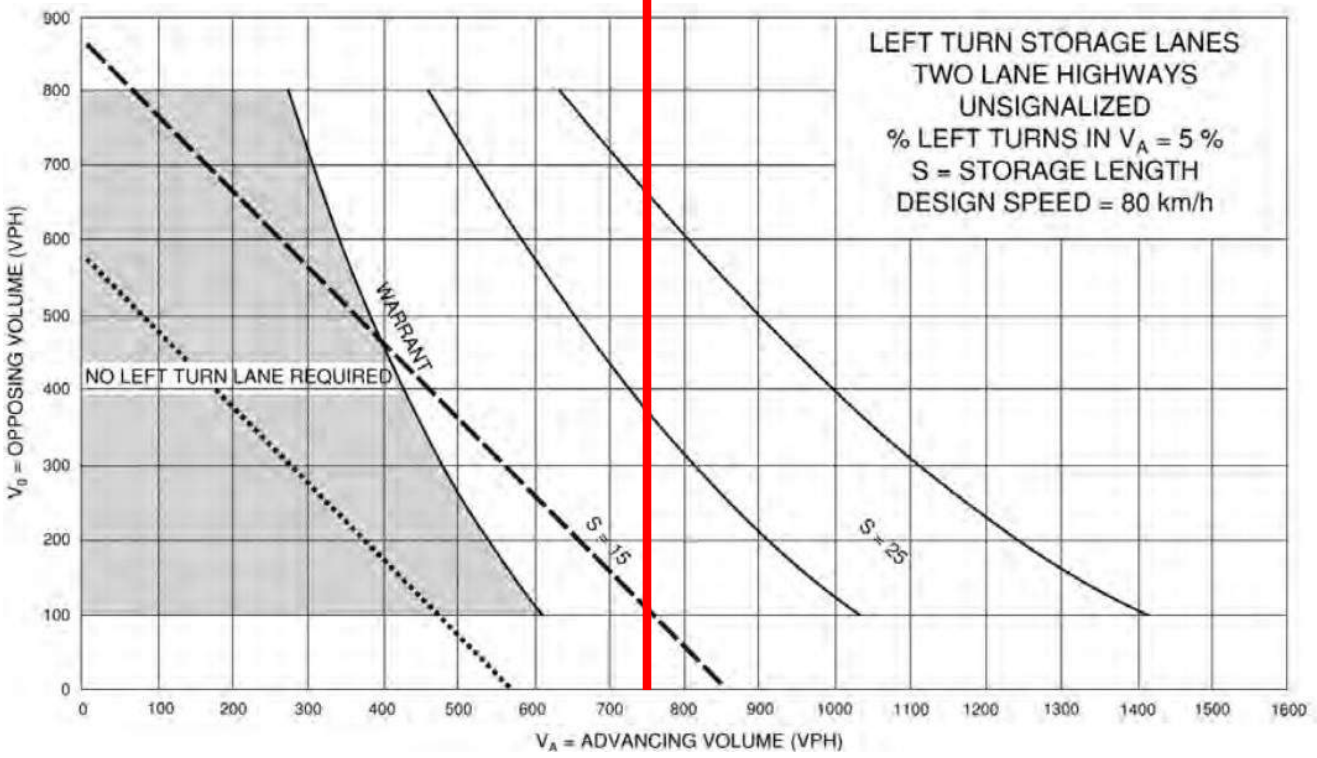


Eastbound Left-Turn Lane Warrant
2051 Future Total Horizon Year
Street E & Emil Kolb Parkway

AM Peak Hour



PM Peak Hour

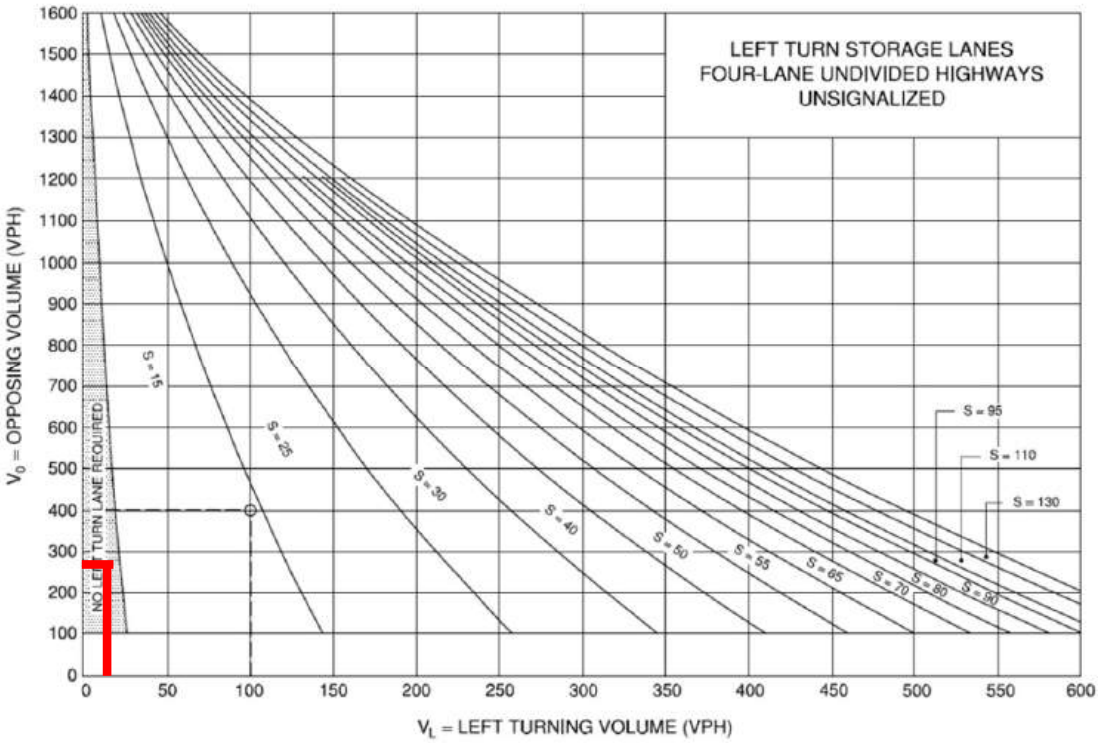


Westbound Left-Turn Lane Warrant

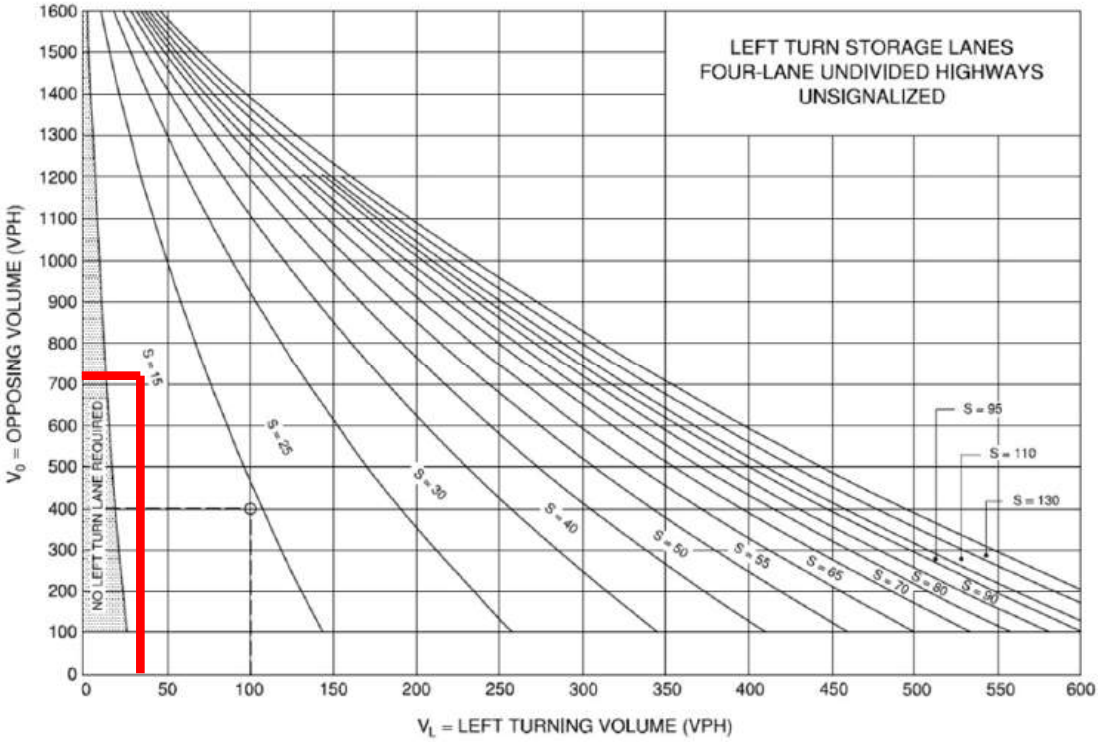
2051 Future Total Horizon Year

Street E & Emil Kolb Parkway

AM Peak Hour



PM Peak Hour

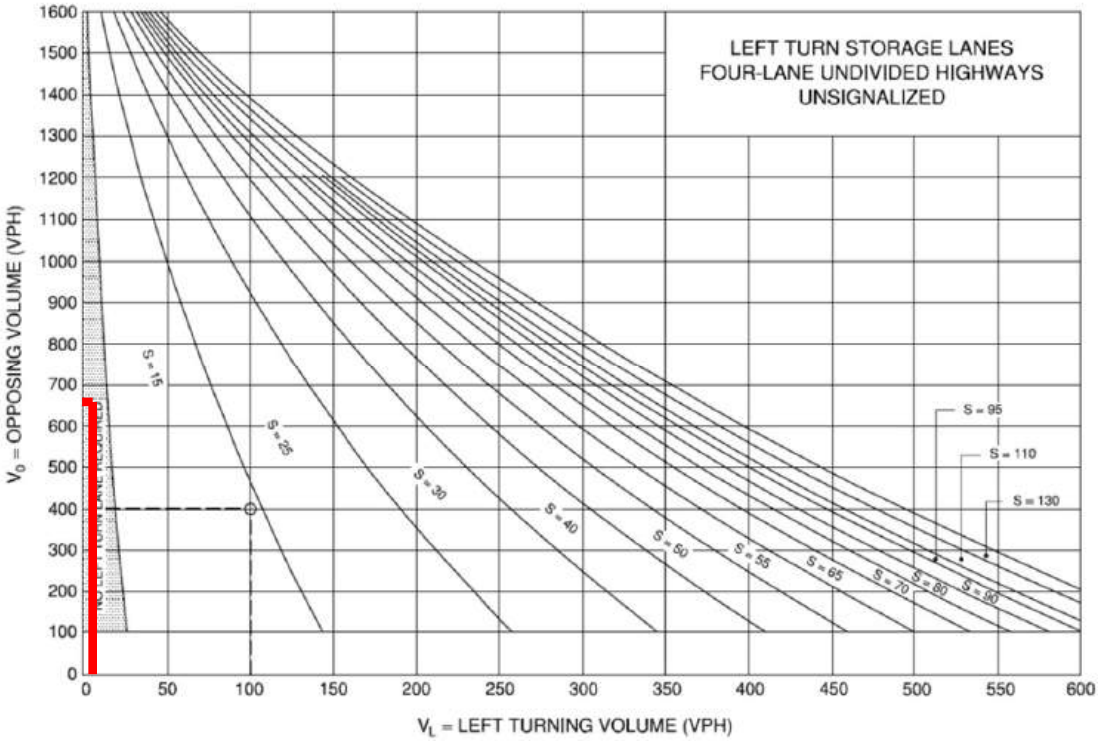


Eastbound Left-Turn Lane Warrant

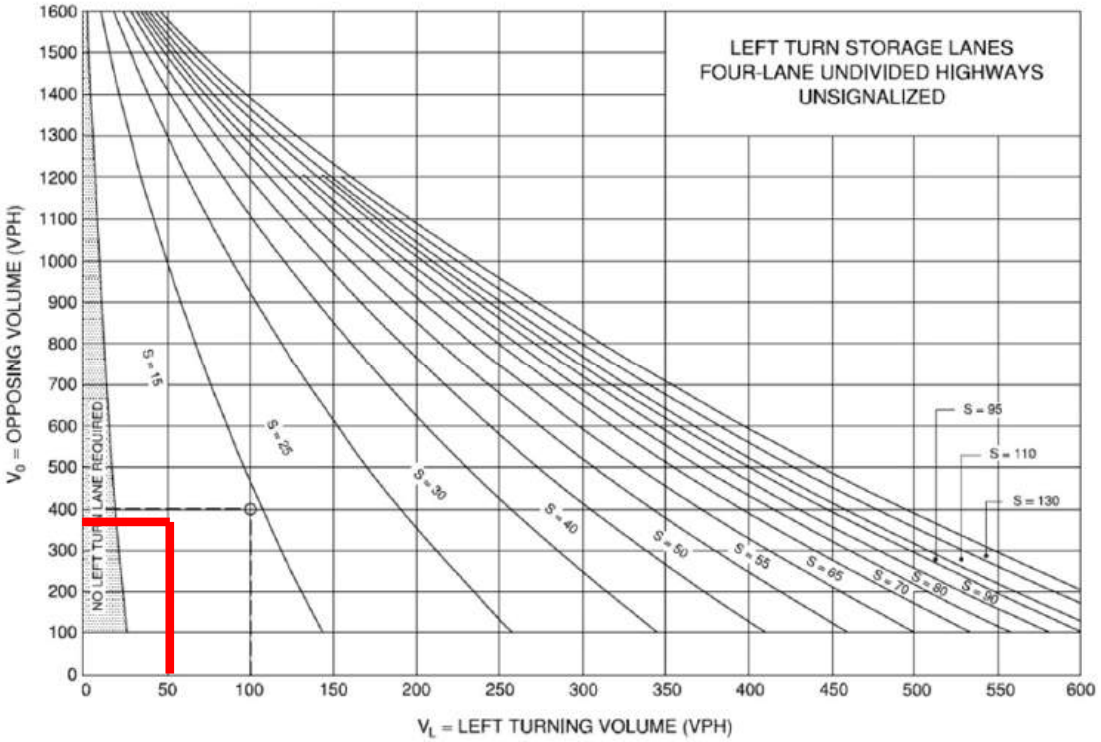
2051 Future Total Horizon Year

Street I & Columbia Way

AM Peak Hour

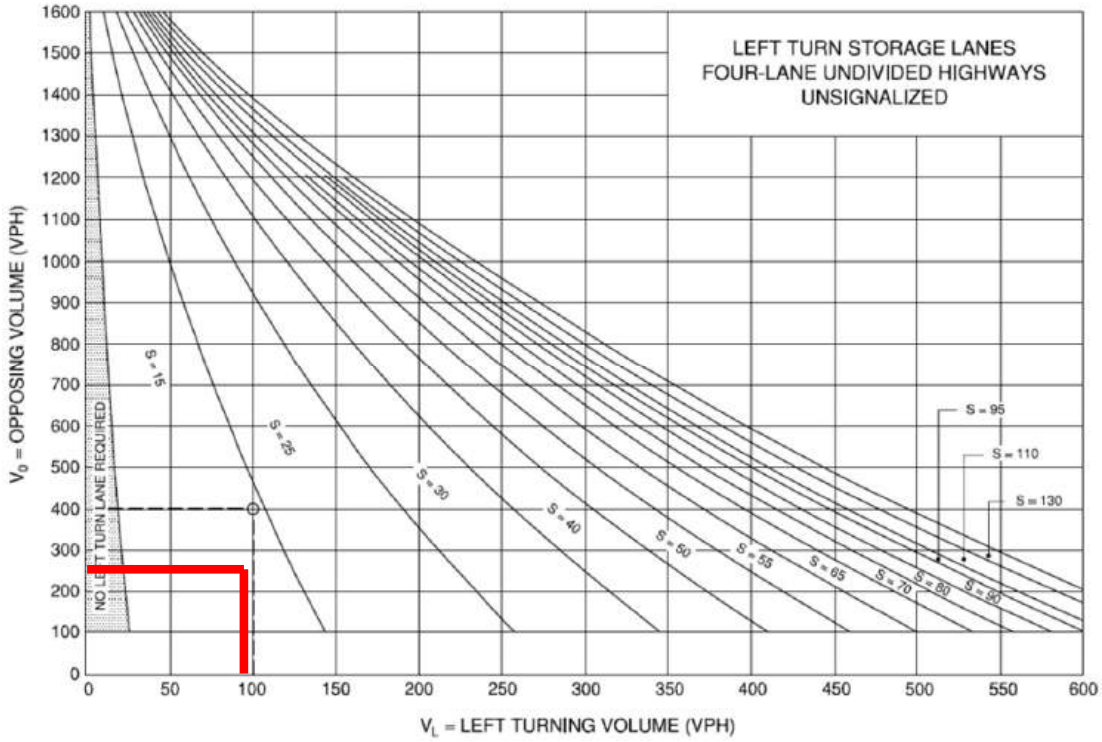


PM Peak Hour

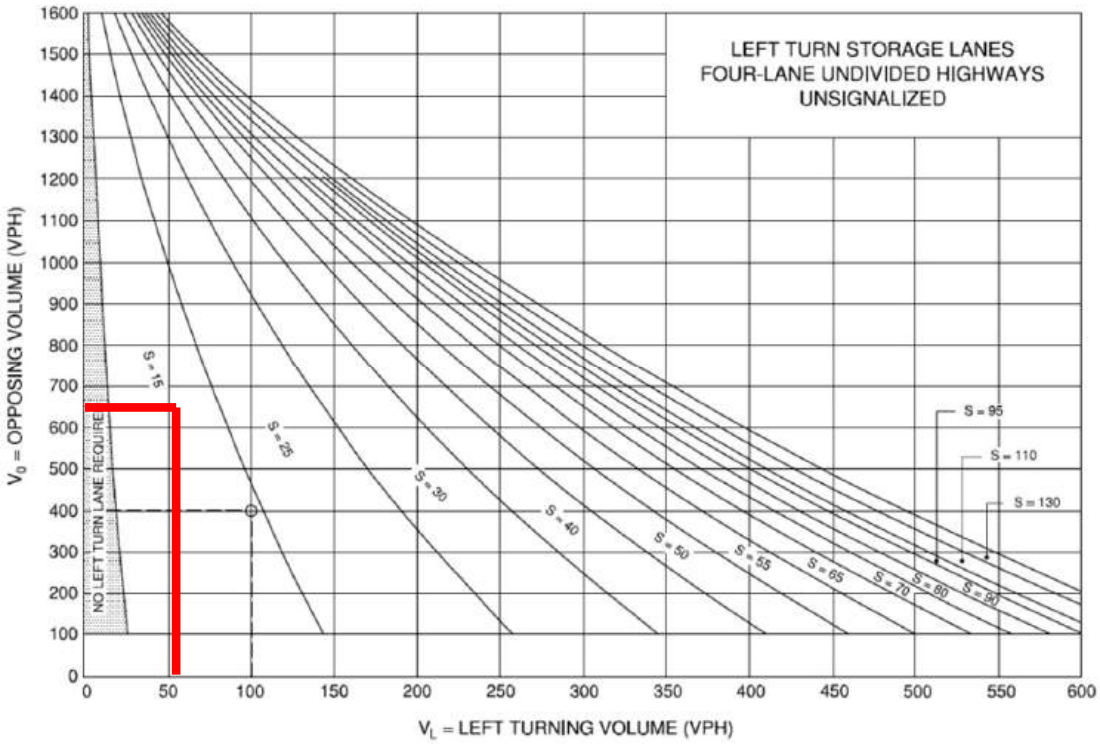


Westbound Left-Turn Lane Warrant
2051 Future Total Horizon Year
Street I & Columbia Way

AM Peak Hour



PM Peak Hour

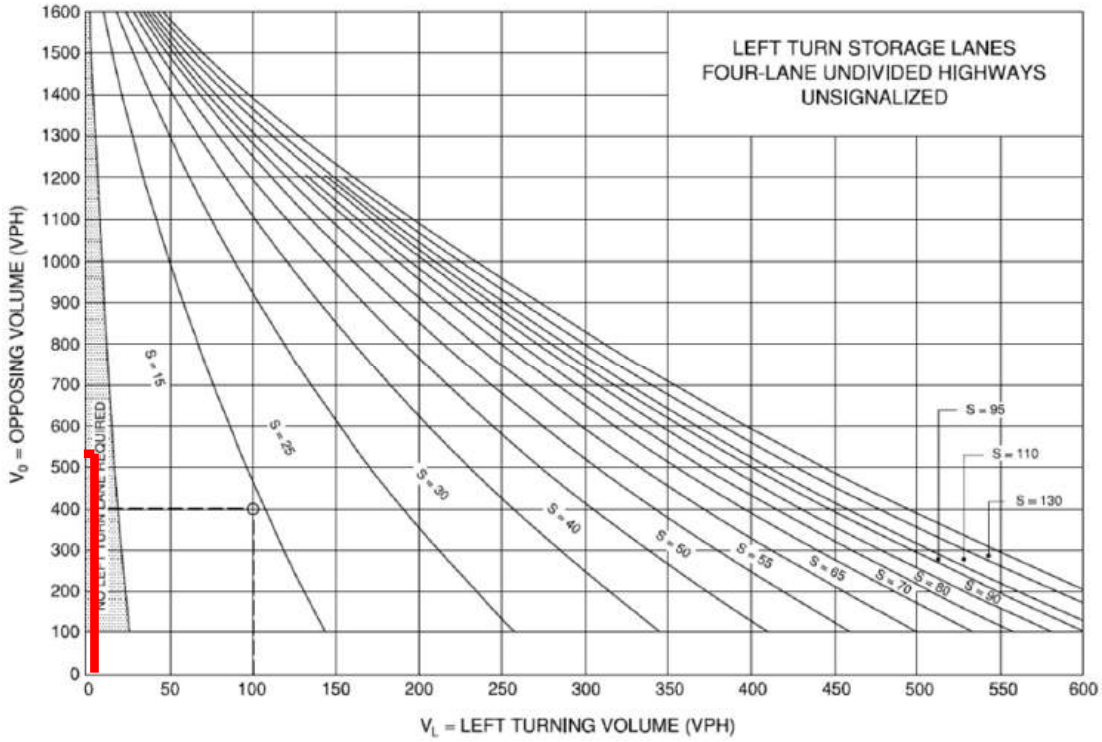


Eastbound Left-Turn Lane Warrant

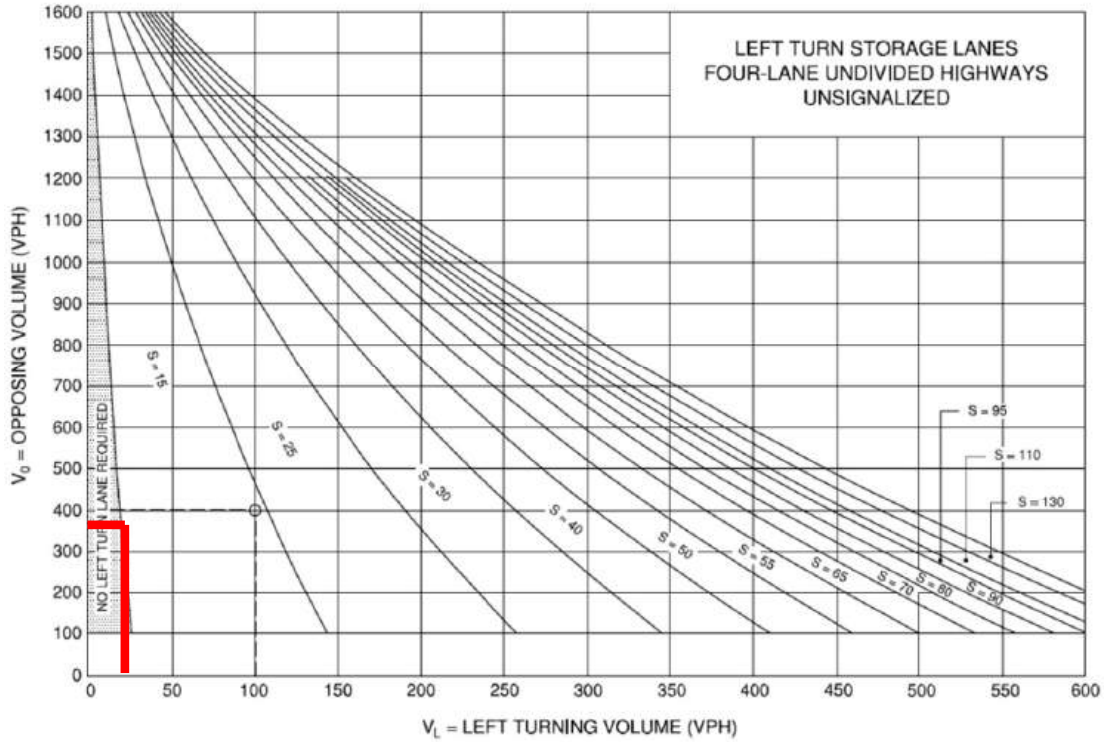
2041 Future Total Horizon Year

Mount Hope Road & Columbia Way

AM Peak Hour



PM Peak Hour

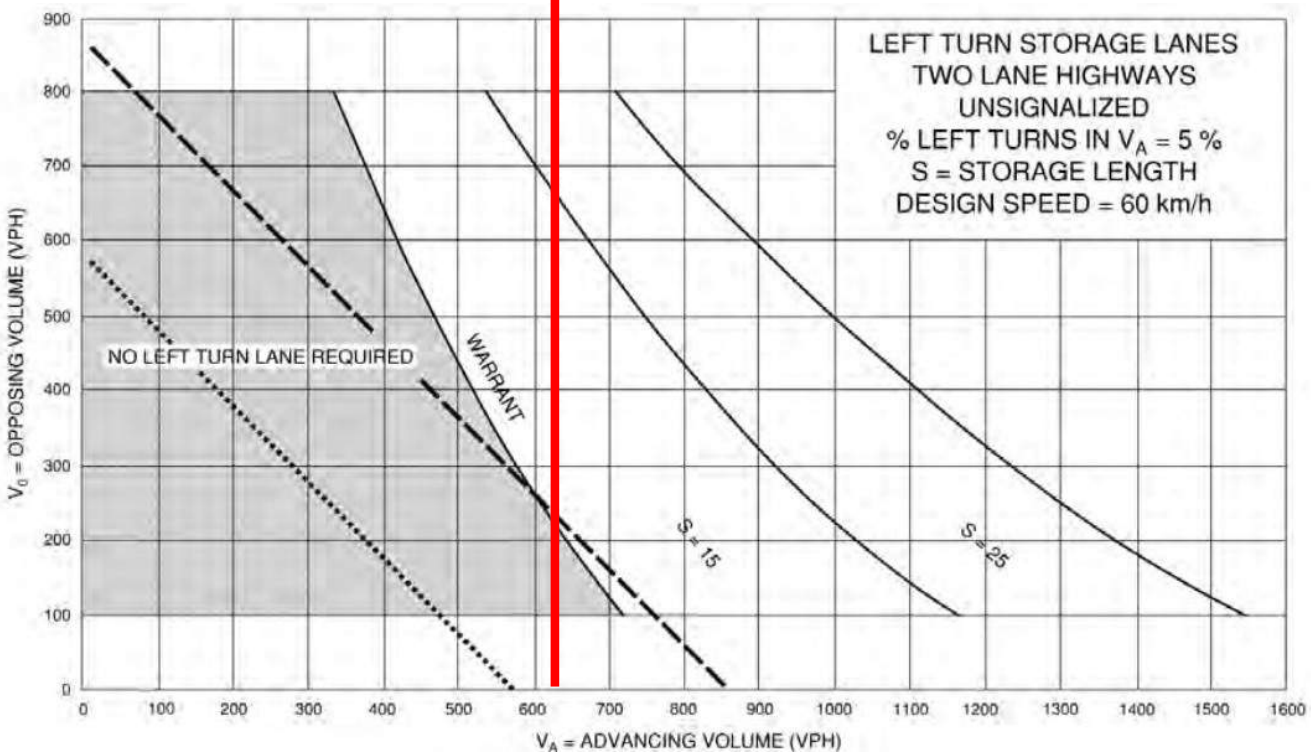


Westbound Left-Turn Lane Warrant

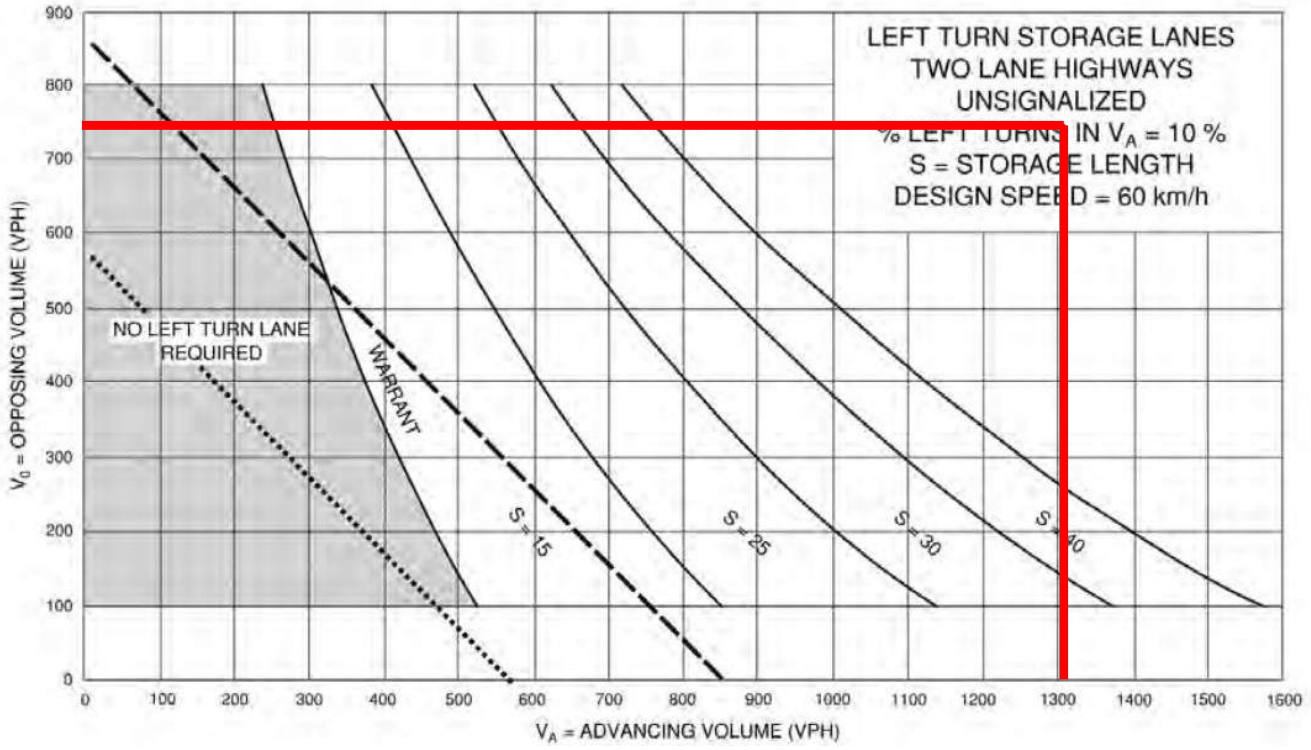
2041 Future Total Horizon Year

Mount Hope Road & Columbia Way

AM Peak Hour



PM Peak Hour

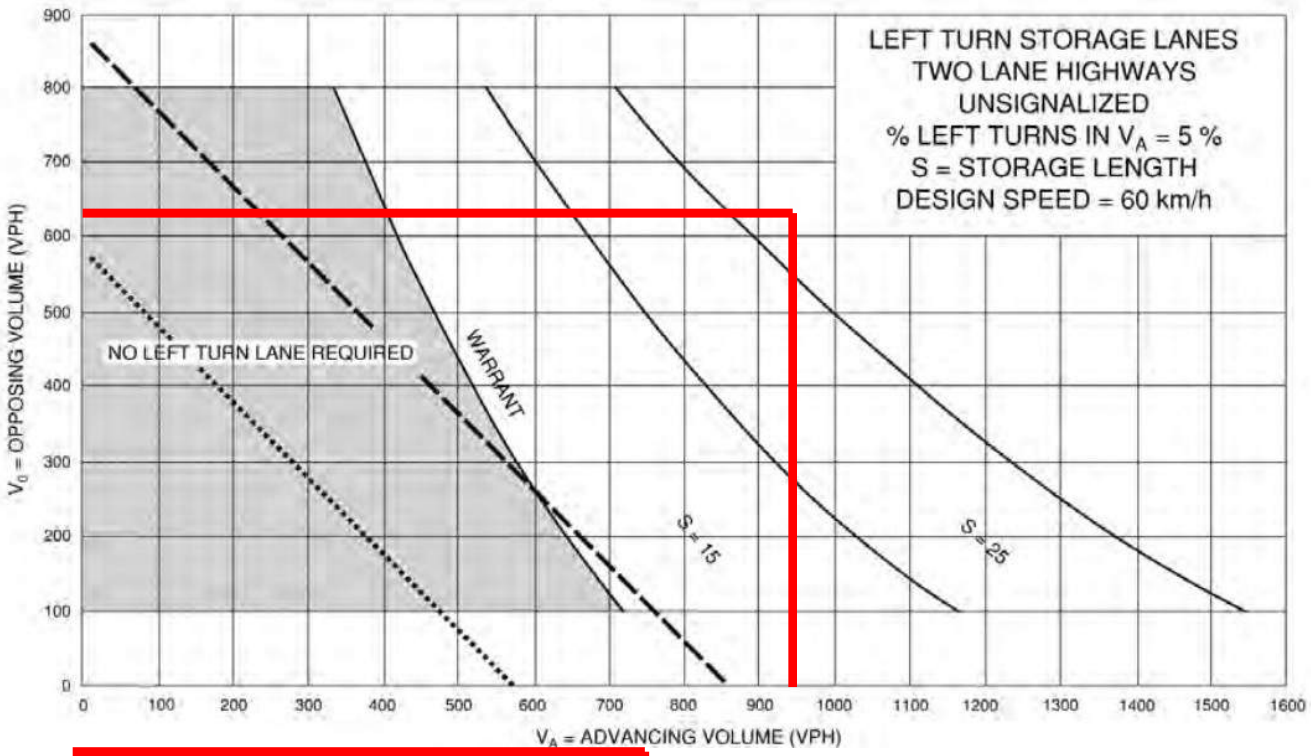


Northbound Left-Turn Lane Warrant

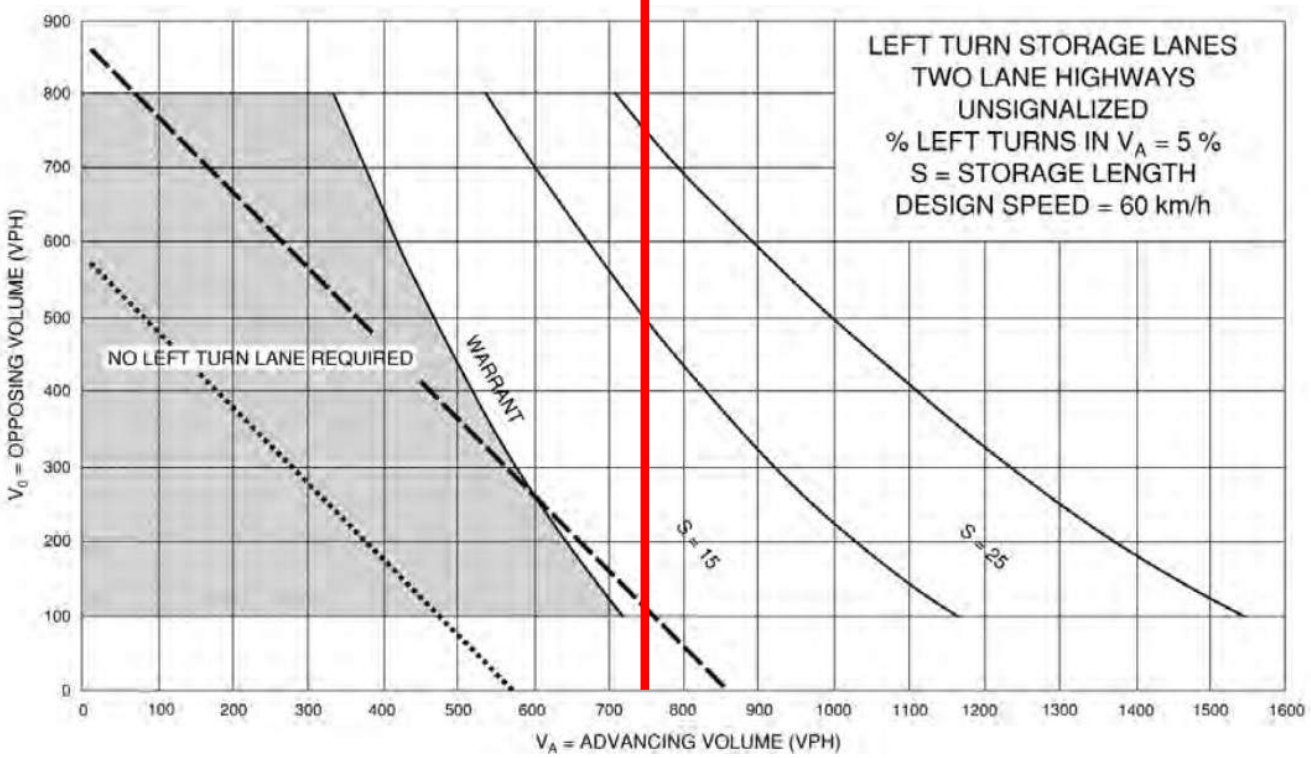
2041 Future Total Horizon Year

Street A & Highway 50

AM Peak Hour



PM Peak Hour

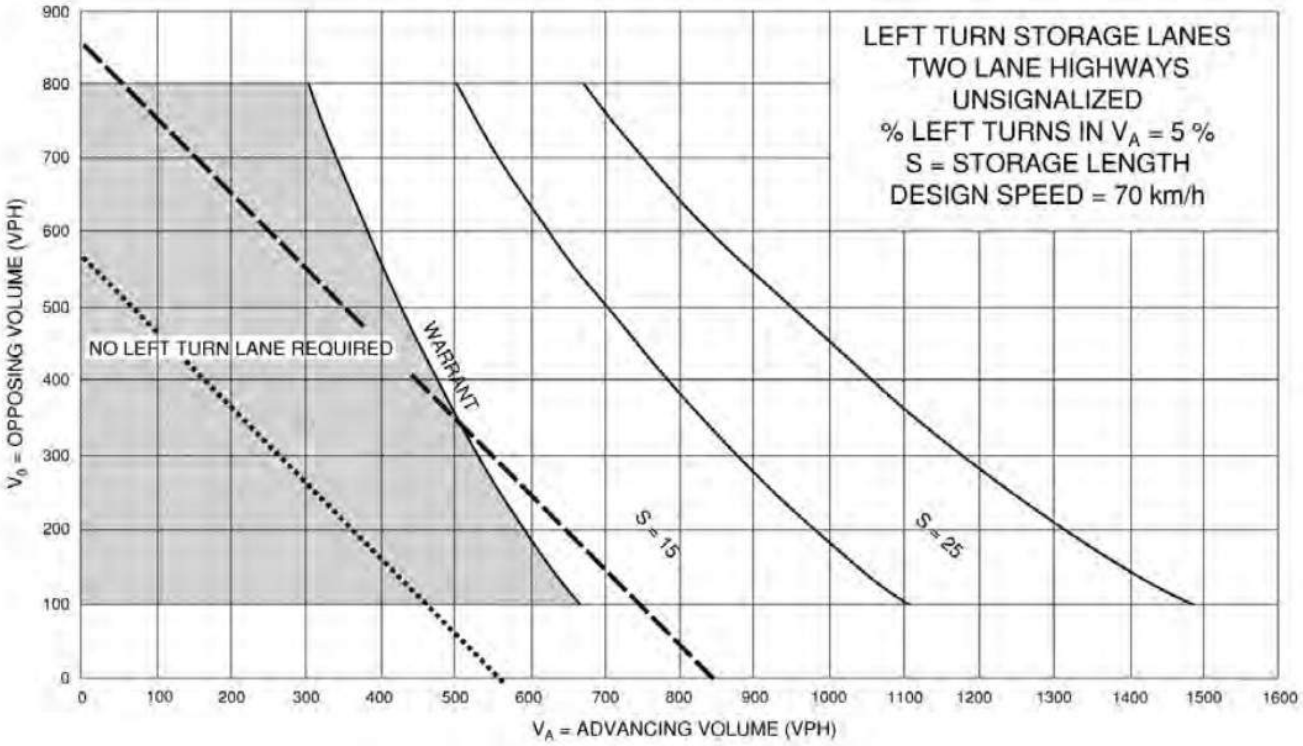


Southbound Left-Turn Lane Warrant

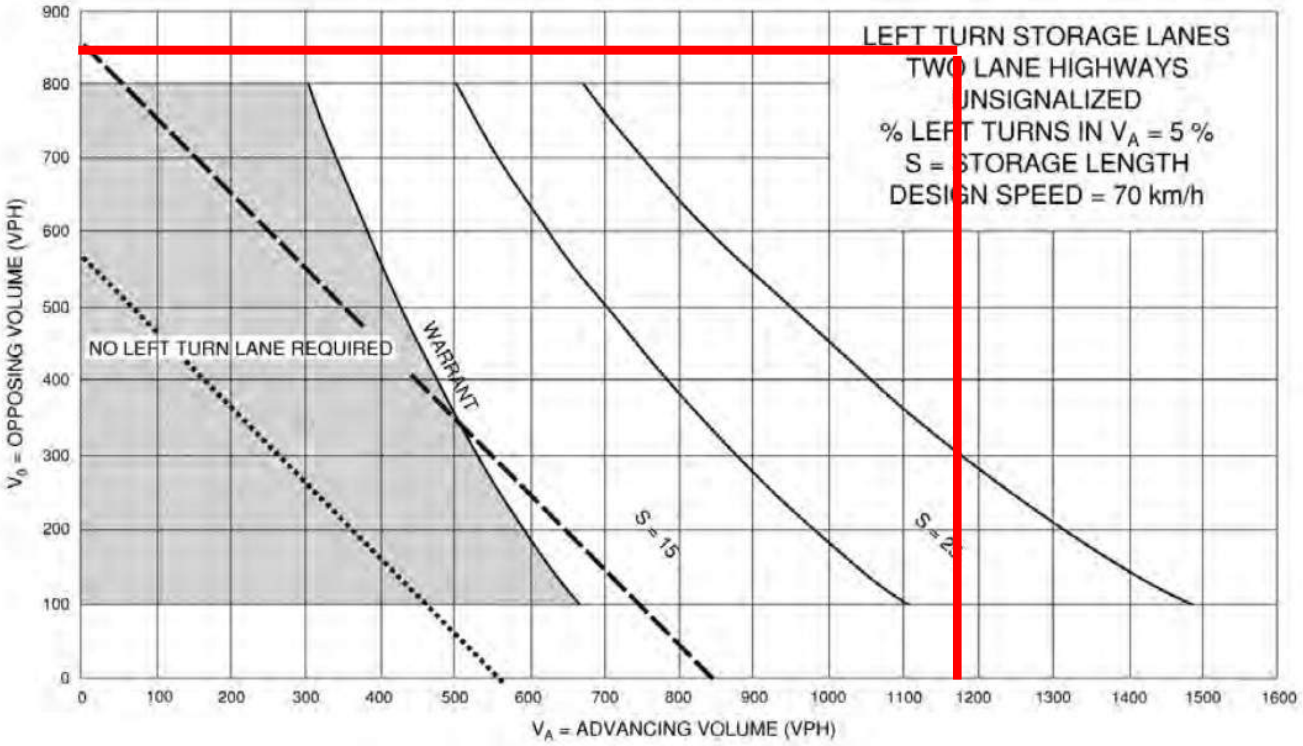
2041 Future Total Horizon Year

Street A & Highway 50

AM Peak Hour



PM Peak Hour

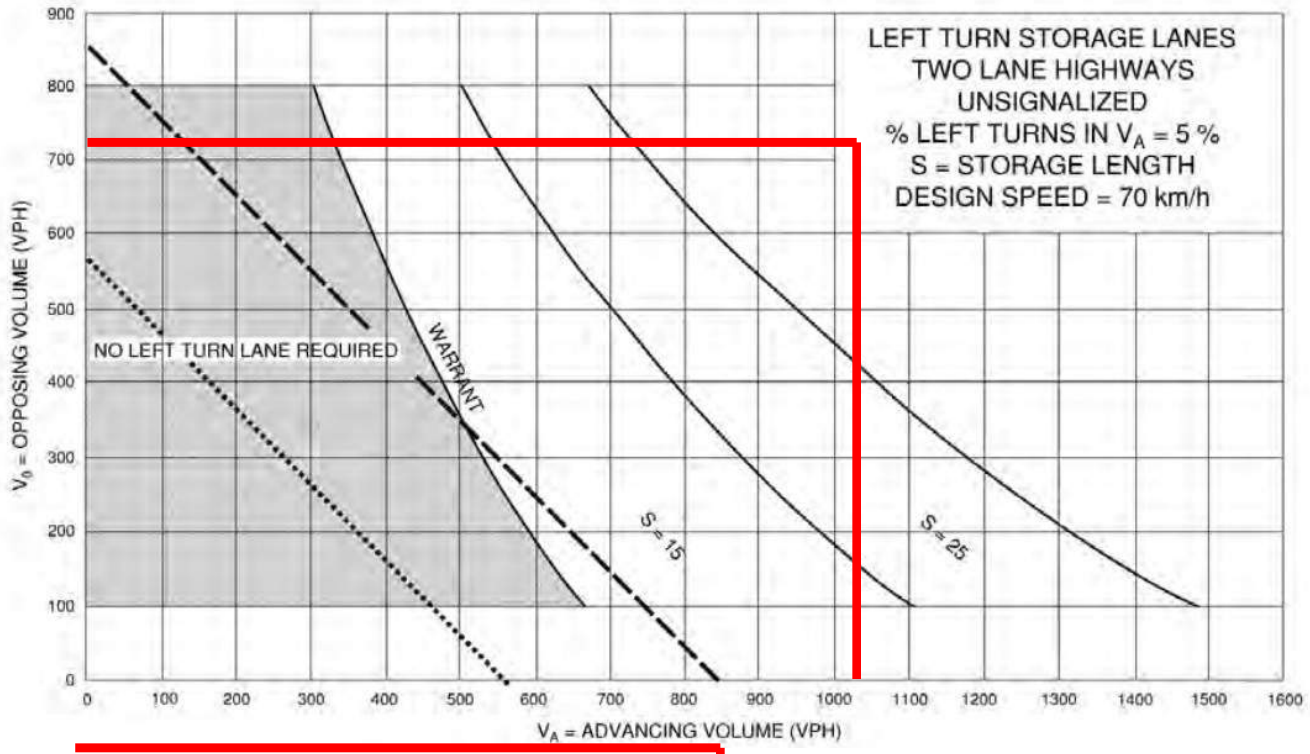


Northbound Left-Turn Lane Warrant

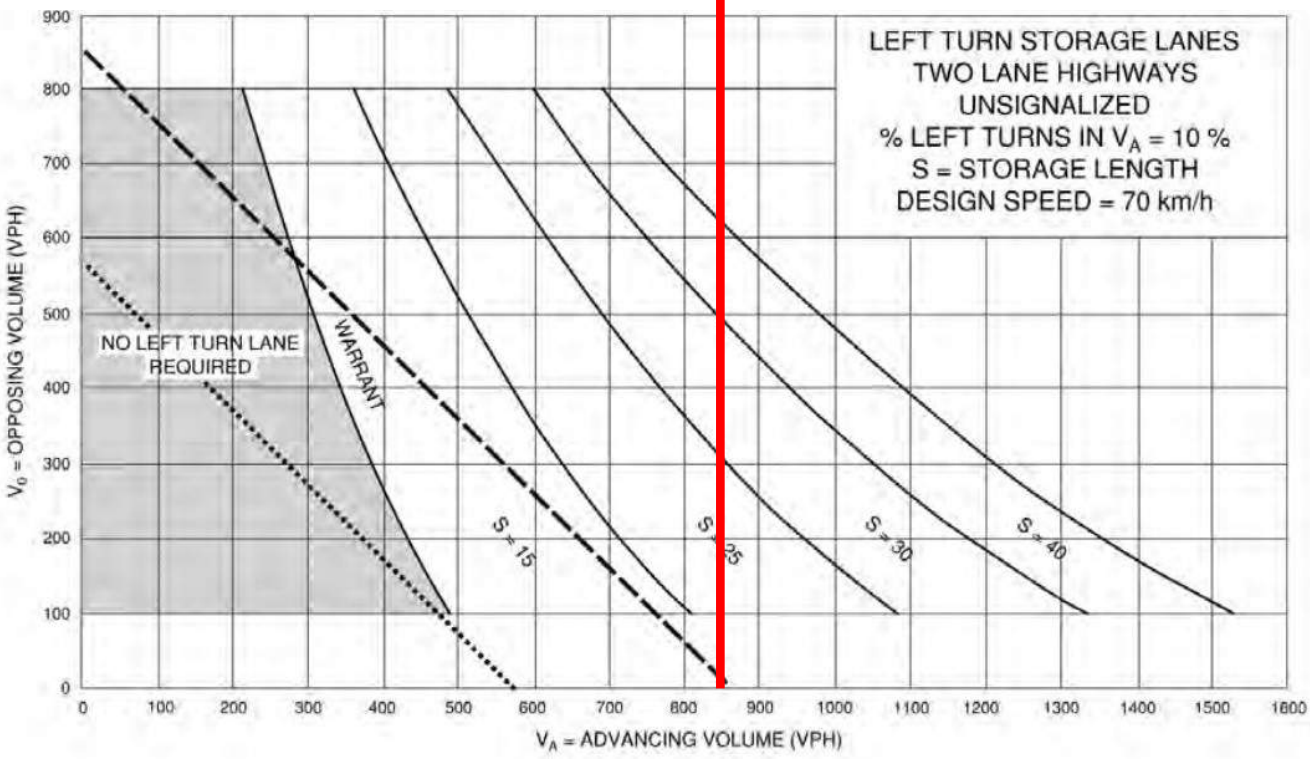
2041 Future Total Horizon Year

Street C & Highway 50

AM Peak Hour



PM Peak Hour

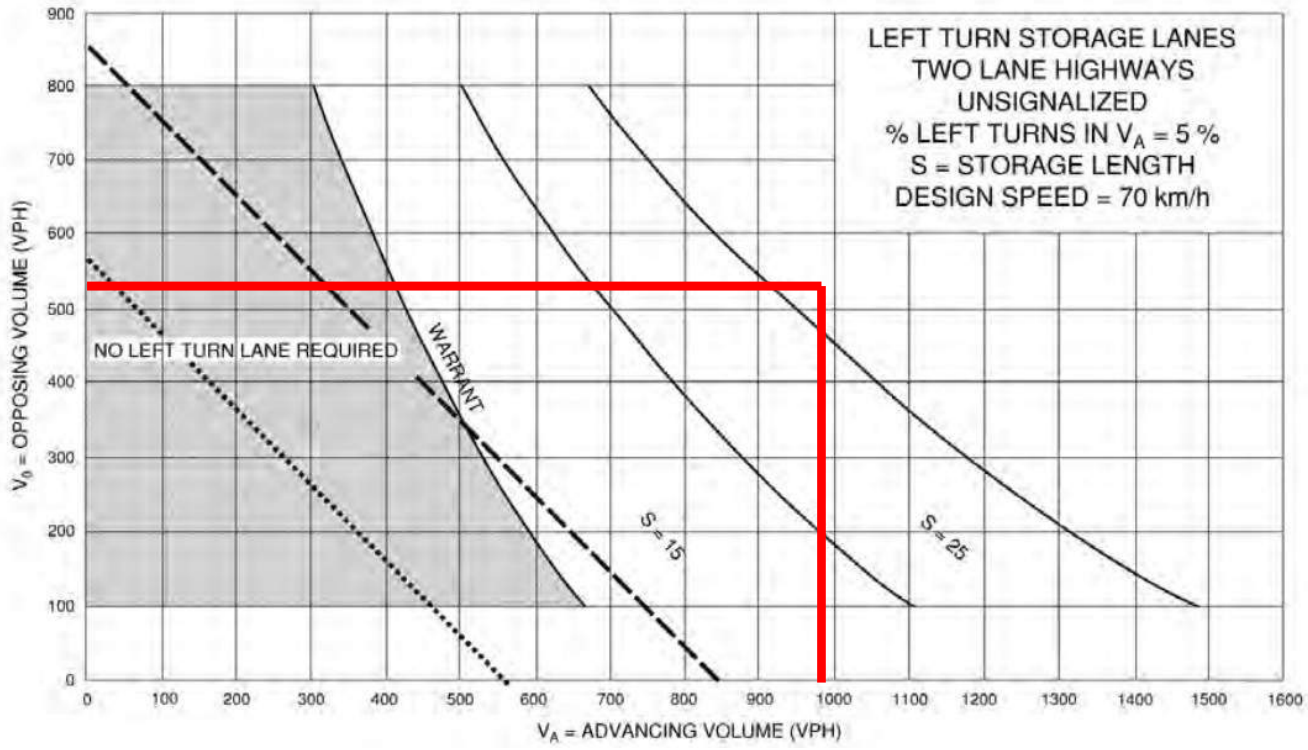


Southbound Left-Turn Lane Warrant

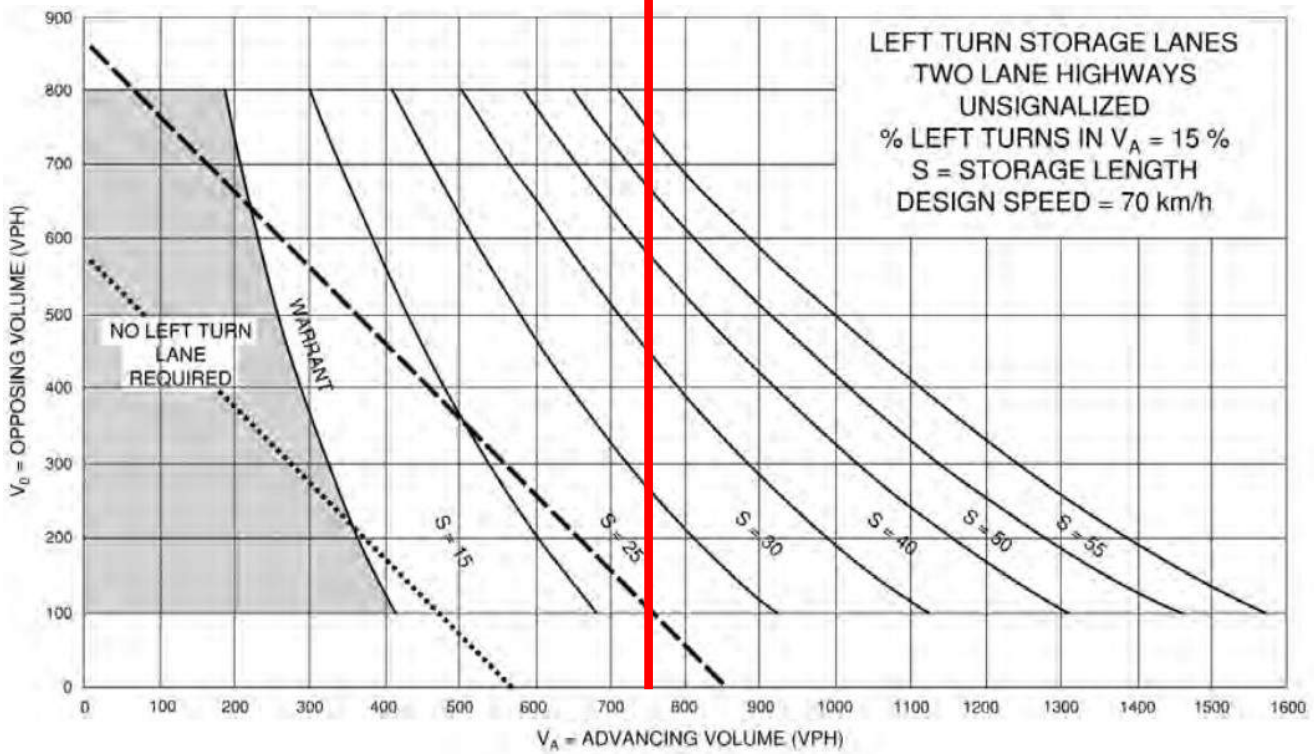
2041 Future Total Horizon Year

Street C & Highway 50

AM Peak Hour



PM Peak Hour

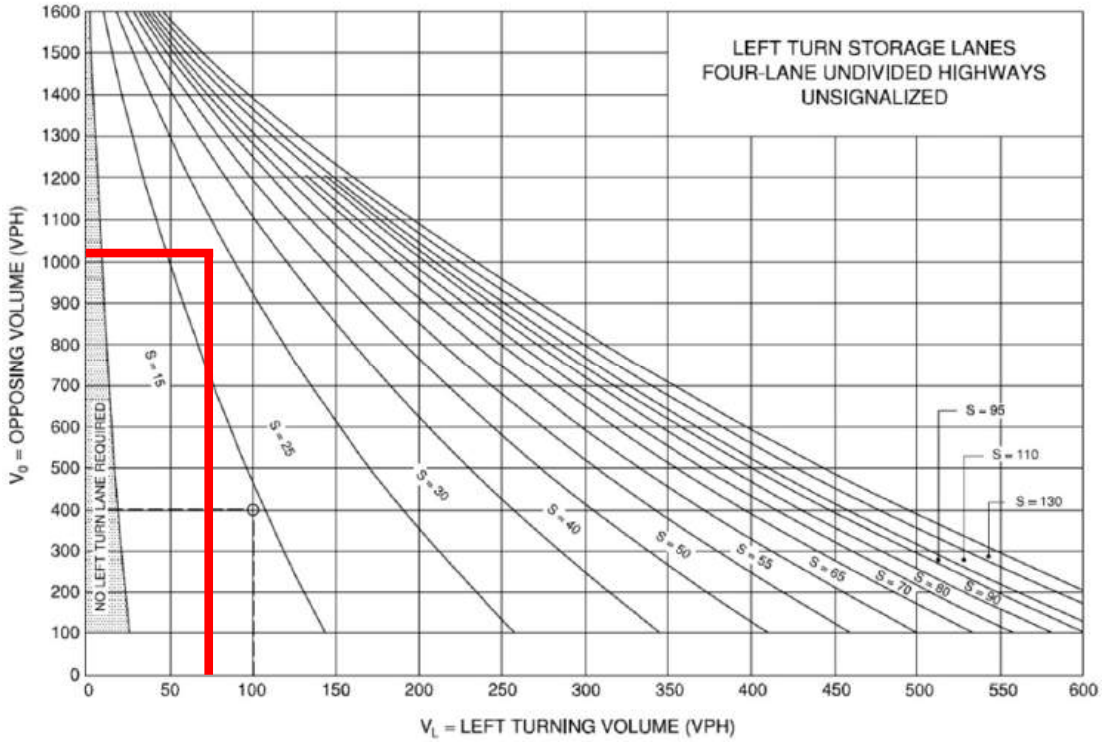


Southbound Left-Turn Lane Warrant

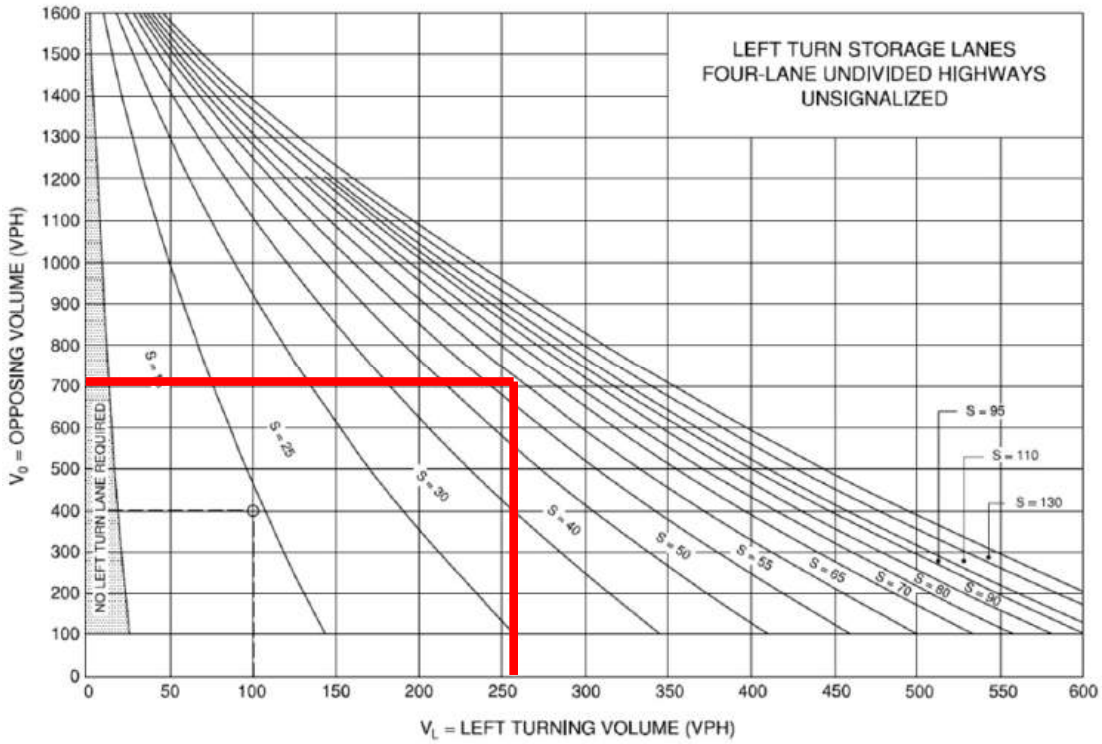
2041 Future Total Horizon Year

Street D & Highway 50

AM Peak Hour



PM Peak Hour

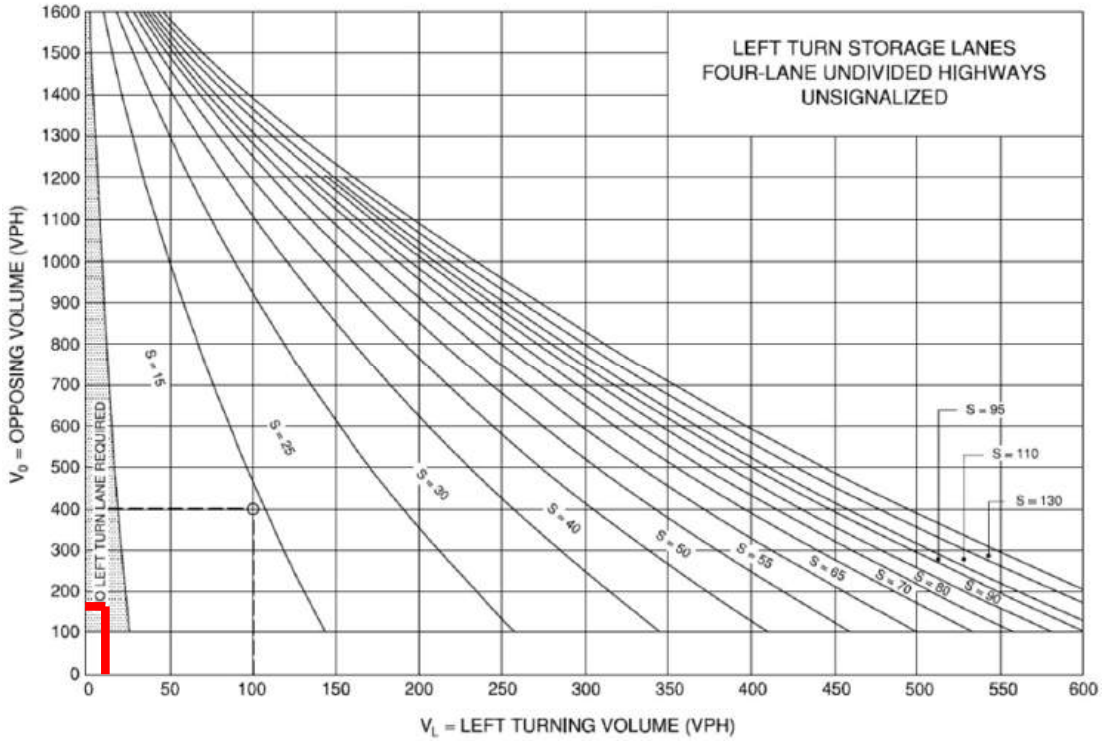


Eastbound Left-Turn Lane Warrant

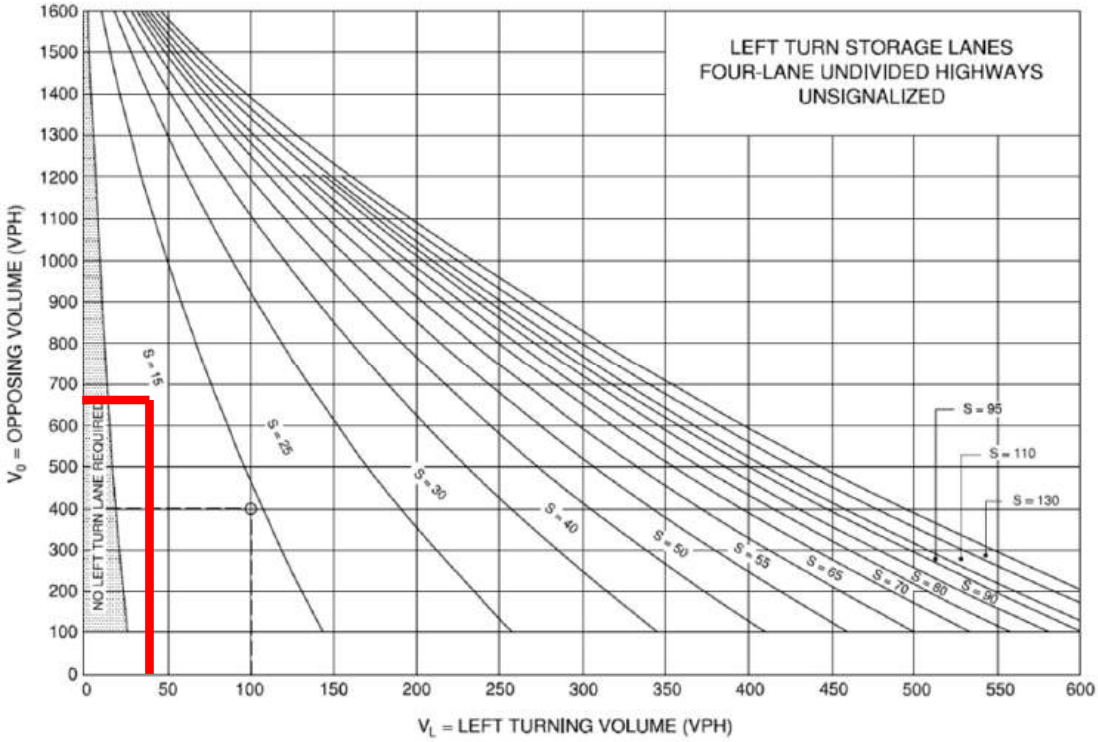
2041 Future Total Horizon Year

Street E & Emil Kolb Parkway

AM Peak Hour



PM Peak Hour

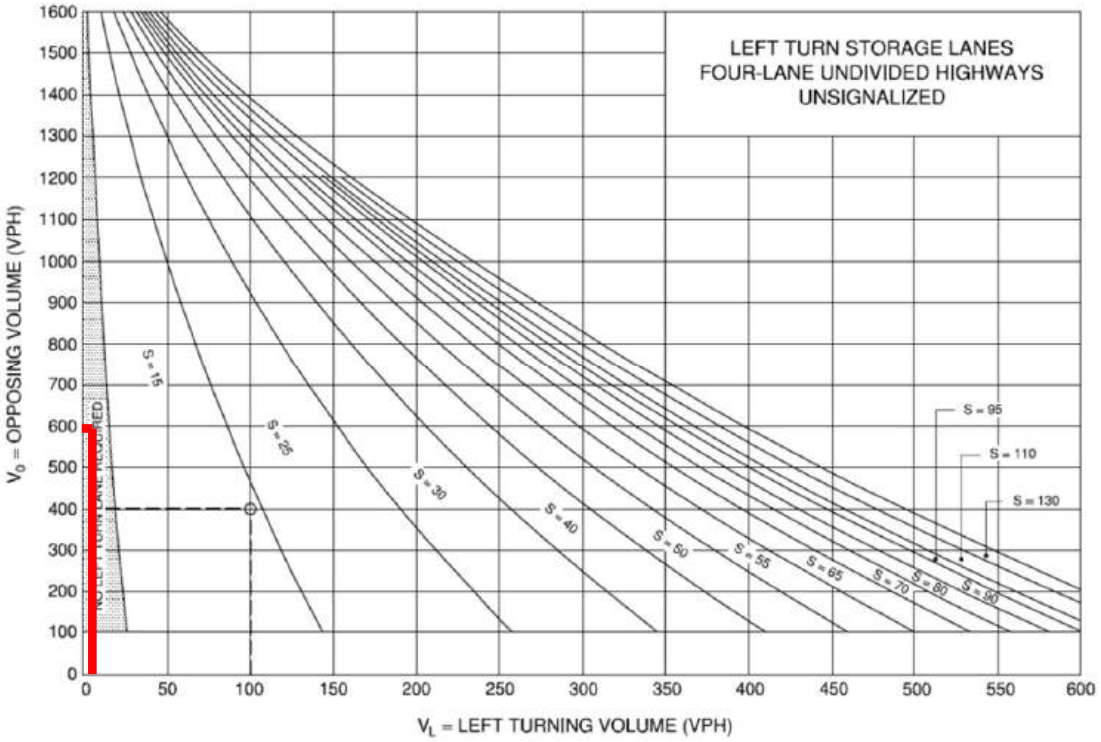


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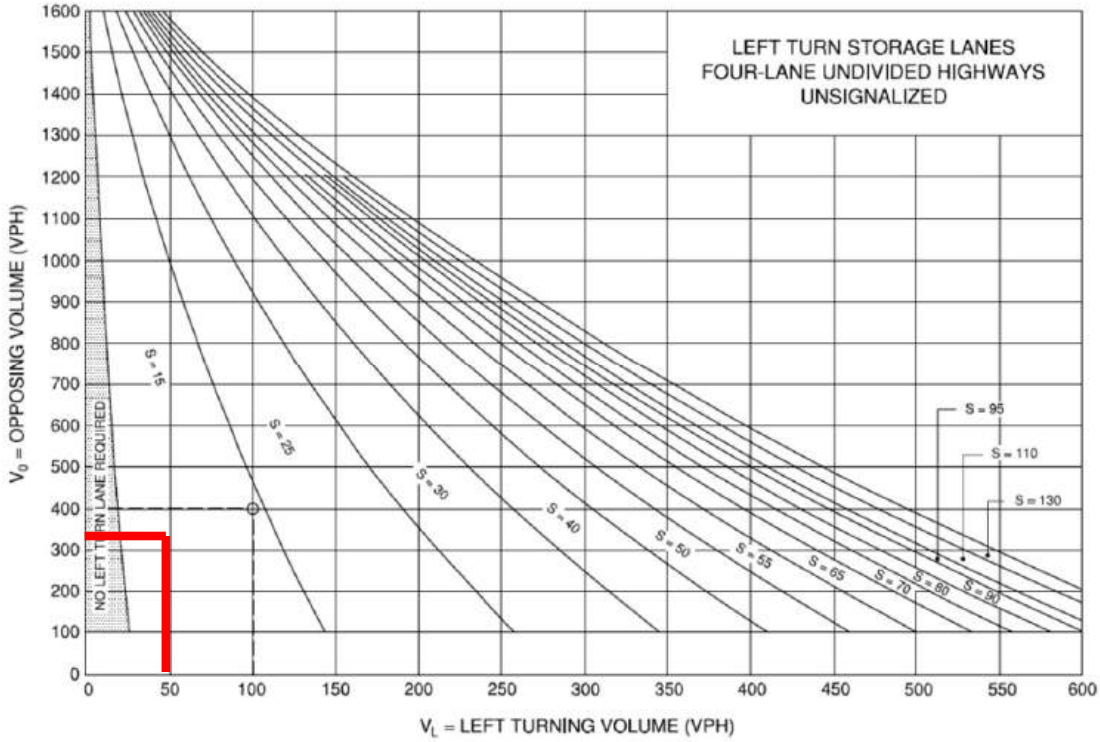
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Street I & Columbia Way

AM Peak Hour

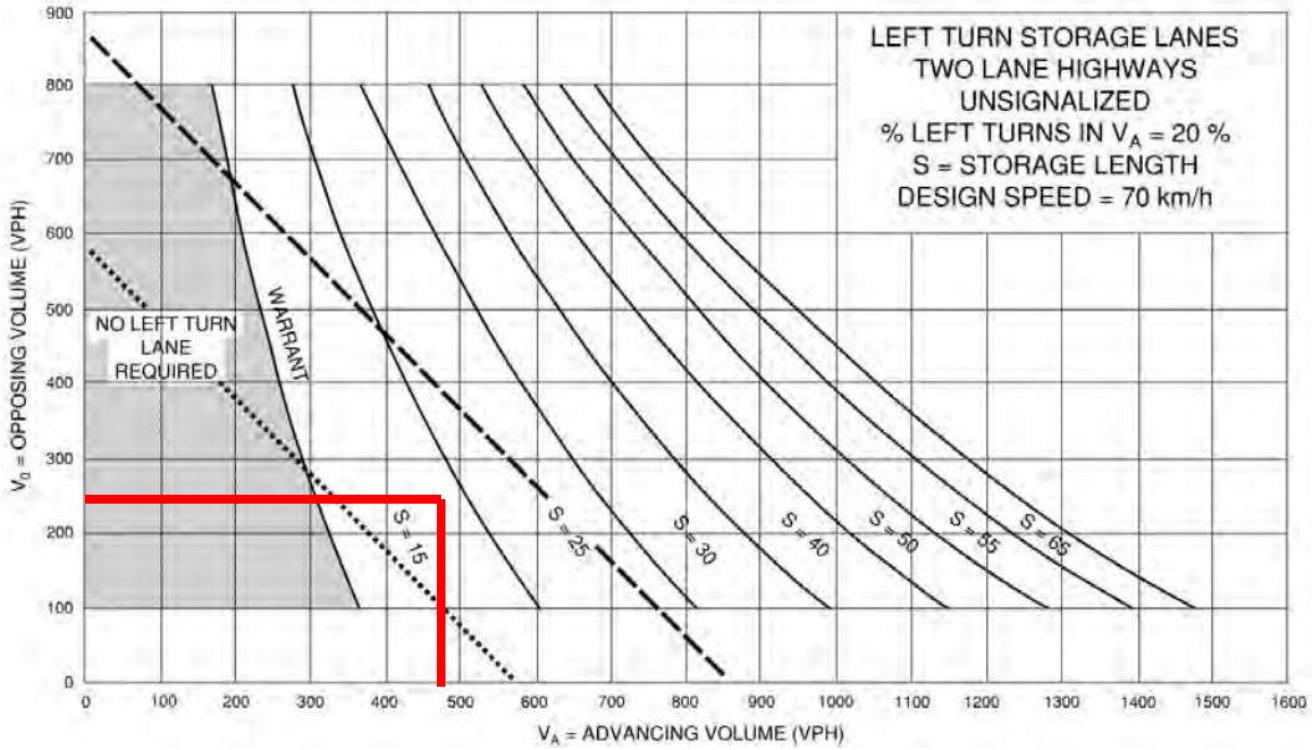


PM Peak Hour

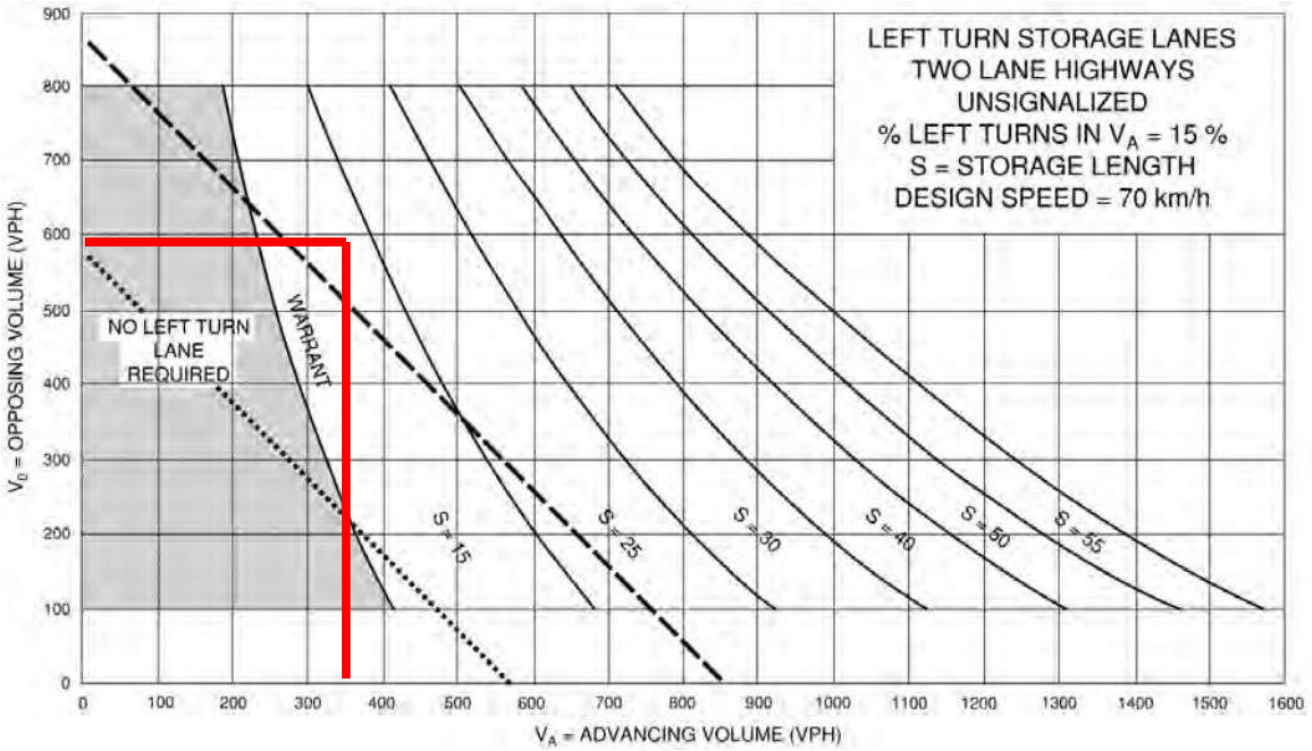


Westbound Left-Turn Lane Warrant
2041 Future Total Horizon Year
Street I & Columbia Way

AM Peak Hour

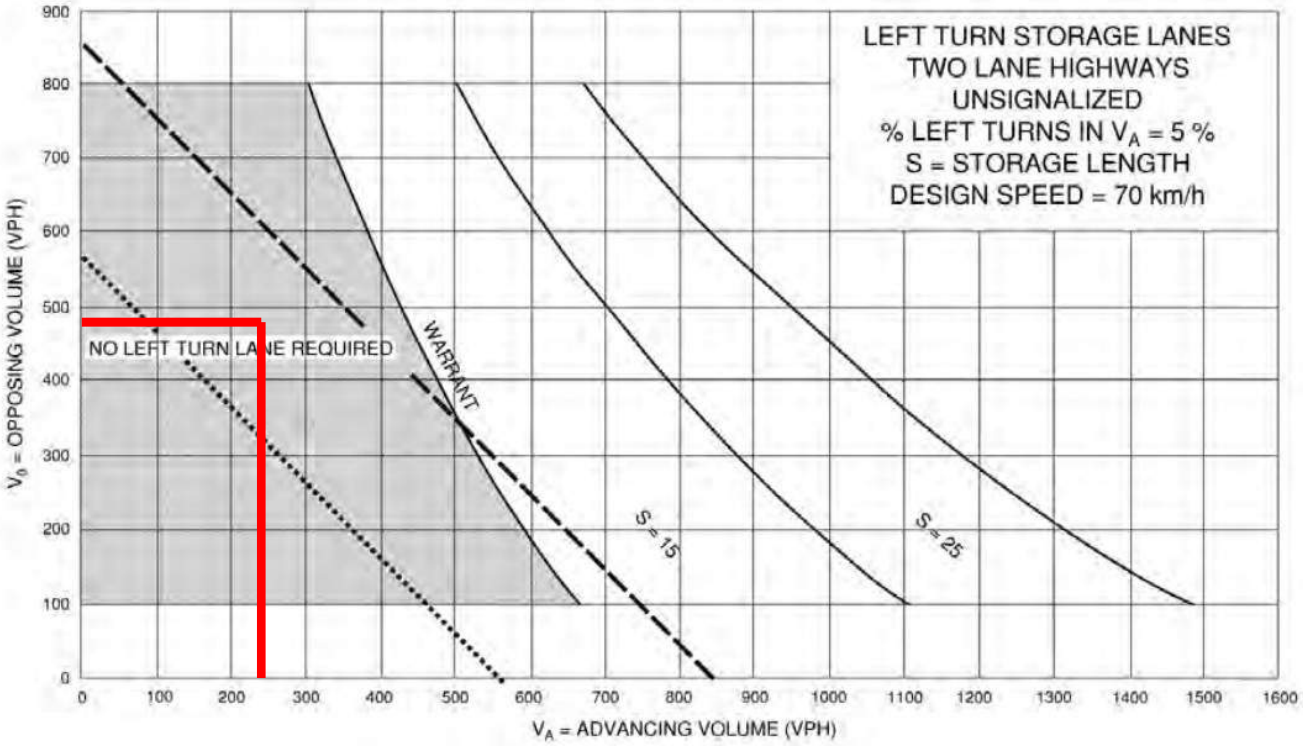


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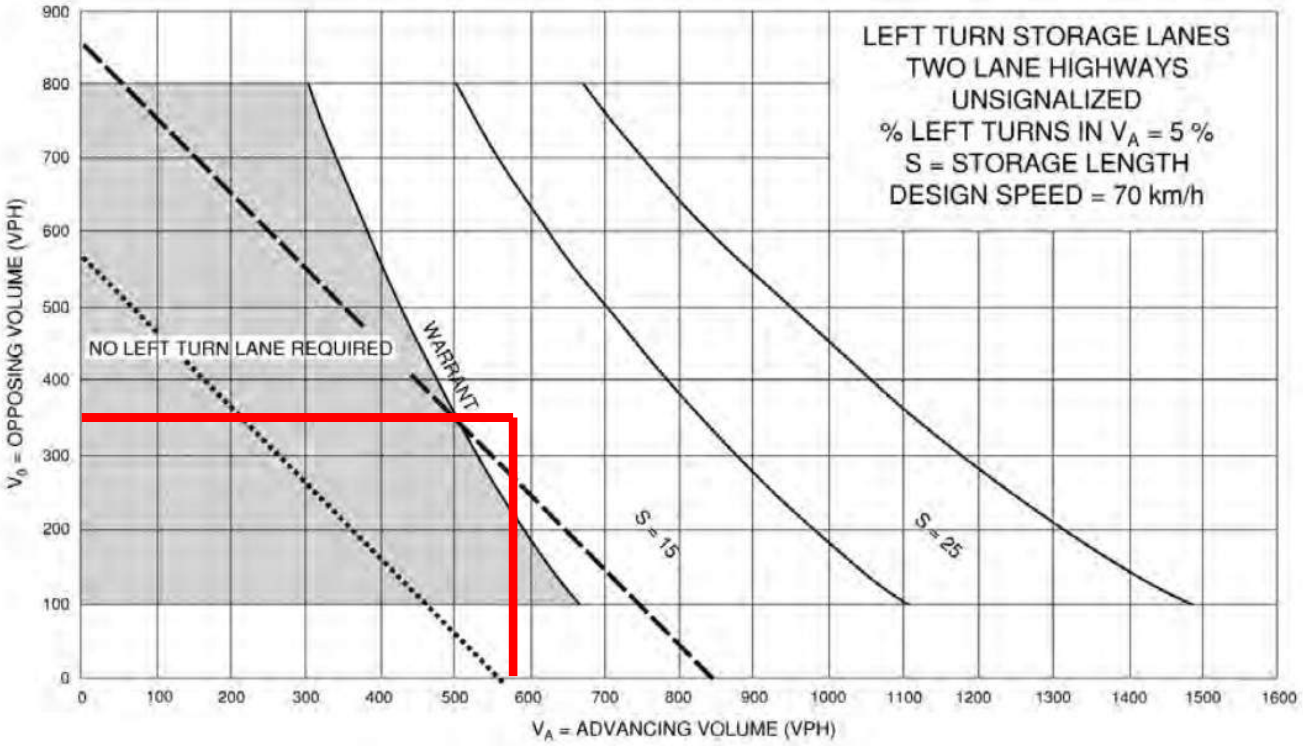


Eastbound Left-Turn Lane Warrant
2031 Future Total Horizon Year
Mount Hope Road & Columbia Way

AM Peak Hour

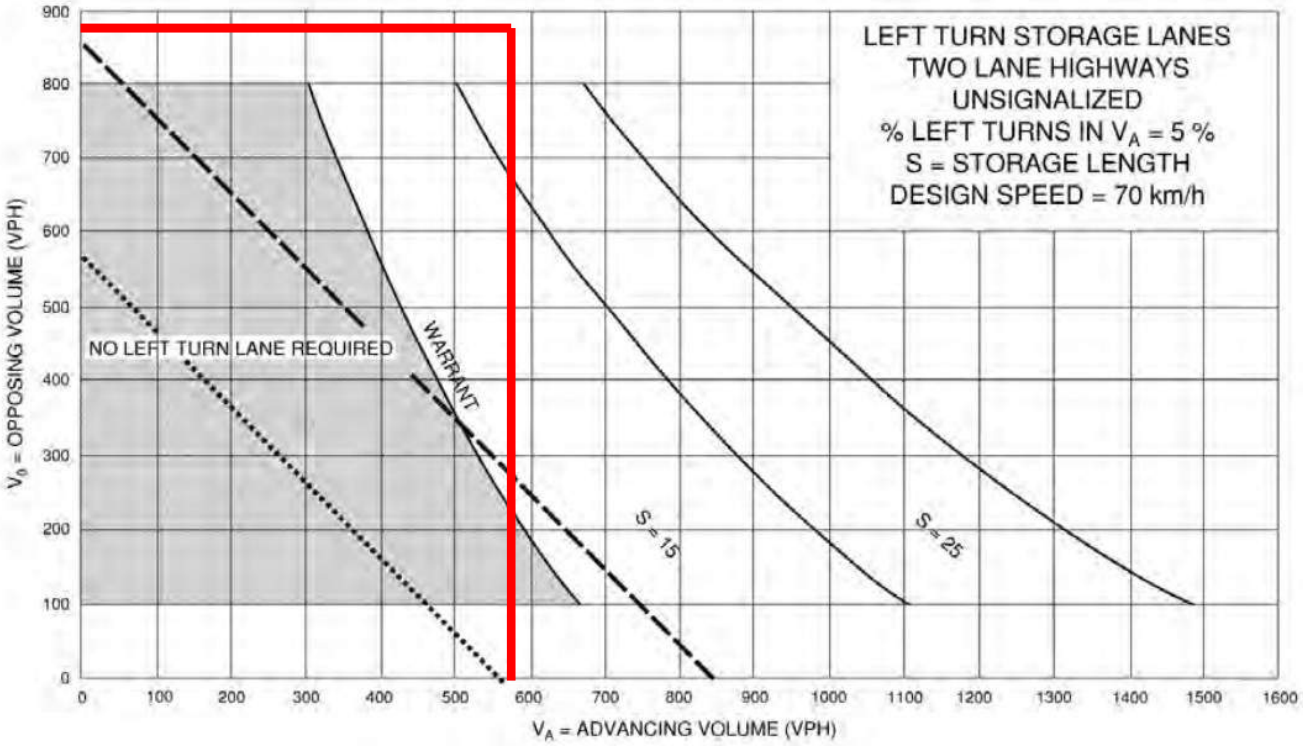


PM Peak Hour

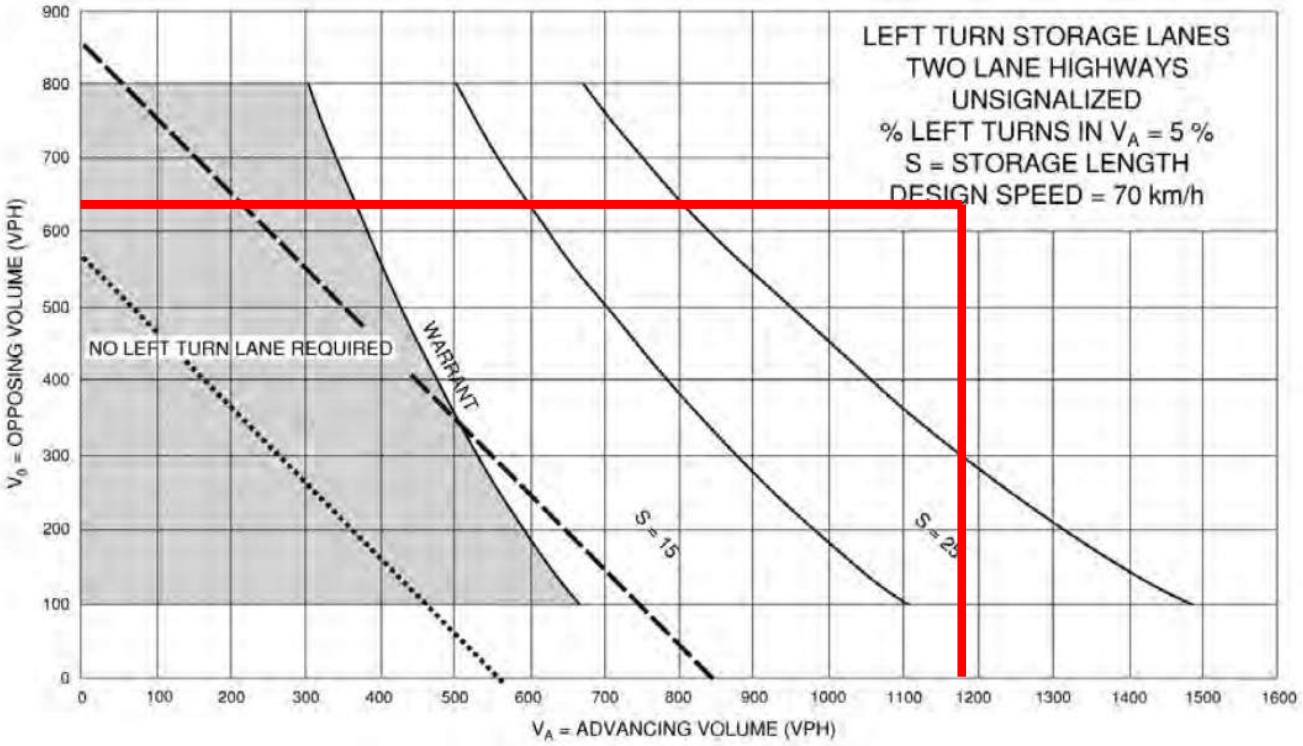


Westbound Left-Turn Lane Warrant
2031 Future Total Horizon Year
Mount Hope Road & Columbia Way

AM Peak Hour



PM Peak Hour

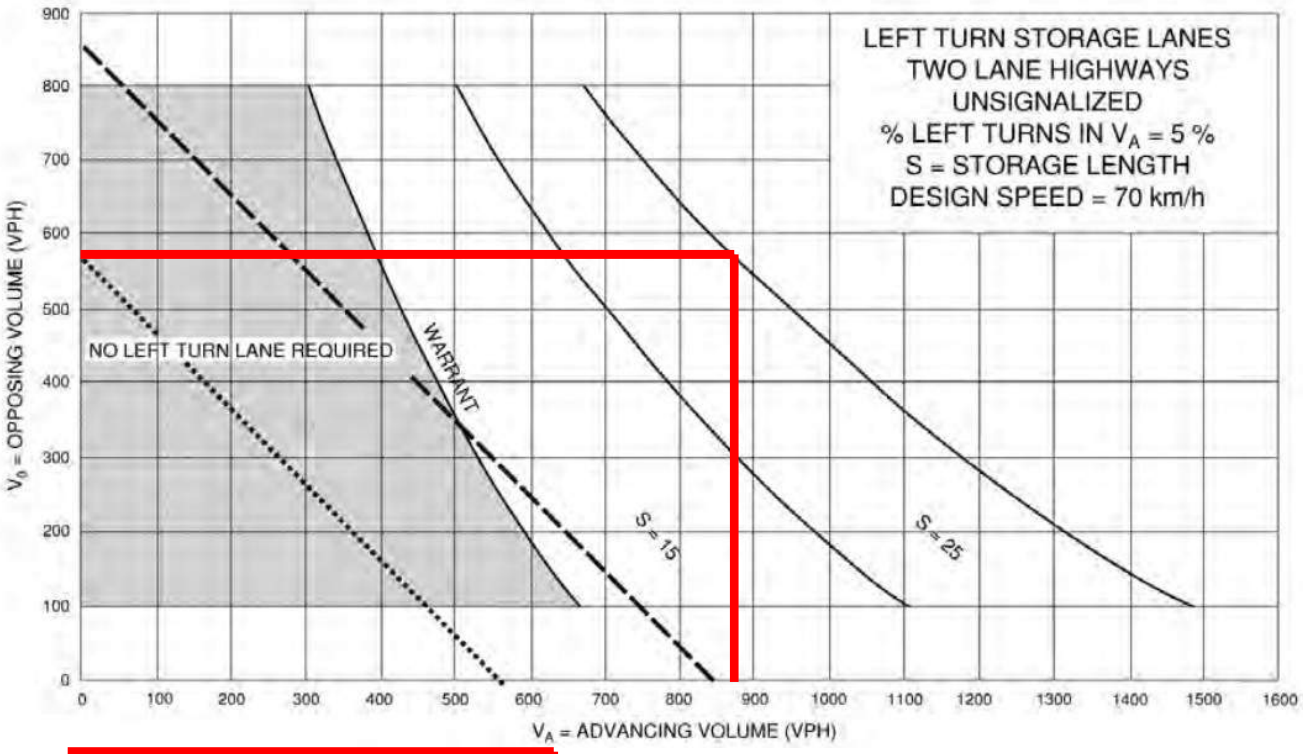


Northbound Left-Turn Lane Warrant

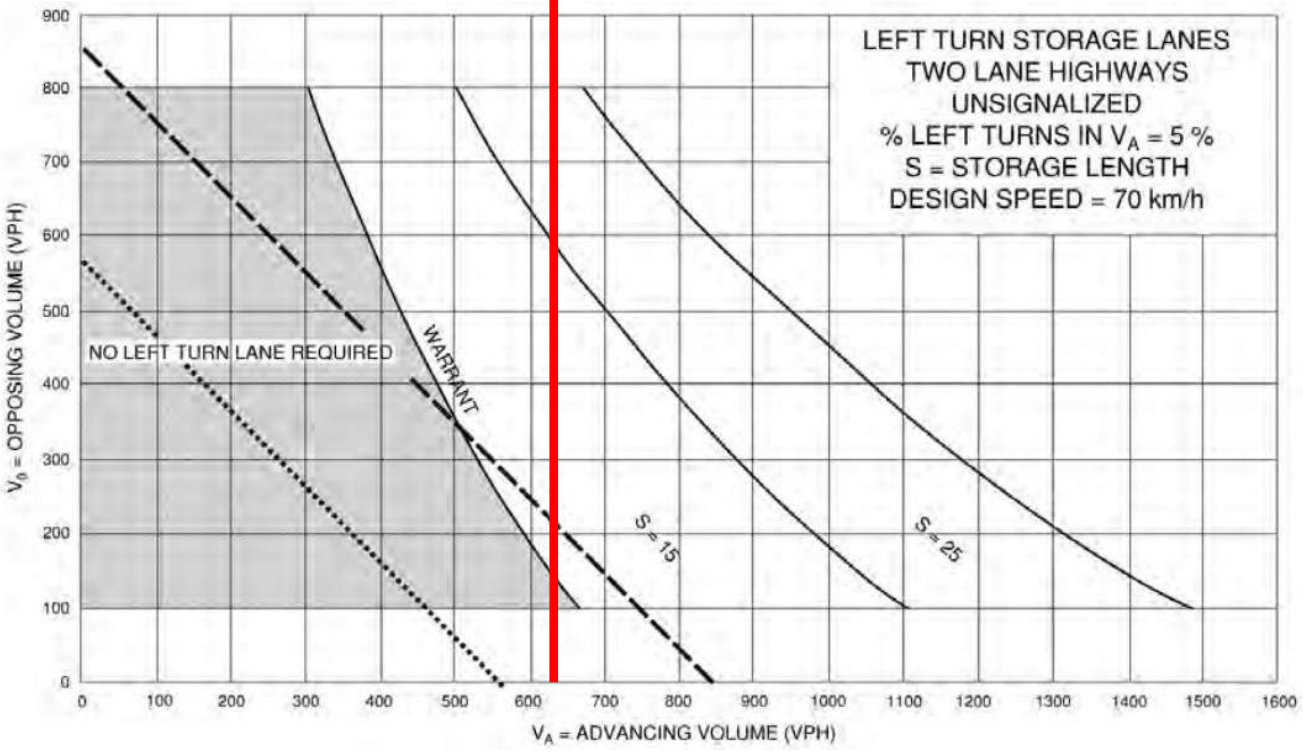
2031 Future Total Horizon Year

Street A & Highway 50

AM Peak Hour



PM Peak Hour

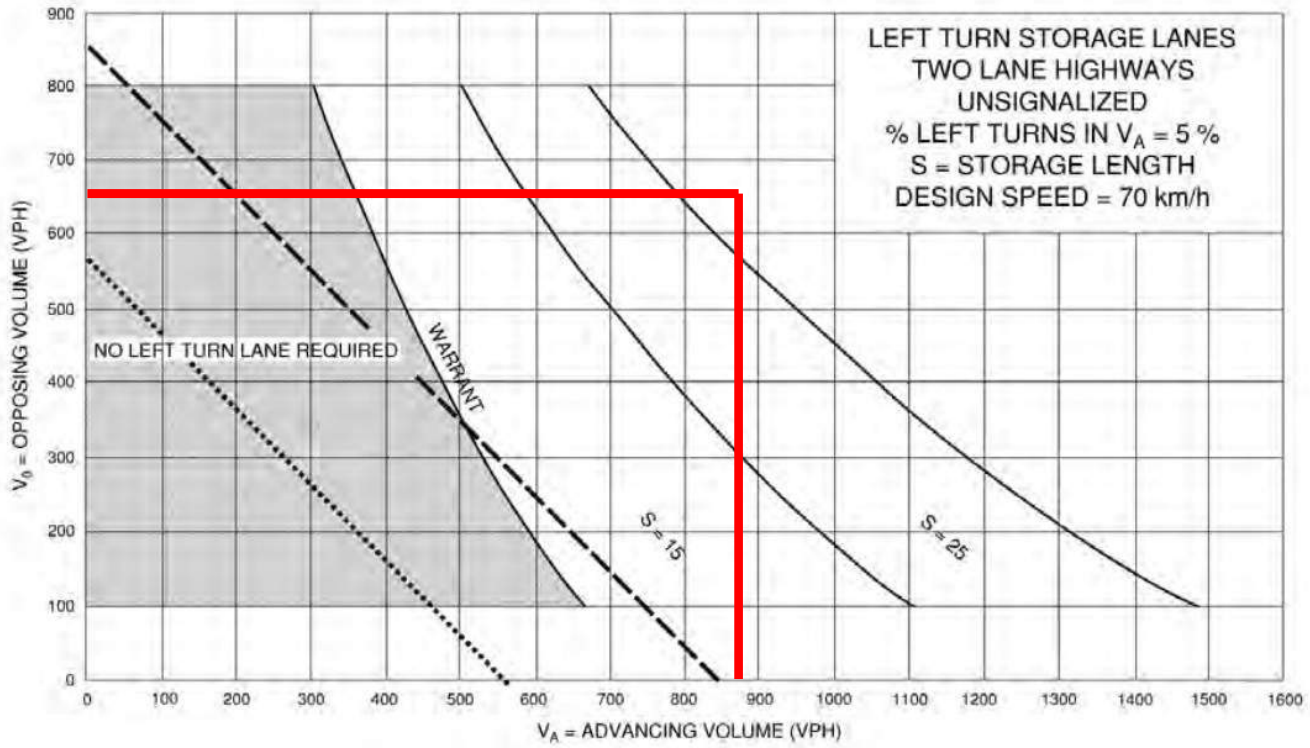


Southbound Left-Turn Lane Warrant

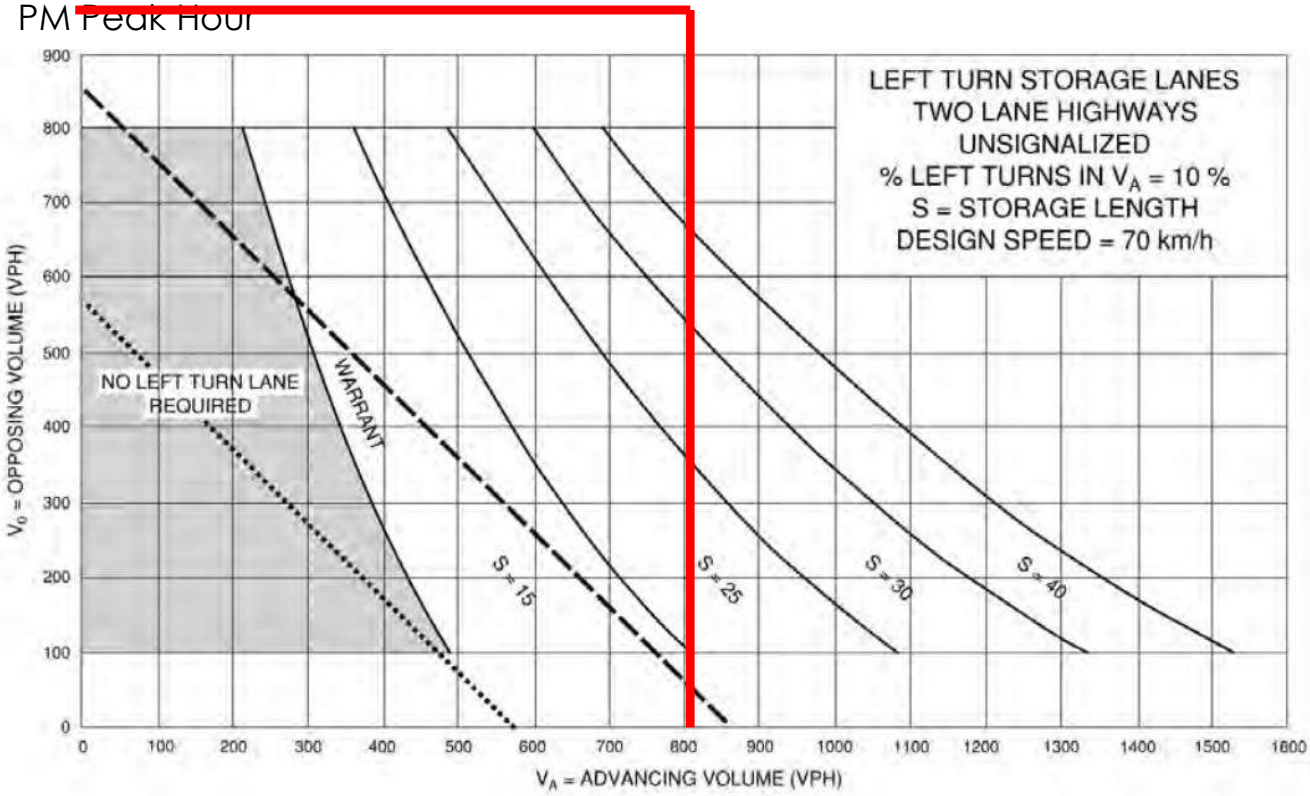
2031 Future Total Horizon Year

Street A & Highway 50

AM Peak Hour



PM Peak Hour

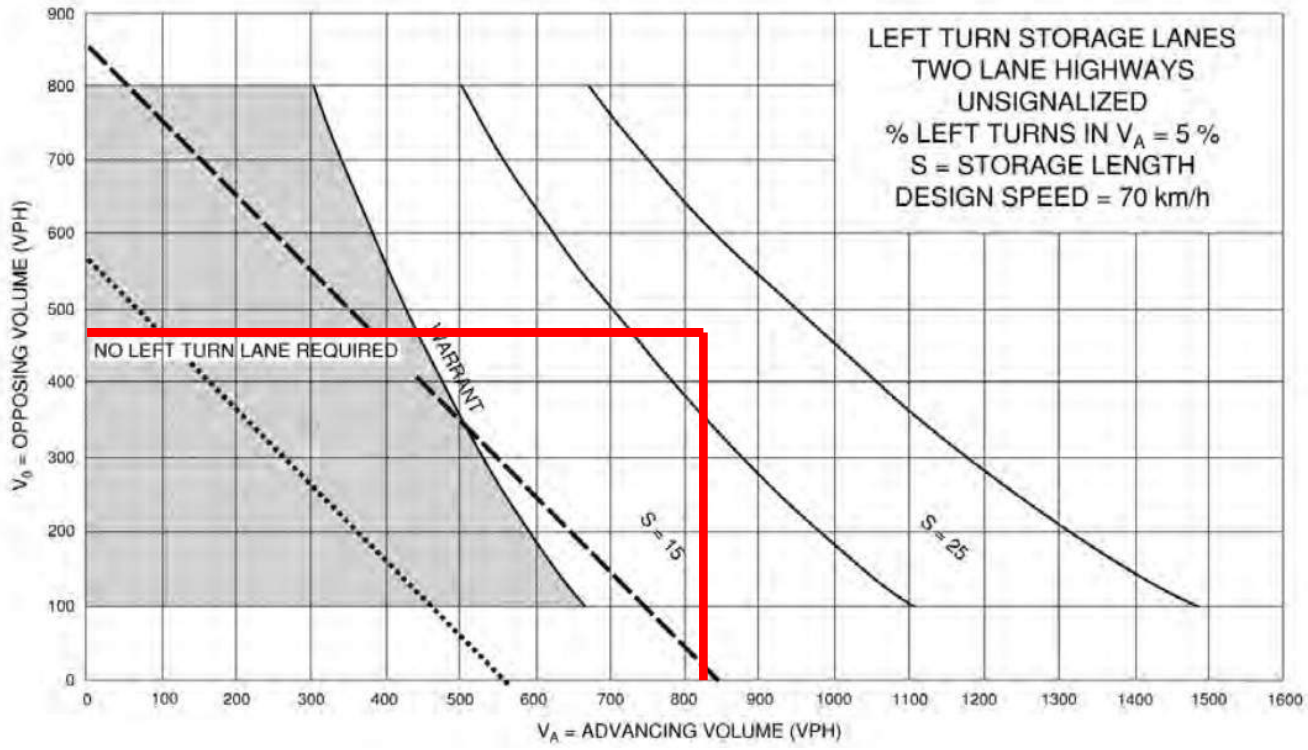


Southbound Left-Turn Lane Warrant

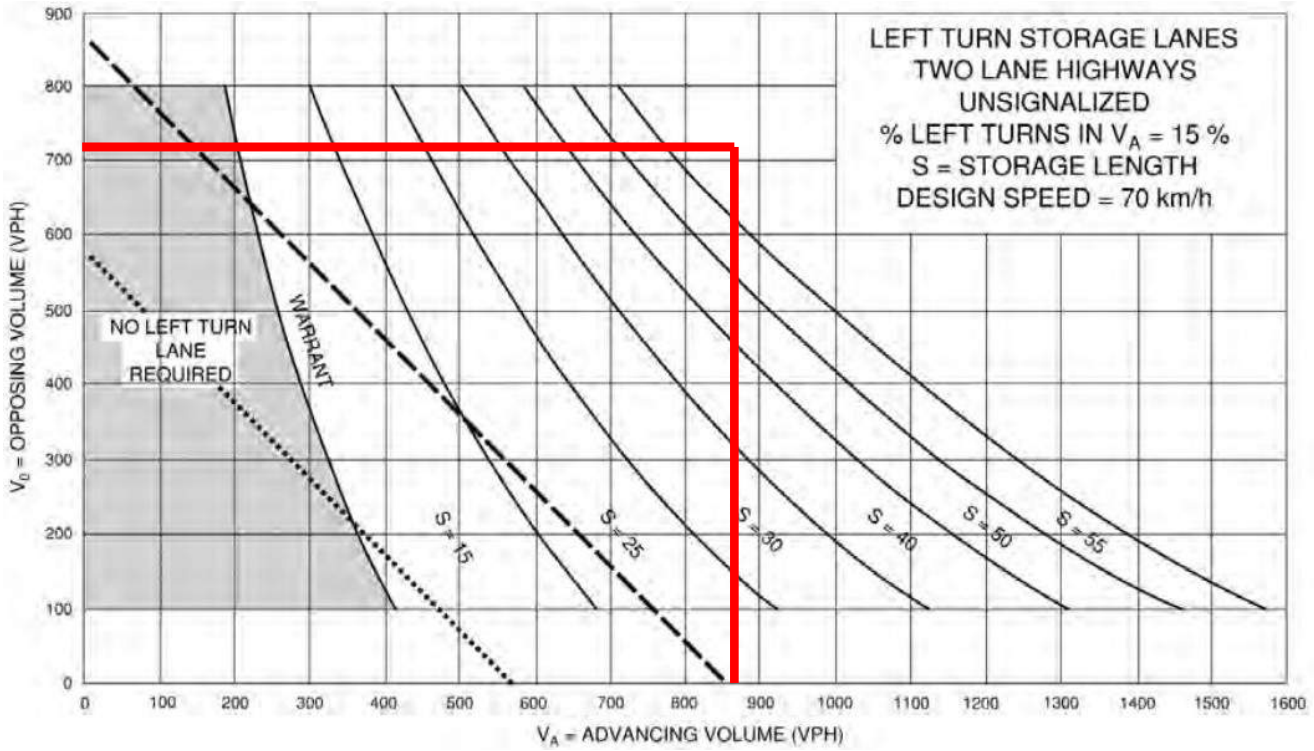
2031 Future Total Horizon Year

Street C & Highway 50

AM Peak Hour



PM Peak Hour

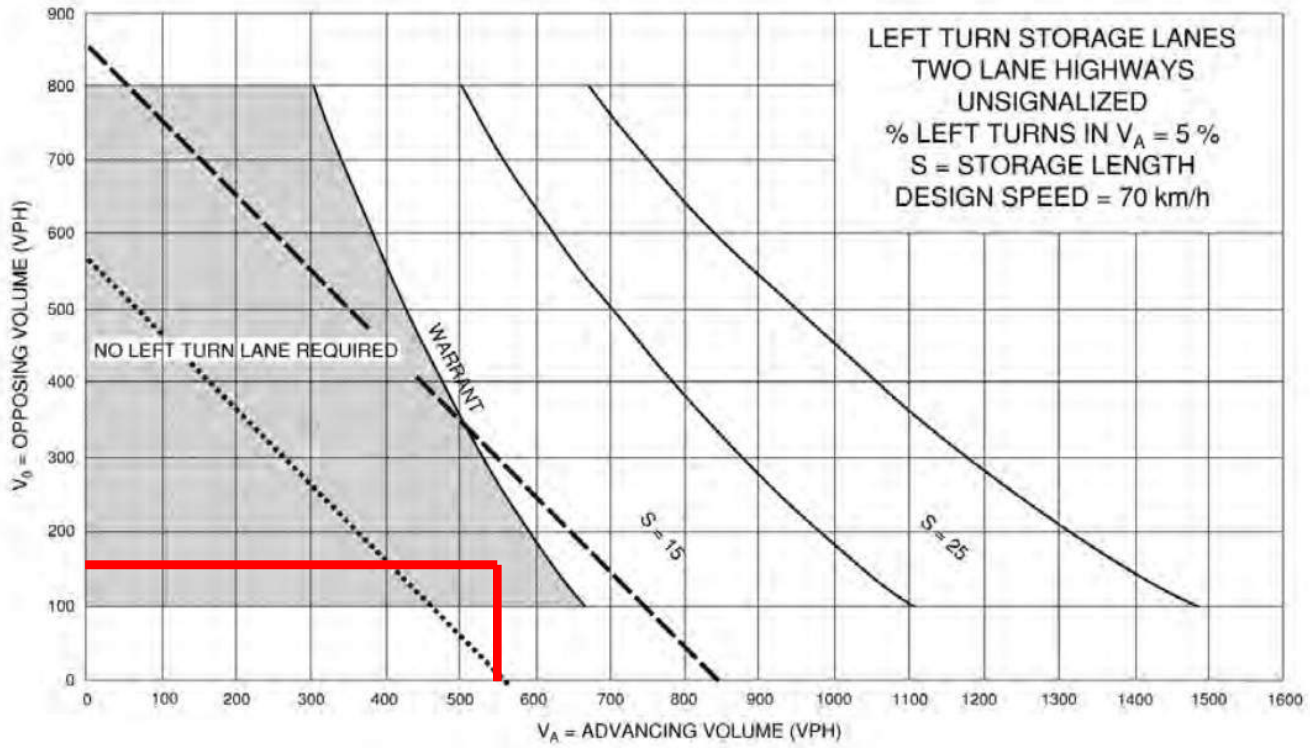


Southbound Left-Turn Lane Warrant

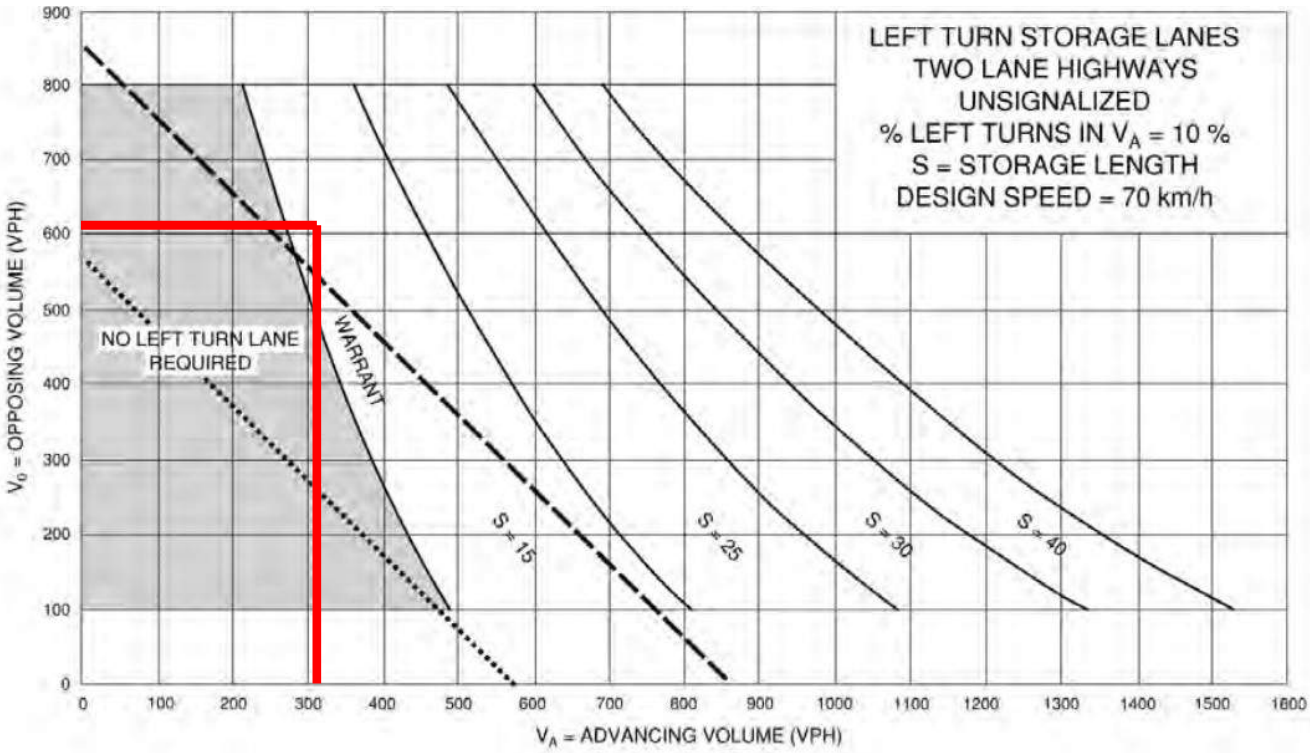
2031 Future Total Horizon Year

Street D & Highway 50

AM Peak Hour



PM Peak Hour

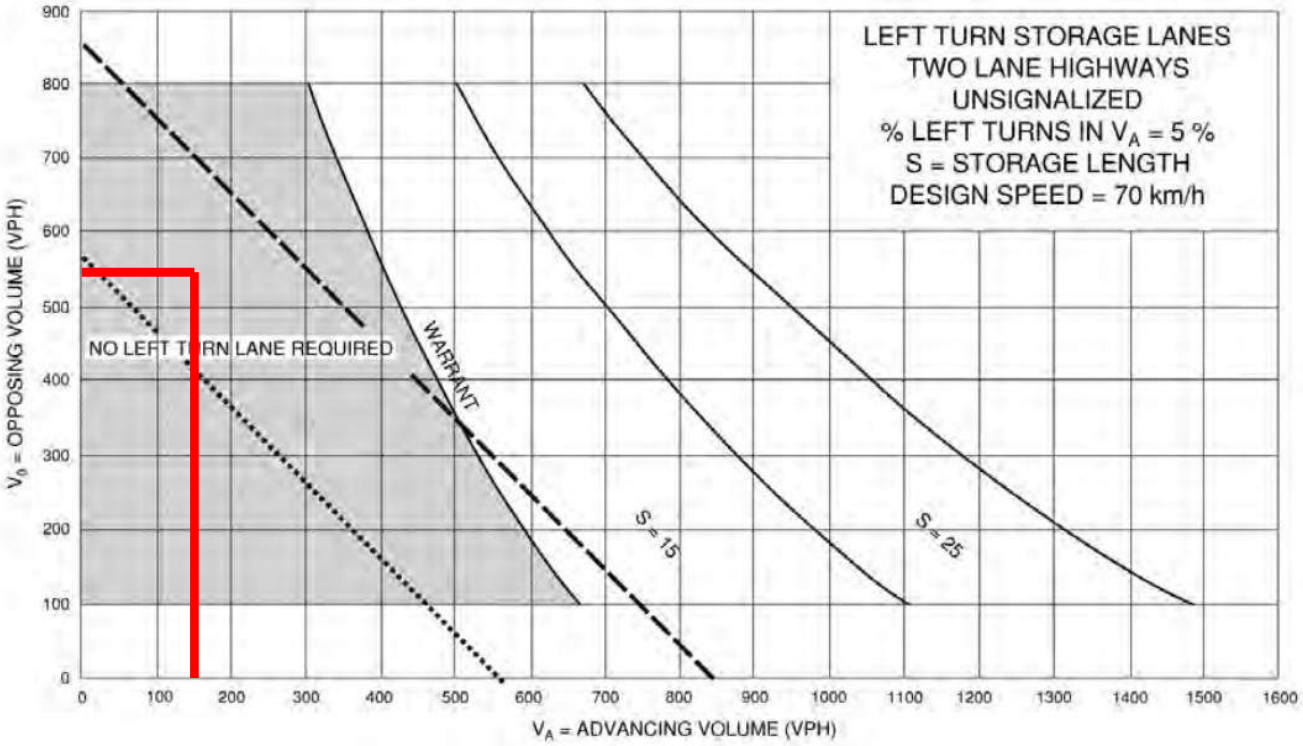


Eastbound Left-Turn Lane Warrant

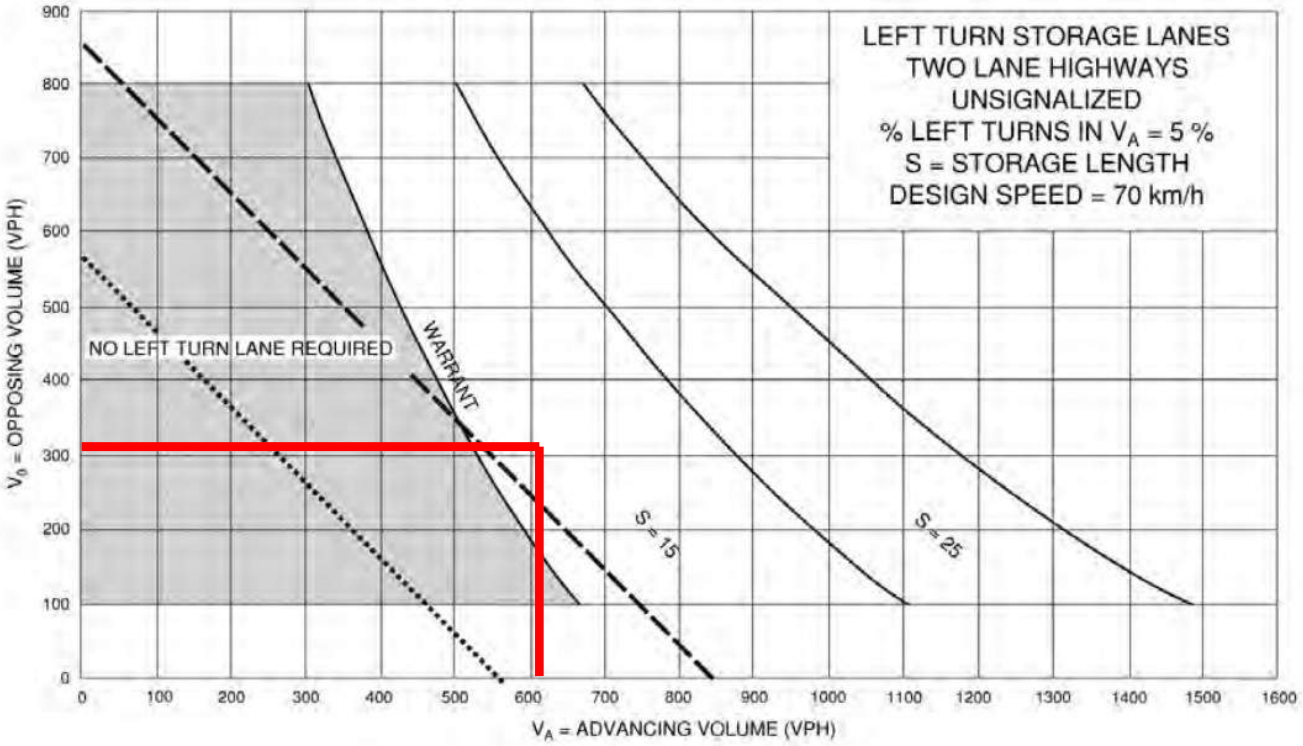
2031 Future Total Horizon Year

Street I & Columbia Way

AM Peak Hour



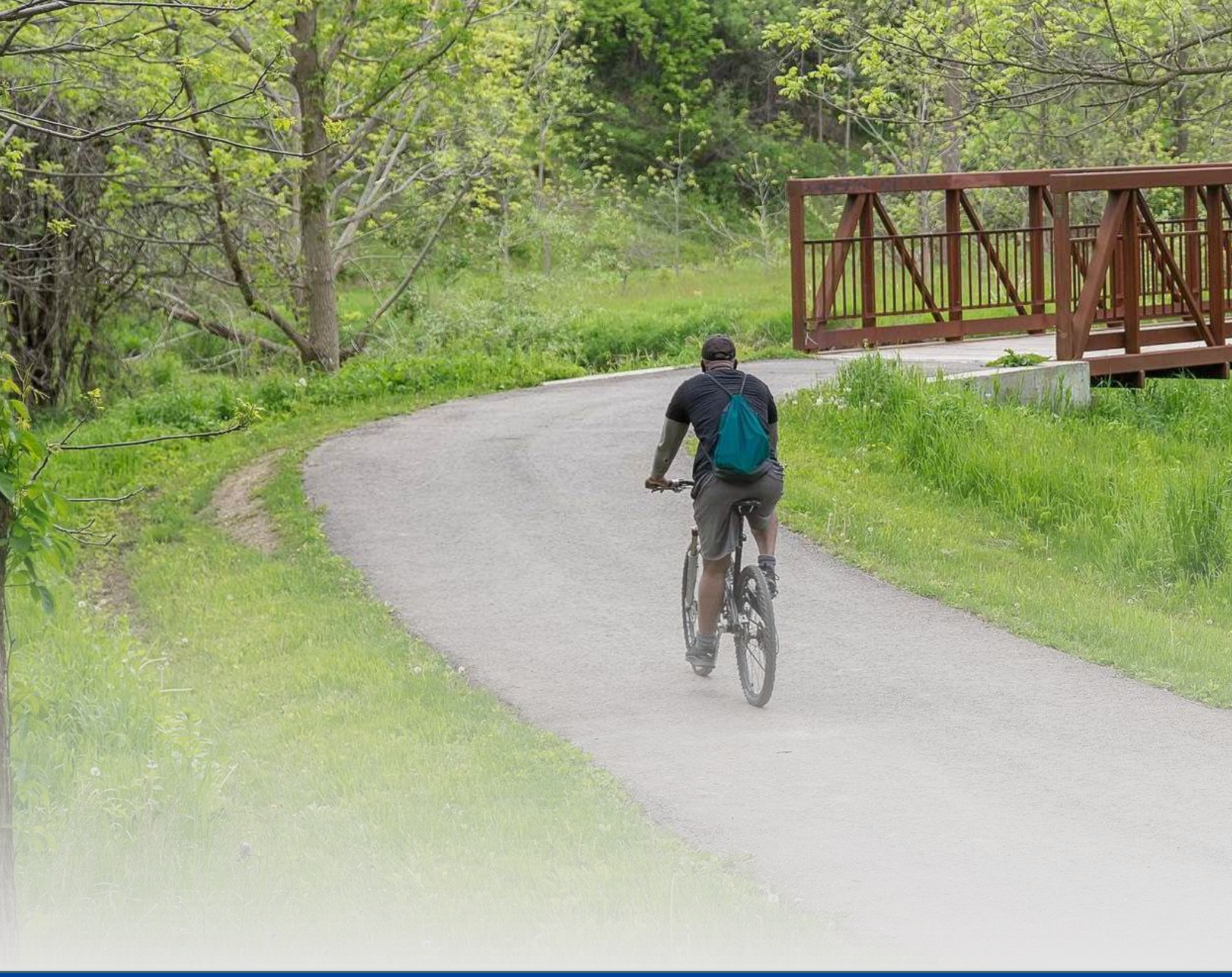
PM Peak Hour



Westbound Left-Turn Lane Warrant
2031 Future Total Horizon Year
Street I & Columbia Way

APPENDIX N

Town of Caledon
Active Transportation Master Plan Excepts



Town of Caledon

Active Transportation Master Plan

June 2024

TOWN OF CALEDON

Pedestrian Network Policies

Generator	Pedestrian Facility Implementation Policy
Urban Arterial Road	On both sides of urban arterial roads.
Urban Collector Road	On both sides of all urban collector roads.
Urban Local Road	On one side of all urban local roads, except for the following generator instances:
Transit	On both sides of every street that serves a transit route.
Intensification/Urban Area	On both sides of the road in the intensification areas.
School	On both sides of every street within 800 metres of a school.
Community Facilities/Local Amenities	On both sides of every street within 400 metres of a community facility or local amenity.
Parks and Trails	On both sides of every street within 500 metres of a community facility or local amenity.
Pedestrian and Cycling network	To minimize gaps in the street, providing pathway connections, as well as the multi-use trails network.





Map 1. Existing conditions

Existing Conditions

Town of Caledon Active Transportation Master Plan

Existing Network

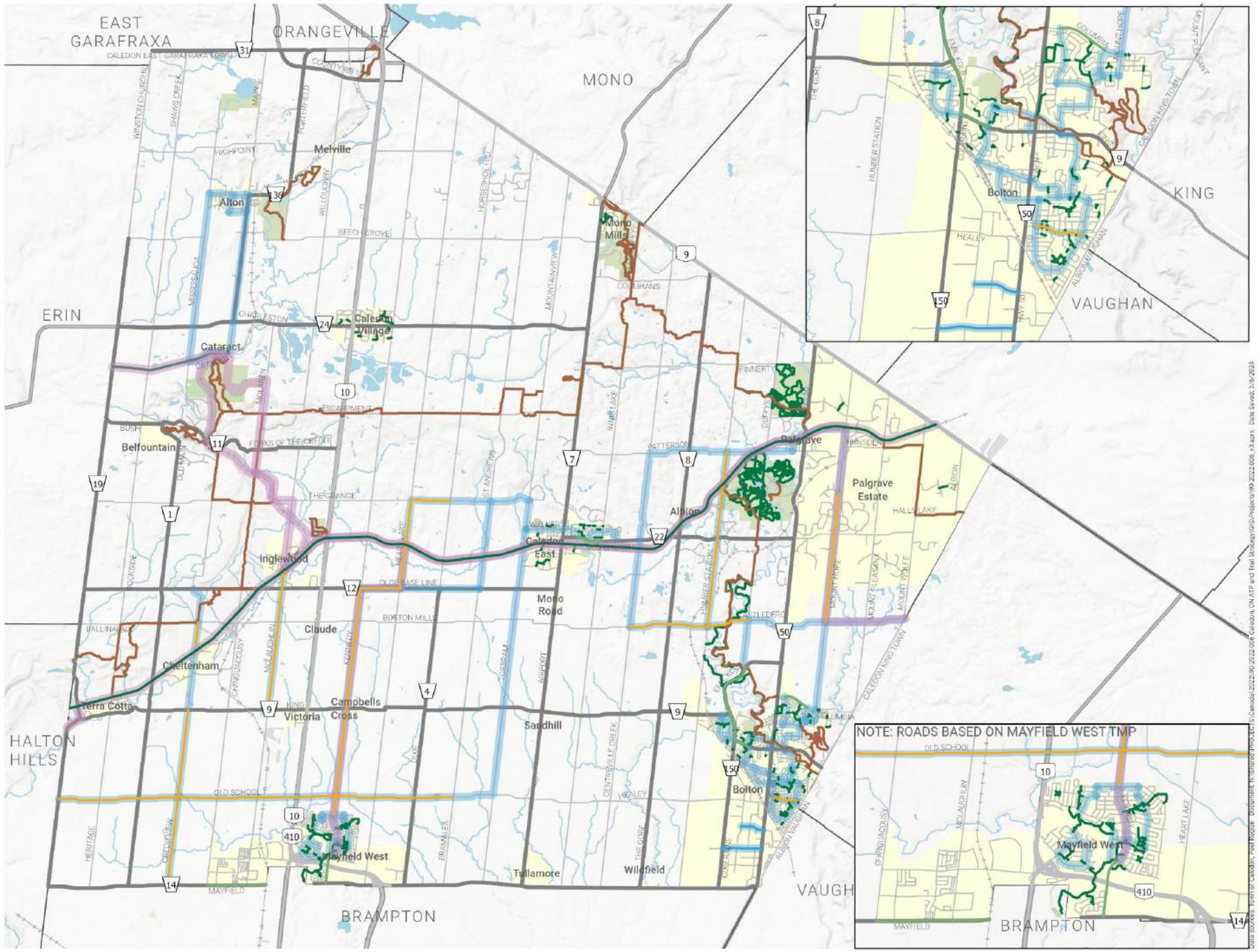
- Multi-use Path
- Painted Bike Lane
- Paved Shoulder
- Signed Cycling Routes
- Multi-use Trail
- Walking Trail
- Designated Trail

Features

- Regional Road
- Provincial Highway
- Railway
- Settlement Area
- Provincial Park
- Park
- Municipal Boundaries

0 1.5 3 KILOMETRES

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Multi-use Paths

Multi-use paths are bidirectional facilities physically separated from the roadway that can be used by people walking and cycling. These are the existing multi-use paths in Caledon:

- Columbia Way
- Kennedy Road
- Emil Kolb Parkway (Regional)
- Old Church Road (Regional)
- Mayfield Road (Regional)

Picture 19. Multi-use path on Kennedy Road



Painted Bike Lanes

Painted bike lanes are designated spaces for people cycling at the edge of the roadway. They are delineated with a white line, bicycle and diamond pavement markings, and signage. There are three roads with painted bike lanes:

- McEwan Drive W
- Bolton Heights Road
- George Bolton Parkway

3.3.3 Trails (Facilities Outside Road Right-of-Way)

The Town has a range of existing and proposed trails in their network, including trails owned by the Town, as well as other organizations. For this plan, the trails have been organized into the following types along with their lengths. The trails are presented by type on Map 1.

Table 4. Existing trails

Trail Type	Existing Kilometres
Multi-use Trail	149
Hiking Trail	144
Designated Trail	94

Multi-use Trail

Multi-use trails have either a paved or packed unpaved surface and are wider to accommodate different uses such as cycling, walking, and horseback riding. Examples of existing multi-use trails in Caledon include:

- Caledon Trailway (packed gravel; hiking, biking, horseback riding).
- Elora Cataract Trailway (packed gravel; hiking, biking, horseback riding).
- Etobicoke Creek Trail (paved, hiking, biking).

Picture 24. Trail sign



The Caledon Trailway runs east-west across the Town, from Terra Cotta to Palgrave on repurposed rail line. The trail is also used as part of the Greenbelt Cycling Route and Trans Canada Trail designated trail routes. There is parking located at most road crossings, with larger parking areas found within settlement areas such as East Caledon, Inglewood, and Terra Cotta. There are a few grade-separated road crossings along the trailway, with a bridge over Hurontario/Highway 10, a reused trestle bridge at Mill Road, and at Duffy's Lane. Some road crossings are controlled, for example at Airport Road, there is a separated crossride treatment at a dedicated signal to cross the road. Most road crossings are uncontrolled, where trail users yield to oncoming traffic.

Picture 25. Caledon Trailway



Hiking Trail

There are many examples of trails that have a dirt surface and are often narrower in width. They may have rules around permitted use, such as walking only. Examples of hiking trails in Caledon include:

- Albion Hills Conservation Area (hiking trail loops).
- Humber Valley Heritage Trail (hiking only – link from Bolton to Albion Hills).
- Ken Whillans Conservation Area (loop trails).
- Oak Ridges Trail (hiking only – link to Palgrave Forest).
- Palgrave Forest Management Area (looped hiking trails).
- Humber Valley Heritage Side Trail (hiking only).
- Bruce Trail (Hiking trail, alignment across town, partially designated, includes following Escarpment Road).

Designated Trail

There are a few trails that exist in Caledon that are part of larger initiatives and use a mixture of roads and trails. These are not additional physical trails, but rather apply the trail initiative designation onto the roadway or existing trail. Examples of designated trails in Caledon are:

- Trans Canada Trail (follows trails – Elora-Cataract Trailway, McLaren, McLaughlin, then Caledon Trailway to boundary).
- Greenbelt Cycling Route (uses the Caledon Trailway, Mount Hope Rd., and Castlederg Rd.).

Picture 26. On road section of the Trans Canada Trail designated trail route

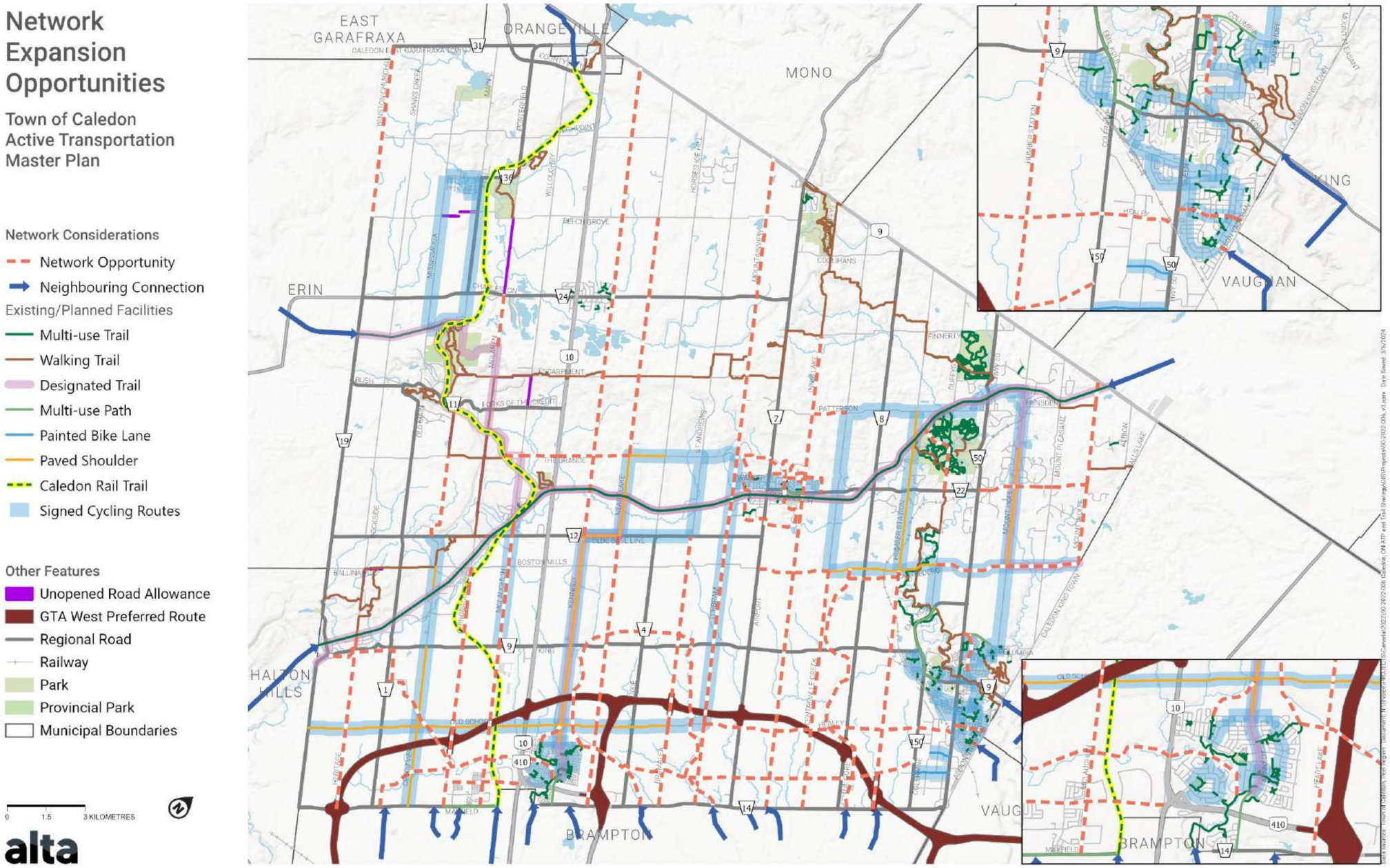


3.3.4 Trail Jurisdiction

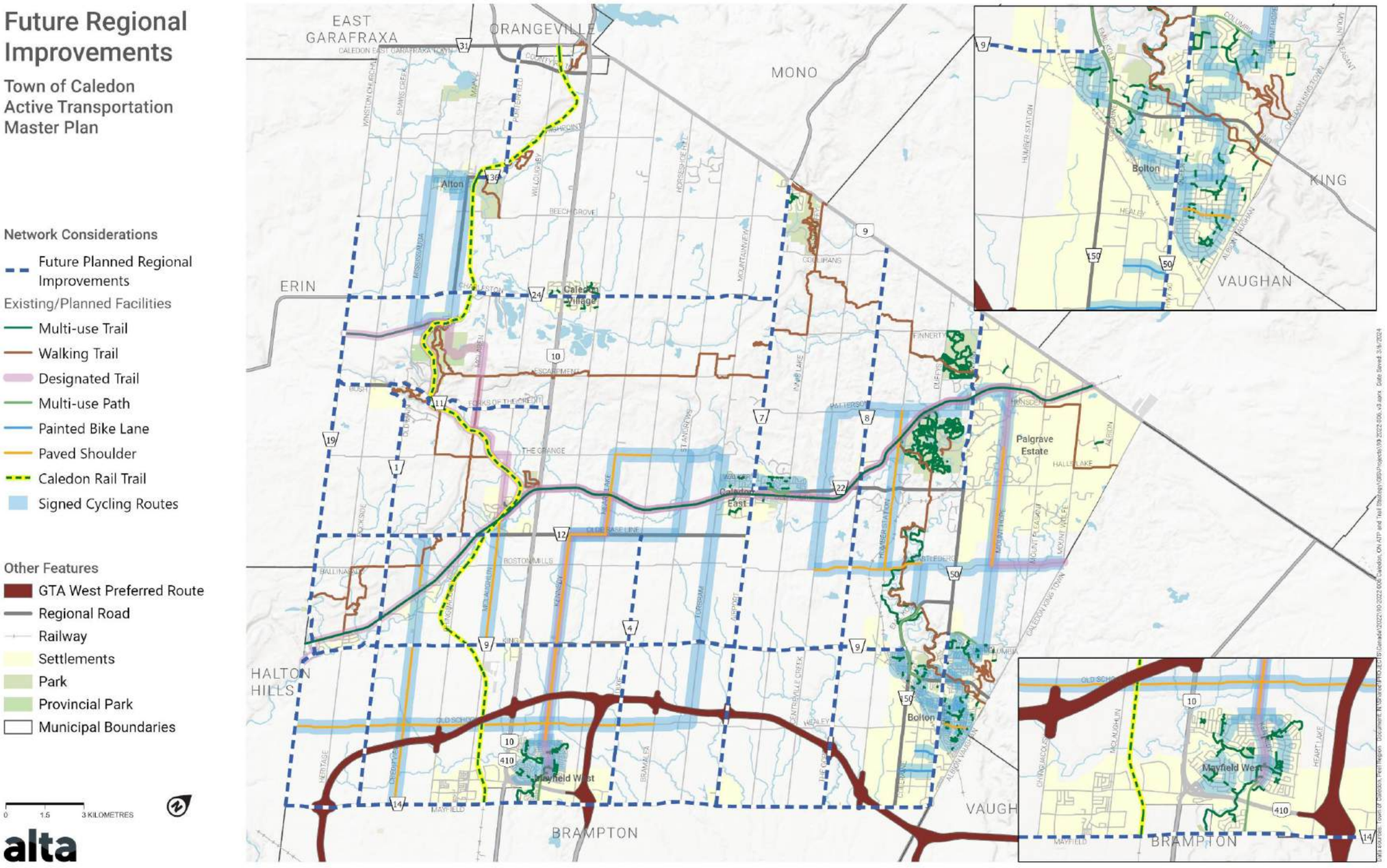
Trails Owned by Town

The Town owns and manages the existing Caledon Trailway, and planned north-south rail trail, which provide routes across Caledon using abandoned rail line corridors. The ATMP identifies opportunities to improve and connect with these trails as well as opportunities for new trail routes in Caledon, with specific focus on opportunities to use unopened road allowances, securing corridors in greenfield developments, and on Town-owned lands.

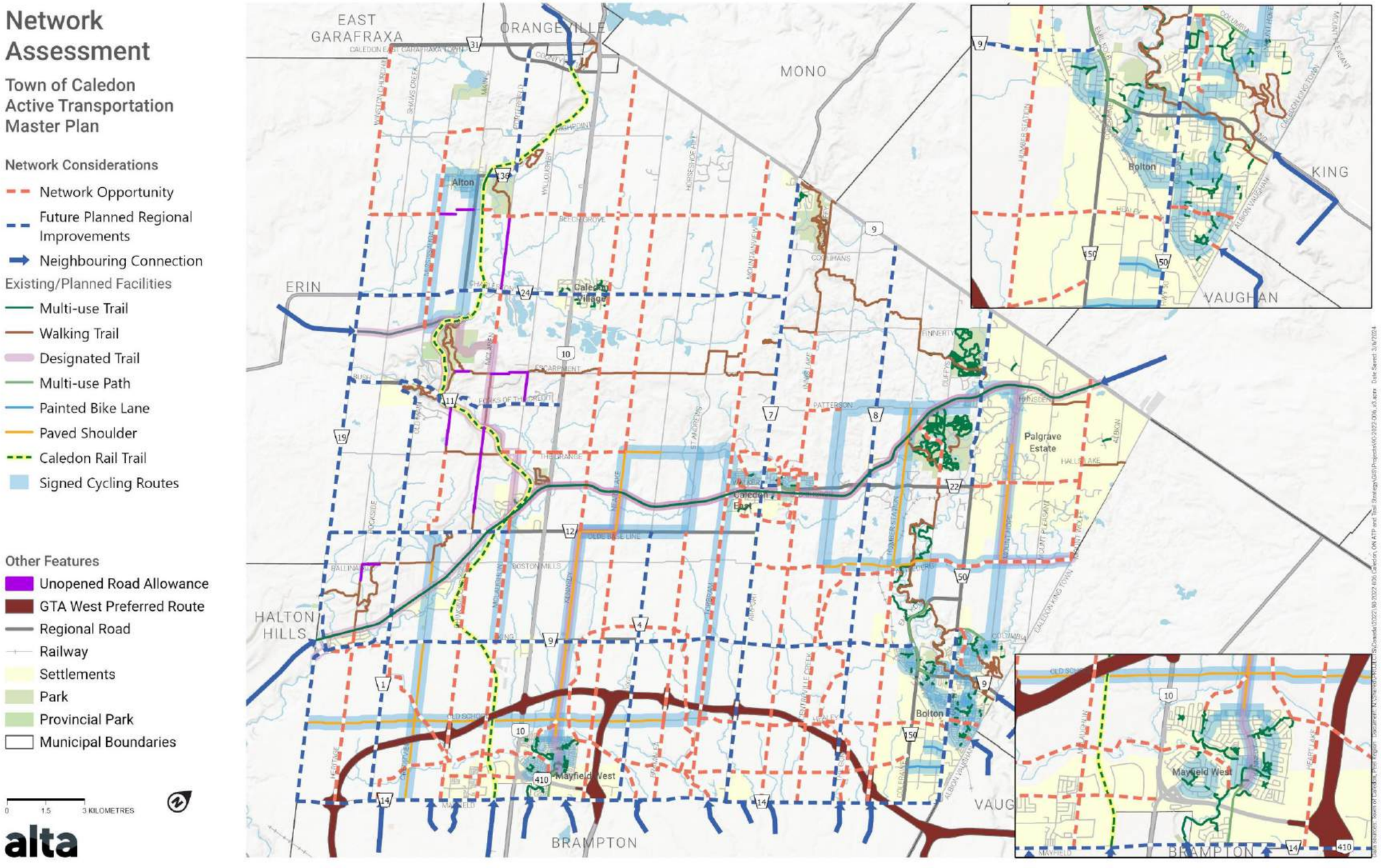
Map 2. Network expansion opportunities



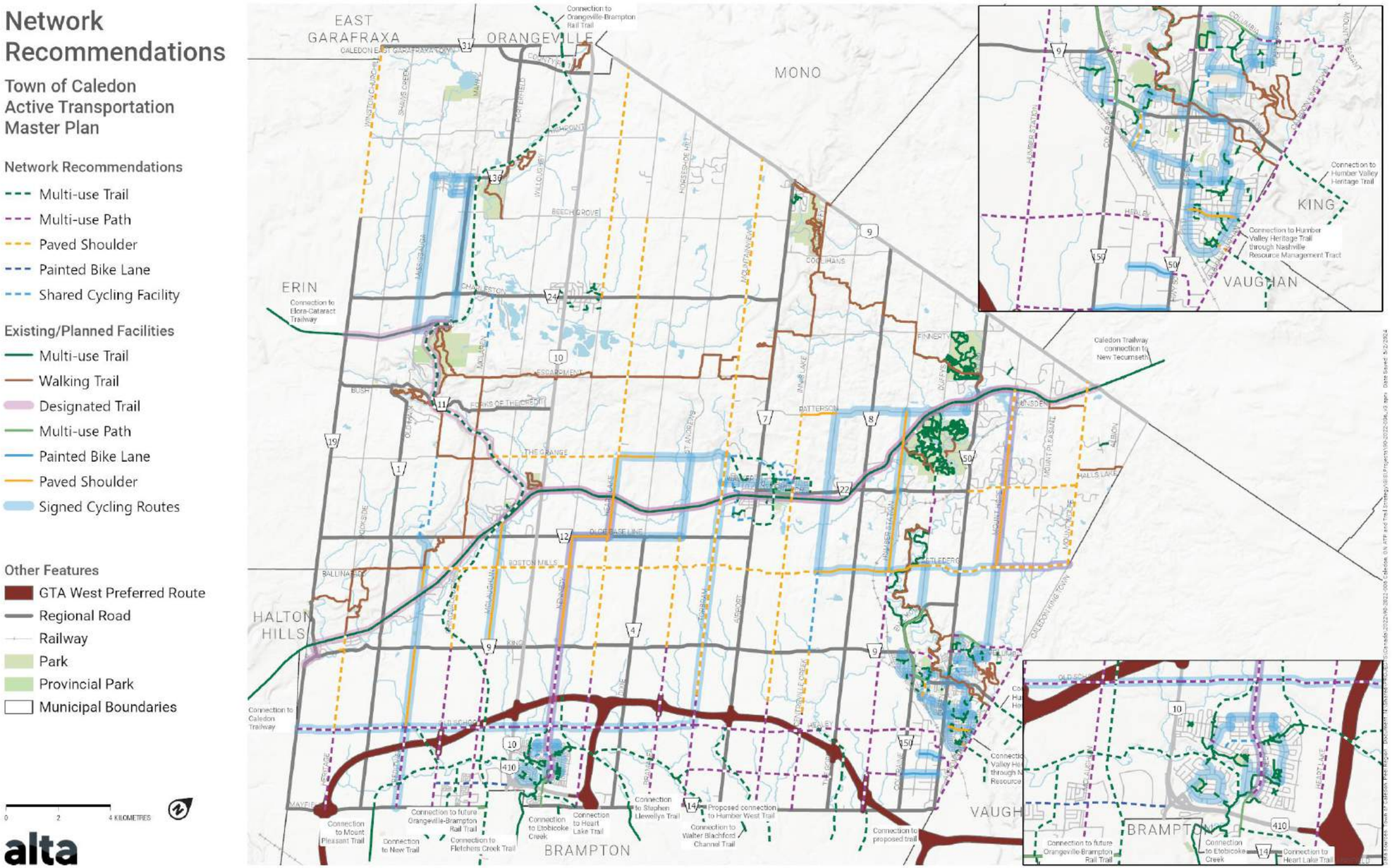
Map 3. Future regional improvements



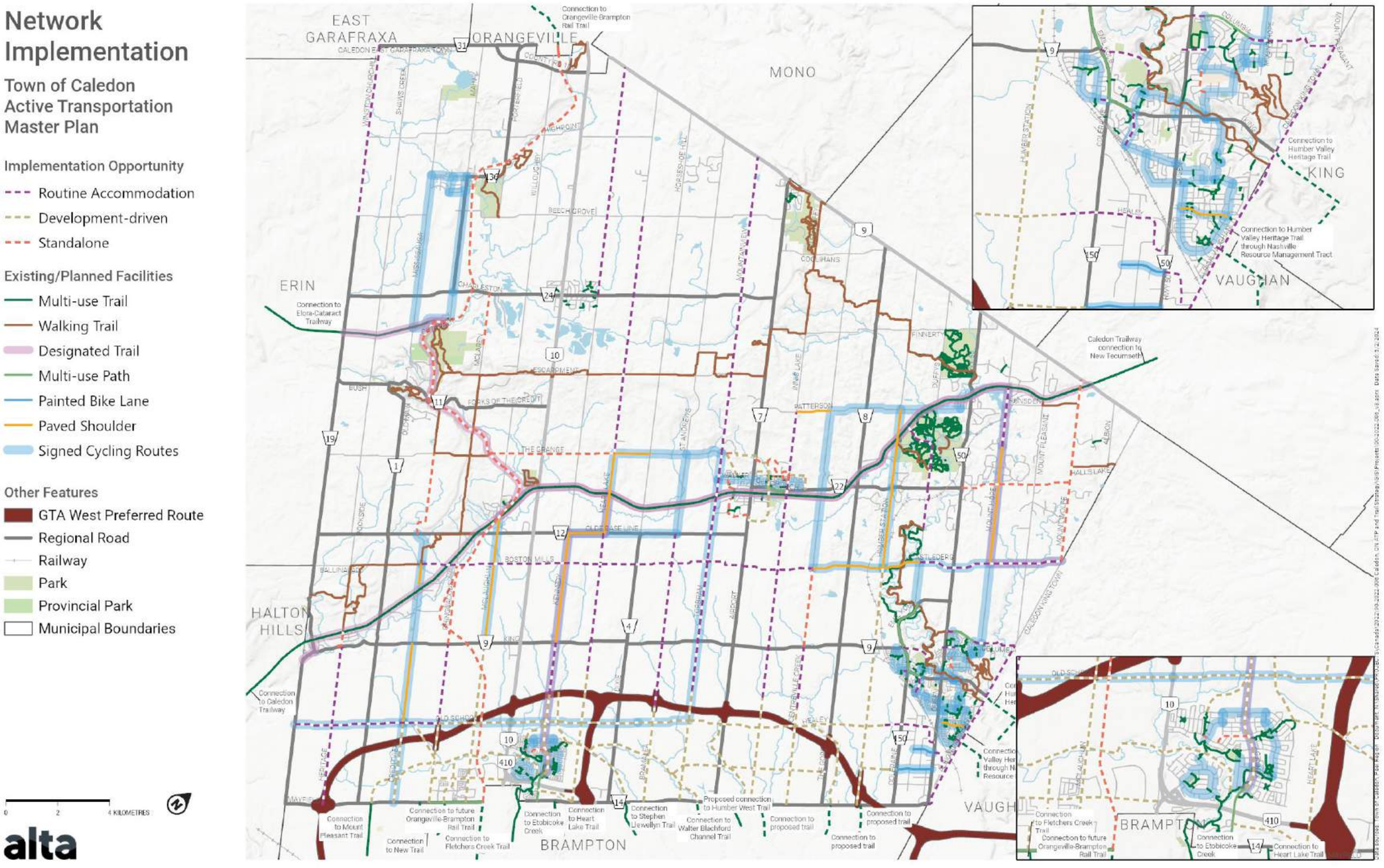
Map 4. Network assessment



Map 5. Network recommendations



Map 7. Network implementation



5.4.3 Intersections and Crossings

Where active transportation facilities meet roads at intersections, midblock crossings, and driveway crossings is where there is more potential for conflict between active transportation users and automobile traffic. These locations should include design elements to remove, mitigate, or manage conflict points as much as possible.

OTM Book 18 chapter 6 provides clear design guidance for treatment options at these locations for cycling users, in addition to guidance on cycling facilities at roundabouts, interchanges and highway ramp crossings, railway crossings, and grade-separated crossings. The guidance includes selection tools to identify appropriate treatment options based on roadway characteristics. The OTM Protected Intersection Guide provides guidance on the design of protected intersections within Ontario municipalities.

OTM Book 15 outlines planning and design treatment options for pedestrian crossings at controlled and uncontrolled locations as well as selection guidance.

Acknowledging that intersections pose the greatest danger to vulnerable road users, pedestrians and cyclists, intersection treatments that provide more separation between active transportation users and motor vehicles are preferred. Continuous sidewalk and cycling facility treatments are preferred where active transportation facilities cross driveways. This treatment has shown to improve street level interactions, making them a more comfortable and predictable experience for all users including motorists.

Picture 38. Examples of protected intersections





Picture 39. Examples of protected intersections



5.4.4 Trailheads

Trailheads are located at trail entrances or access points. They can vary in scale and amenities provided depending on their context and available facilities. Trailheads act as a meeting area or gathering space for people who are travelling the trail together. Trailheads should include accessible paths connecting the trail to the parking area and site amenities. The Town should integrate trailhead amenities with existing or planned infrastructure such as parking, benches, etc. wherever feasible and appropriate. Trailheads should be designed to minimize negative impacts on the trail experience, such as trail crossings and introducing conflicts to the trail route.

Major trailhead locations often include automobile parking with accessible spaces, seating, waste receptacles, bike parking, an information kiosk, washrooms and drinking water fountains. Major trailheads should be implemented along primary trail classifications, at strategic points where parking can be provided and there is a high demand for trail use. Minor trailheads should include some seating, waste receptacle, and wayfinding signage. Minor trailheads should be implemented along primary trail classifications at all road entrances that are considered non-major trailheads.

Trailheads should be planned at key locations along a trail to provide access to users coming from different areas. They should also be considered with some frequency to provide amenities to trail users who are travelling along a trail.