

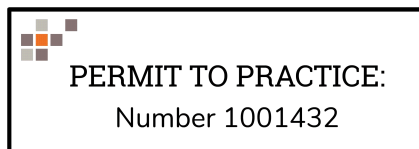
4501 ARTHUR DRIVE, DELTA

Transportation Impact Assessment (TIA)



Braden Huggett, EIT
Transportation Engineer-in-Training
Author

Kristen Machina, P.Eng.
Senior Transportation Engineer
Reviewer



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WATT VANCOUVER
380 – 825 Homer Street
Vancouver, BC V6B 2W2
778-309-1253



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1.0 INTRODUCTION

WATT Consulting Group (WATT) was retained by 1228289 BC Ltd. to prepare a Transportation Impact Assessment (TIA) for 4501 Arthur Drive in Delta, BC for the City of Delta (City).

The TIA forms part of the rezoning application. The information presented in this report reflects the rezoning application site plan package by ParaMorph Architecture Inc. as of July 2025.

1.1 Background

In November 2023, WATT submitted a TIA for the 4501 Arthur Drive site as part of a rezoning application to build a four-story multifamily rental building with 56 dwelling units at the subject site.

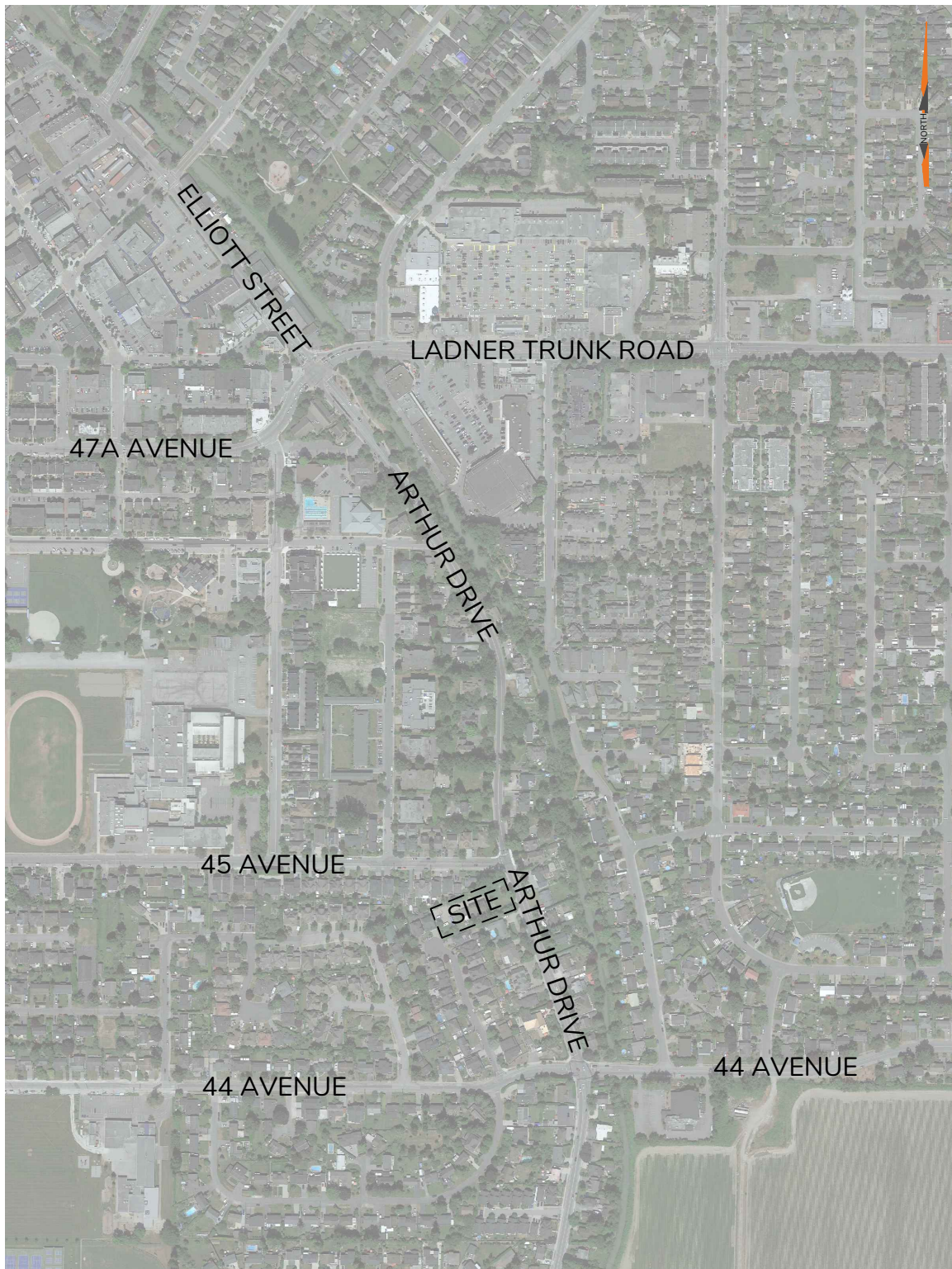
In February 2024, an addendum to the TIA was issued to address 23 units added to the proposed development. A subsequent addendum was issued in May 2024 to address an additional two units added to the development, increasing the total number of units to 81.

The rezoning application for the multifamily rental building was rejected by City Council. A new rezoning application has been submitted to develop a 24-unit townhouse complex, satisfying the council's concerns over density.

1.2 The Site Today

The development site is bounded by 45 Avenue to the north and Arthur Drive to the east.

The existing site is currently a HC Zone occupied by 1 single family house (identified as a heritage building). The site location and lot layout are illustrated in **Figure 1**.



4501 Arthur Drive, Delta
Transportation Impact Assessment (TIA)

Figure 1
Site Location



1.3 Proposed Development

The proposed rezoning is planned to be rezoned to a RT76 Zone with a residential multi-family (townhouse) development with 24 dwelling units. The proposed vehicular access to the site is on Arthur Drive.

The development will replace the existing single-family house. The date of occupancy of the development is expected to be in 2027.

1.4 This Report

This report is provided as part of the rezoning application being submitted to the City of Delta. The report contains the following:

- An overview of the transportation context in the vicinity of the site, including vehicular, pedestrian, cycling, and transit facilities, and area travel characteristics.
- An overview of the proposed development program.
- An assessment of the existing traffic activity patterns and volumes in the study area during the weekday morning and afternoon peak periods.
- An assessment of the trip generation and assignment characteristics of the proposed development.
- A review of vehicular traffic operations at intersections in the area under existing (2025), opening year (2027), five-year planning horizon (2032), and ten-year planning (2037) conditions, including an assessment of the operational impacts of the proposed development and traffic signal warrants for potential intersection improvements.
- A review of site characteristics including sight distance assessments and driveway access spacing.



2.0 TRANSPORTATION CONTEXT

2.1 Road Network

The existing road network, lane configuration, and intersection control are illustrated in Figure 2. The study area consists of five roadways.

Arthur Drive is a north-south arterial road under the jurisdiction of the City of Delta. It extends from 47A Avenue / Ladner Trunk Road (where Elliott Street terminates) in the north, to 34B Avenue in the south, where it continues as 53 Street. For most of the study area, Arthur Drive has a two-lane cross-section (one lane in each direction). Auxiliary turn lanes are provided at the intersections with 47A Avenue / Ladner Trunk Road and 44 Avenue. South of 44 Avenue, it is a designated on-street bike route with painted bike lanes and bike route guide signs. South of 44 Avenue, there is an additional northbound lane, although only one receiving lane north of 44 Avenue. Curbside parking is not available. Sidewalk is available on the west side of the road and on the east side of the road with gaps.

44 Avenue is an east-west road under the jurisdiction of the City of Delta. 44 Avenue extends from 48B Street in the west, to 57 Street in the east where it continues as Harvest Drive. It is classified as a local road between 48B Street and Arthur Drive, and as collector road between Arthur Drive and 57 Street. For the majority of the study area, 44 Avenue has a two-lane cross-section (one lane in each direction). Auxiliary left turn lanes are provided at the intersection of Arthur Drive. A Multi-Use Pathway is available on the south side of the road west of Arthur Drive, and on-street shared bike lanes are available east of Arthur Drive with pavement markings and bike route guide signs as part of the on-street bike route. Curbside parking is available on the north side of the road west of Arthur Drive, and on both sides of the road east of Arthur Drive. Sidewalk is available on the north side of the road and as part of the Multi-Use Pathway on the south side of the road west of Arthur Drive. Sidewalk is also available on the north side of the road east of Arthur Drive, and on the south side of the road up to east of 52A Street.

45 Avenue is an east-west collector road under the jurisdiction of the City of Delta. 45 Avenue extends from 46A Street in the west, to Arthur Drive in the east. Throughout the study area, 45 Avenue has a two-lane cross-section (one lane in each direction). Curbside parking is available on both sides of the road. Sidewalk is available on both sides of the road with major gaps on the south side.



47A Avenue / Ladner Trunk Road are east-west arterial roads under the jurisdiction of the City of Delta. 47A Avenue extends from 47A Street in the west (where River Road West terminates), to Arthur Drive in the east, where it terminates. It continues east as Ladner Trunk Road and terminates at Highway 10/91 interchange. In most of the study area, 47A Avenue has a two-lane cross-section (one lane in each direction) and Ladner Trunk Road has a five-lane cross-section (two lanes in each direction and a center left turn lane). There are no cycling facilities on either road within the vicinity of the study area. Curbside parking is available on both sides of 47A Avenue but it is not available on Ladner Trunk Road. Sidewalk is available on both sides of 47A Avenue and Ladner Trunk Road.

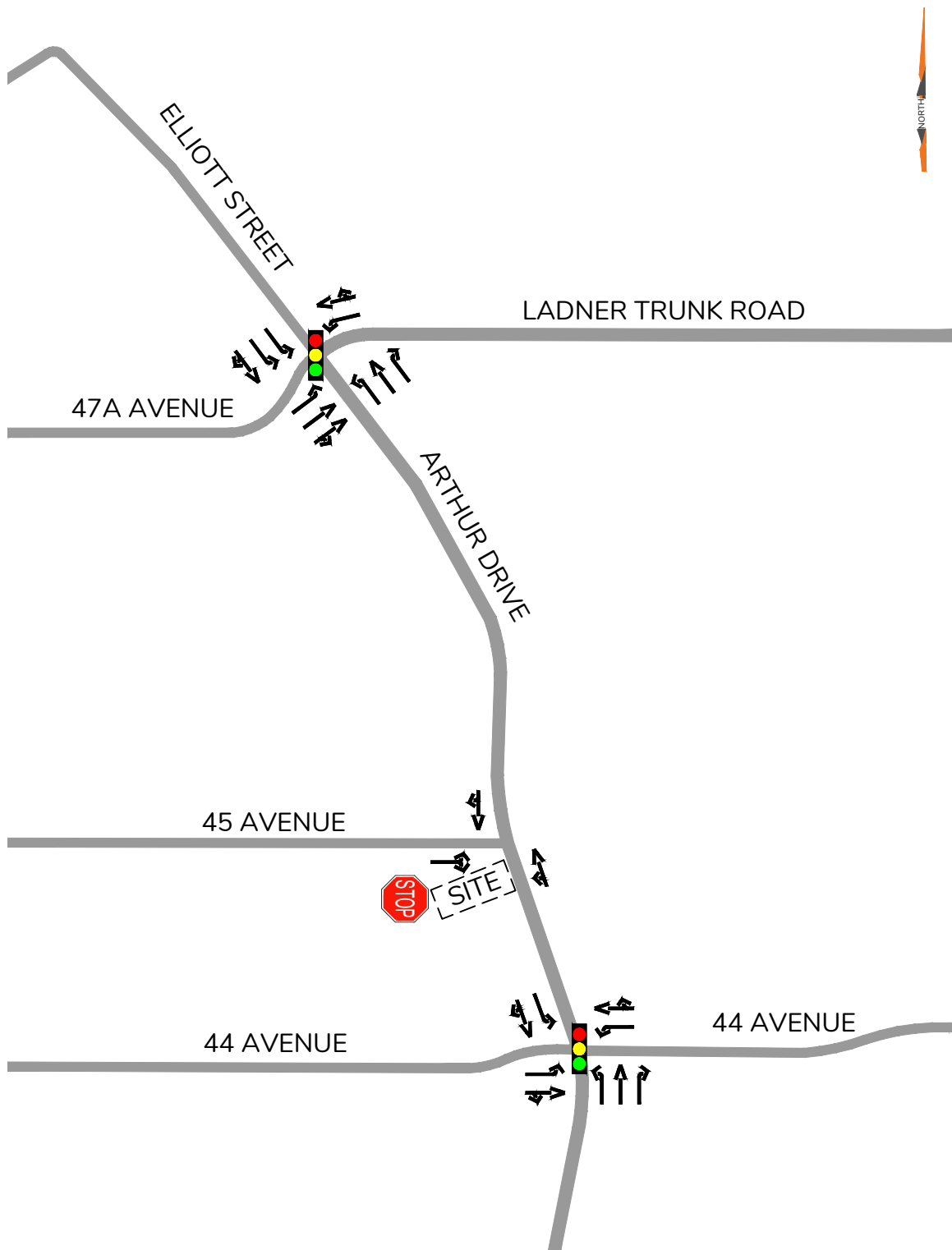
2.2 Study Intersections

The study area consists of three intersections.

44 Avenue & Arthur Drive is a signalized four-legged intersection. Except for northbound approach where a dedicated right turn lane is available, all other approaches have a shared through-right turn lane and a dedicated left turn lane. Pedestrian crossings are available on all four legs of the intersection. A push-button actuated signal is available for cyclists on all four approaches.

45 Avenue & Arthur Drive is an unsignalized three-legged intersection with stop control on the eastbound approach and free movements for northbound and southbound approaches. All approaches have a single shared lane for all movements. A pedestrian crossing is available on the west leg of the intersection, and overhead flashing beacon crosswalk is available on the north leg of the intersection.

47A Avenue / Ladner Trunk Road & Arthur Drive / Elliott Street is a signalized four-legged intersection. Three lanes are available for all approaches, except for the westbound approach where two lanes are available. All approaches have one dedicated left turn lane, except for the southbound approach where two dedicated left turn lanes are available. A dedicated right turn lane is also available for northbound approach. A channelized right turn lane with yield control is available for westbound approach. Pedestrian crossings are available on all four legs of the intersection. A push-button activated signal is available for pedestrians at the channelized right turn from the westbound approach.





2.3 Transit Network

Table 1 summarizes the transit route in the site vicinity. The development is served by five bus routes, which provides connections to key employment, institutional, transit exchanges and recreational locations such as Ladner Village, Delta View Care Centre, Ladner Exchange, Scottsdale Exchange, Bridgeport Station, Tsawwassen Mills, South Delta Exchange, Ladner Leisure Centre, Delta City Hall, and Delta Hospital. There is an existing southbound bus stop on the site's frontage, and other bus stops are less than 100 meters (i.e. a 1-minute walk) away.

Table 1 - Existing Transit Services

Route	Direction	Walking Distance	Service Frequency (Peak Hours)
310 – Scottsdale / Ladner	East/West	100 m	20 min
601 – Bridgeport Station / South Delta / Boundary Bay	North/South	10 m	15 min
606 (PM Peak Only) – Ladner Ring	Circular	100 m	20 min
608 (AM Peak Only) – Ladner Ring	Circular	10 m	30 min
609 – South Delta Exchange / Ladner Exchange	North/South	10m	30 min
616 – Ladner South / Ladner Exchange	Circular	100 m	30 min



2.4 Cycling Network

The existing cycling network is illustrated in **Figure 3**. The site has adequate connection to the network of cycling routes in the City.

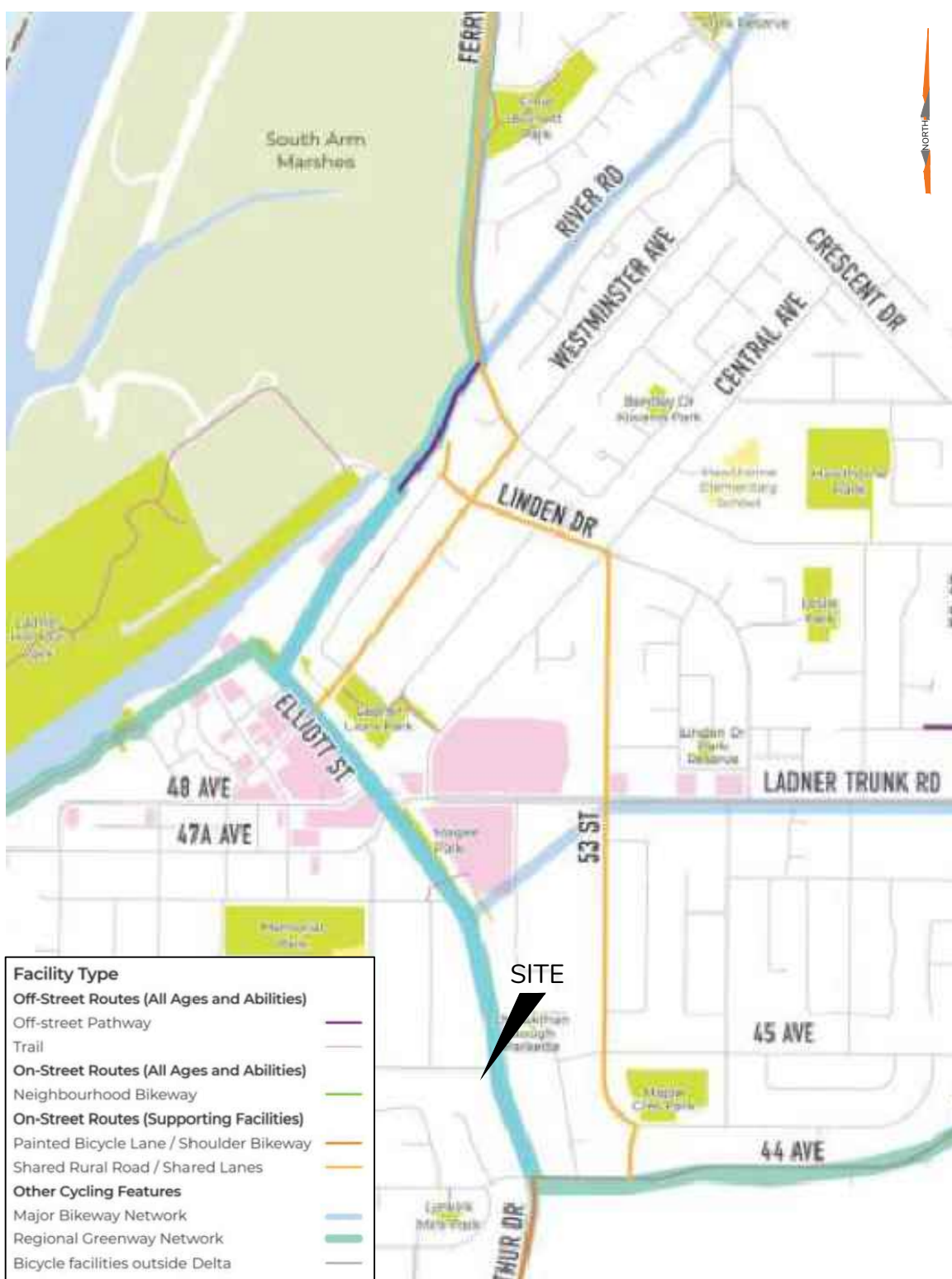
Approximately 200 m from the site, 44 Avenue (east of Arthur Drive) and Arthur Drive (south of 44 Avenue) are part of the on-street bike routes where signed guidance and/or pavement markings are available. A multi-use pathway is also available on 44 Avenue west of Arthur Drive. These cycling routes connect users to areas across the City. However, given that much of the bike route shares the lane with vehicles, the bike route may not be comfortable for cyclists of all ages and abilities.

According to the Delta Cycling Master Plan, cycling improvements can be expected within the site vicinity. Off-street pathways are expected to be provided on 45 Avenue and Arthur Drive south of 44 Avenue. Protected bike lanes are expected to be provided on Arthur Drive north of 44 Avenue and 44 Avenue east of Arthur Drive. Ladner Trunk Road and Arthur Drive are also part of TransLink's Major Bikeway Network (MBN), according to the Regional Cycling Strategy. The MBN will provide safer and comfortable cycling facilities connecting Urban Centres and major destinations across Metro Vancouver. Arthur Drive is also identified in Metro Vancouver's *Regional Greenways 2050* plan, which aims to provide a complete network of recreational trails that support active transportation. These improvements would enhance cycling connectivity in the region and allow for a better riding experience for cyclists of different ages and abilities.

2.5 Pedestrian Environment

The walking infrastructure is sufficient in proximity to the site. Sidewalk is available on the west side of Arthur Drive and a short section on the east side of Arthur Drive up to the bus stop at 4400 block north of 44 Avenue. Pedestrian crossing on Arthur Drive is available with an overhead flashing beacon crosswalk at 45 Avenue. Sidewalk is also available on the north side of 45 Avenue, which connects to Delta Secondary School.

The proposed development is planned to include refurbishments and landscaping to the existing sidewalk on Arthur Drive along the site frontage. A curb cut will be provided at the parkade access in the centre of the development. A relocation of the existing southbound bus stop on the west side of Arthur Drive will be required to accommodate the parkade access.





3.0 PROPOSED DEVELOPMENT

3.1 Overview

The architectural and landscape site plans are provided in **Appendix A**. The transportation-related elements of the proposed site plan are summarized in **Table 2**.

Table 2 - Development Program

Site Element	Details
Residential Units	24 units
Vehicle Parking	51 vehicle parking spaces.
Vehicular Access	Access to the residences is provided from the proposed driveway on Arthur Drive.
Bicycle Parking	6 short-term bicycle parking spaces.
Cyclist Access	Cyclist access to the residences is provided from the proposed driveway on Arthur Drive
Pedestrian Access	Pedestrian access is proposed to be located on Arthur Drive.



4.0 TRAFFIC VOLUMES

4.1 Traffic Analysis Scenarios and Design Periods

Vehicle traffic operational analysis has been undertaken for the weekday morning (AM) and afternoon (PM) peak hour under the following conditions:

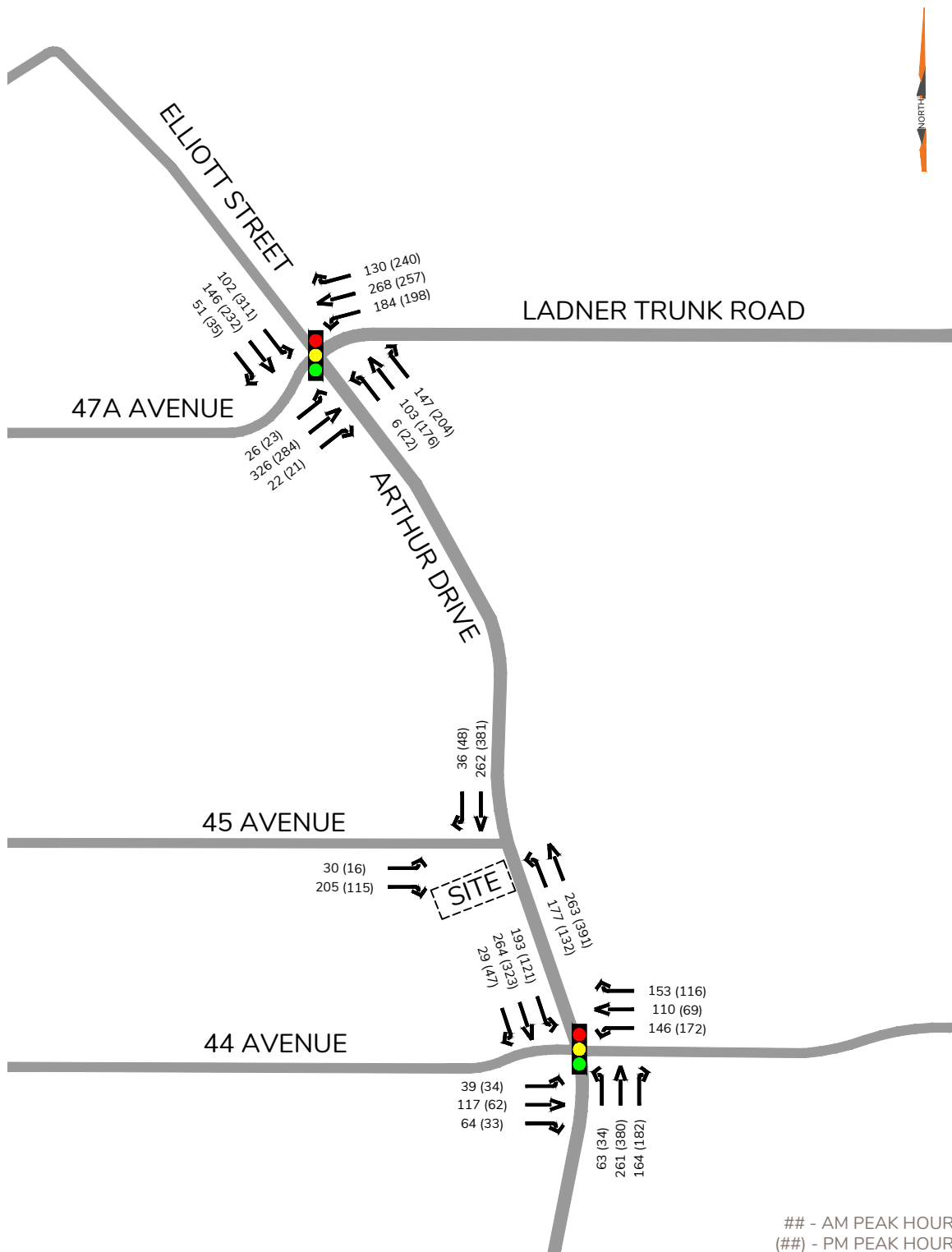
- **Existing traffic:** traffic activity under current conditions.
- **Background traffic:** traffic activity levels in the future, which includes allowances for corridor growth and other background developments.
- **Post-development traffic:** traffic activity levels in the future with the site redeveloped and projected site-generated traffic added to the road network.

Traffic operations are discussed in the following sections for these scenarios:

- 2025: Existing Conditions
- 2027: Opening Day, background and post-development conditions
- 2032: Five-year horizon after opening day, background and post-development conditions
- 2037: Ten-year horizon after opening day, background and post-development conditions

4.2 Existing Traffic

Turning movement volumes were collected on Thursday September 14th, 2023 between 7:00AM and 9:00AM to identify the AM peak hour, and 4:00PM to 6:00PM to identify the PM peak hour at the study intersections. The AM and PM peak hours were found to be between 8:00AM and 9:00AM, and 4:15PM and 5:15PM respectively. A +1.0% annual linear growth rate was applied to the 2023 turning movement count volumes to estimate existing (2025) volumes. Existing traffic volumes for the weekday AM and PM peak hour are illustrated in **Figure 4**.





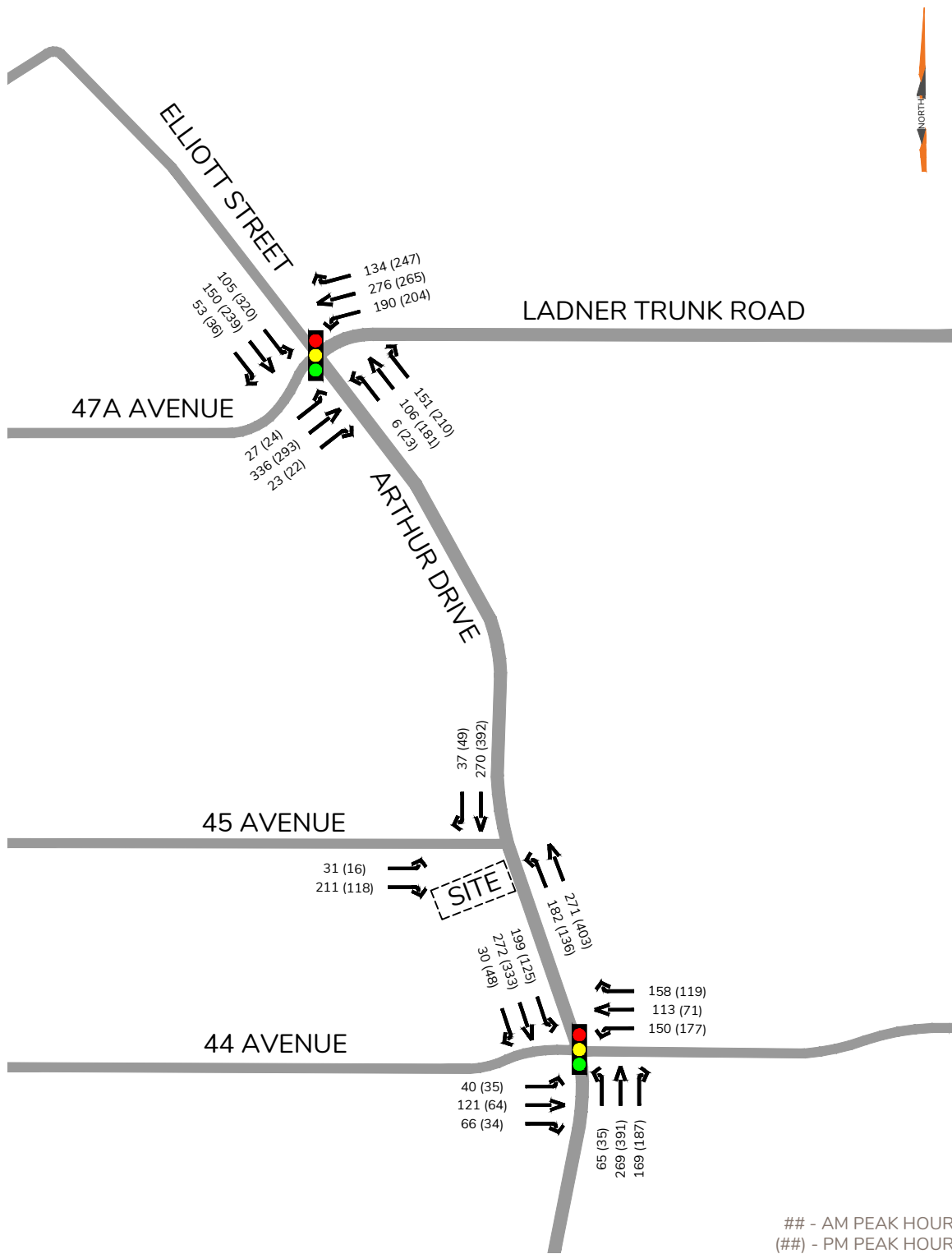
4.3 Background Traffic Volumes

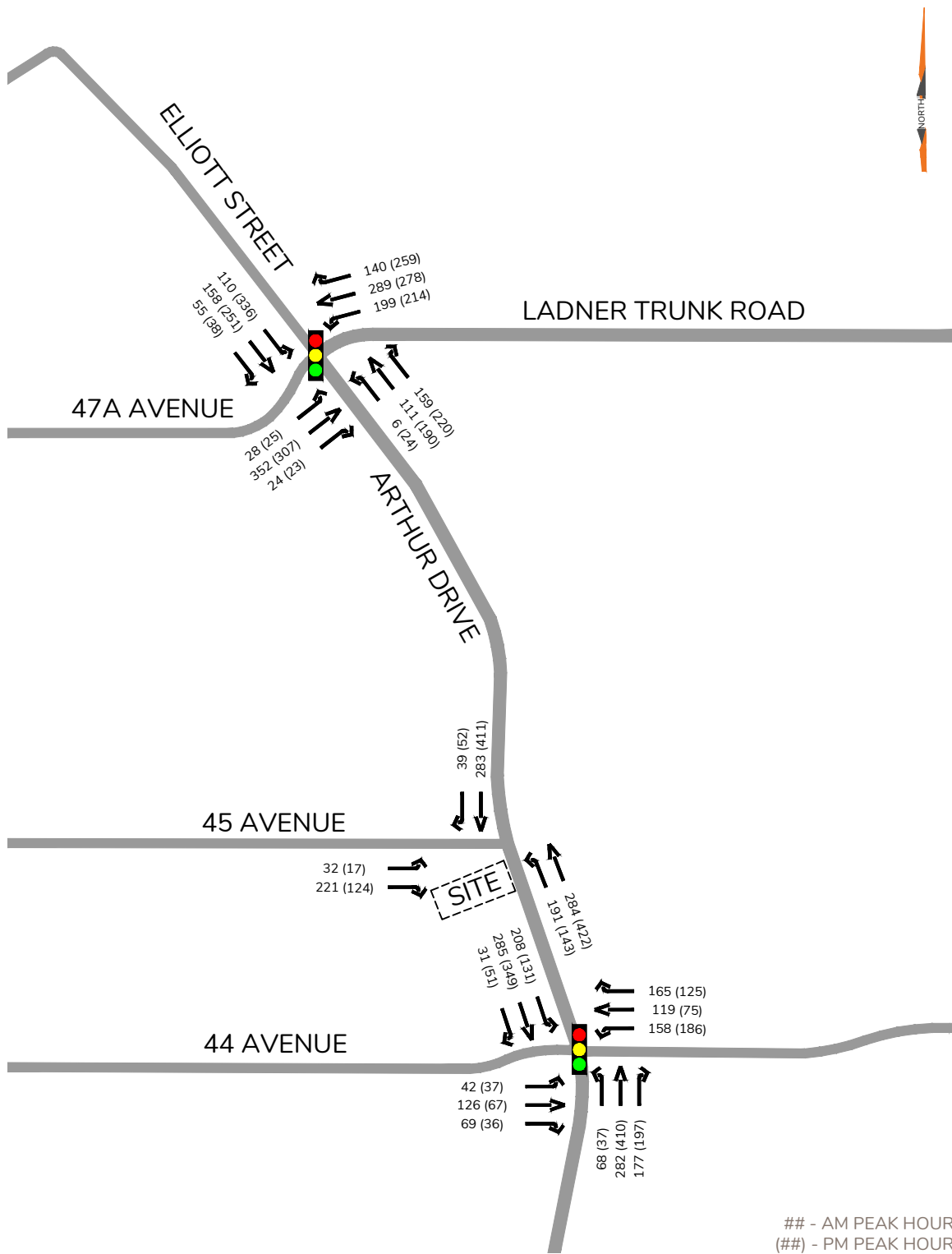
4.3.1 Corridor Growth

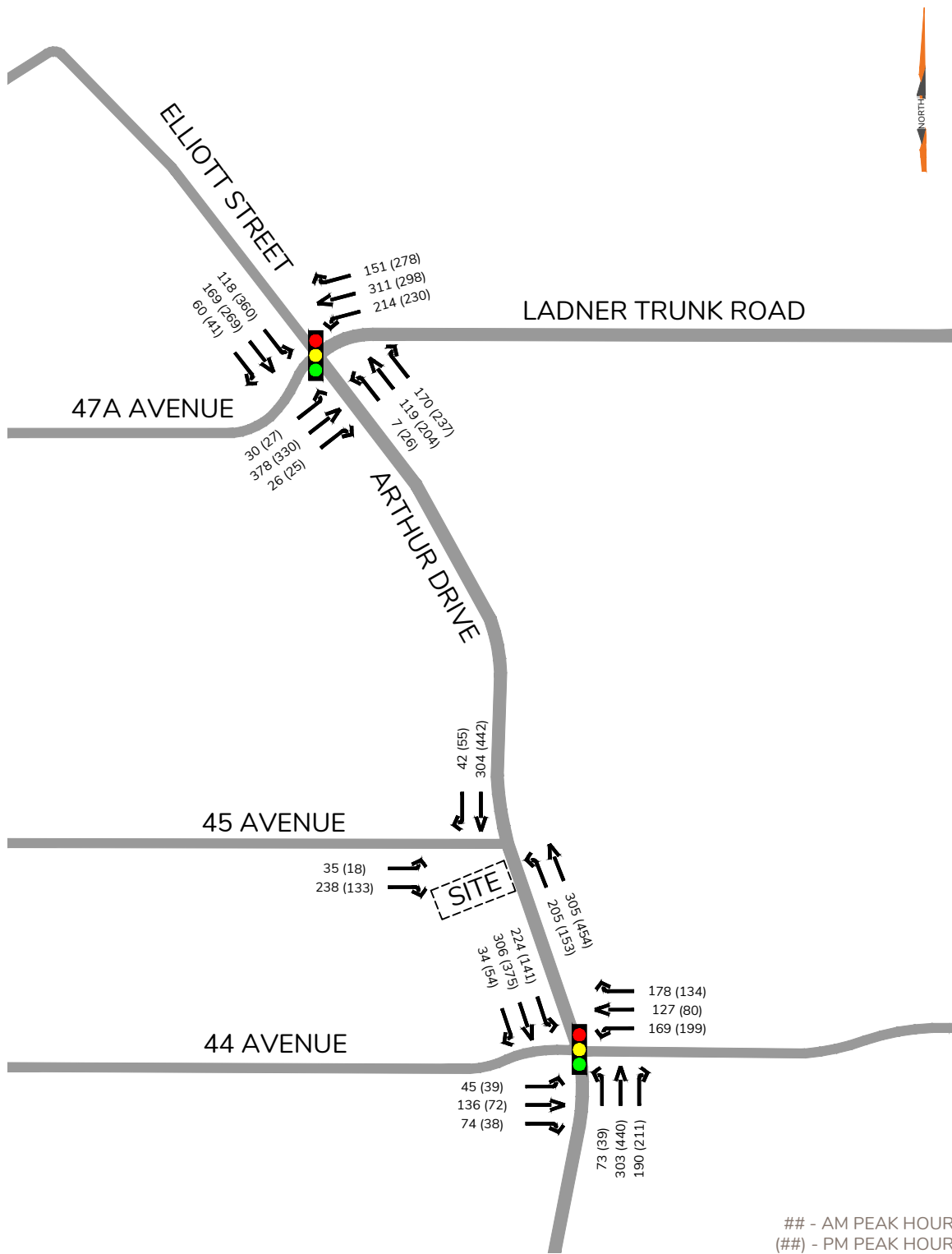
Corridor growth for all study roads was forecast using a +1.0% annual linear growth rate applied to the existing 2025 volumes to all the horizon years. This growth would capture background traffic growth and any traffic growth due to adjacent redevelopments.

4.3.2 Background Traffic Volumes

Background traffic volumes are the sum of the existing traffic volumes and corridor growth. Background traffic volumes for the 2027 opening day, 2032 five-year horizon year, and 2037 ten-year horizon year are illustrated in **Figure 5**, **Figure 6**, and **Figure 7** respectively.









4.4 Site Traffic Volumes

The weekday peak hour trip generation rates are obtained from Institute of Transportation Engineers (ITE) Trip Generation Manual 12th Edition. They are then used to estimate the number of site-generated trips for the proposed development. The trip generation rates are summarized in **Table 3**.

Table 3 - Trip Generation Rates

Land Use	Trip Generation Source	Setting	Units	Trip Type	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
					Rate	In	Out	Rate	In	Out
Residential Single-family (Existing)	ITE 210: Single-Family Detached Housing	General Urban/Suburban	Dwelling Units	Vehicles	0.70	27%	73%	0.93	62%	38%
Residential Townhouse/Duplex (Proposed)	ITE 215: Single-Family Attached Housing	General Urban/Suburban	Dwelling Units	Vehicles	0.47	25%	75%	0.51	57%	43%

Based on the vehicle trip generation rates notes above, the number of external vehicle trips expected to be generated by the proposed development are shown in **Table 4**. The proposed development is expected to generate a total of 10 vehicle trips in the AM peak hour and 11 vehicle trips in the PM peak hour. This is equivalent to approximately 1 vehicle trip every 6 minutes in the AM and PM peak hours.



Table 4 - Trip Generation, External Vehicle Trips

Land Use	Trip Generation Source	Setting	Units	Trip Type	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
					Total	In	Out	Total	In	Out
Residential Townhouse/ Duplex (Proposed)	ITE 215: Single-Family Attached Housing	General Urban/ Suburban	24	Vehicles	11	3	8	12	7	5
Residential Single-family (Existing)	ITE 210: Single-Family Detached Housing	General Urban/ Suburban	1	Vehicles	(1)	(0)	(1)	(1)	(1)	(0)
Net Vehicle Trips					10	3	7	11	6	5

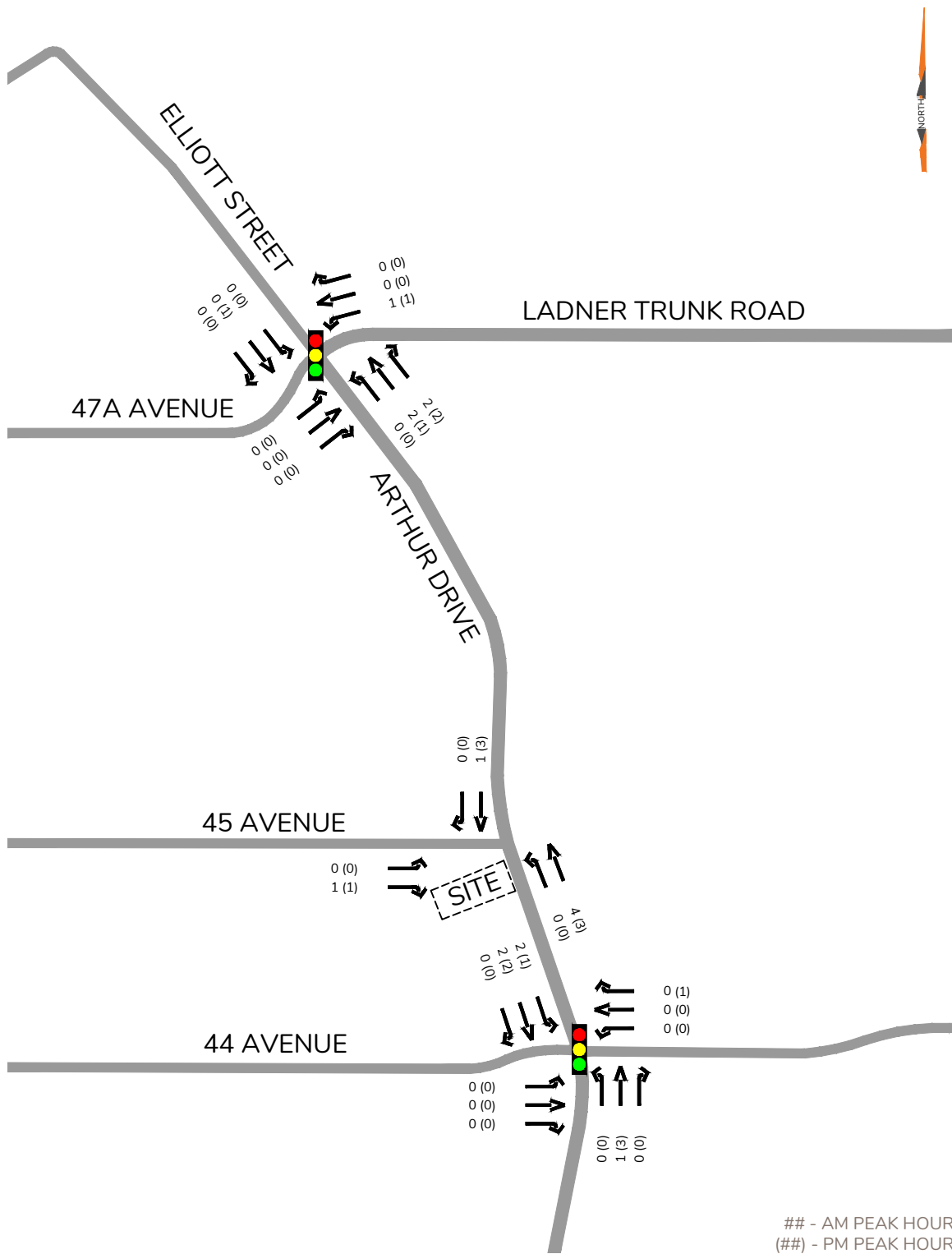
4.4.1 Trip Distribution and Assignment

The trip distribution pattern for site-generated traffic was established based on the existing traffic patterns at each intersection.

The distribution of inbound and outbound traffic adopted for the proposed development is summarized in Table 5. The net new site traffic volumes assigned to the area road network are illustrated in Figure 8.

Table 5 – Site Trip Distribution

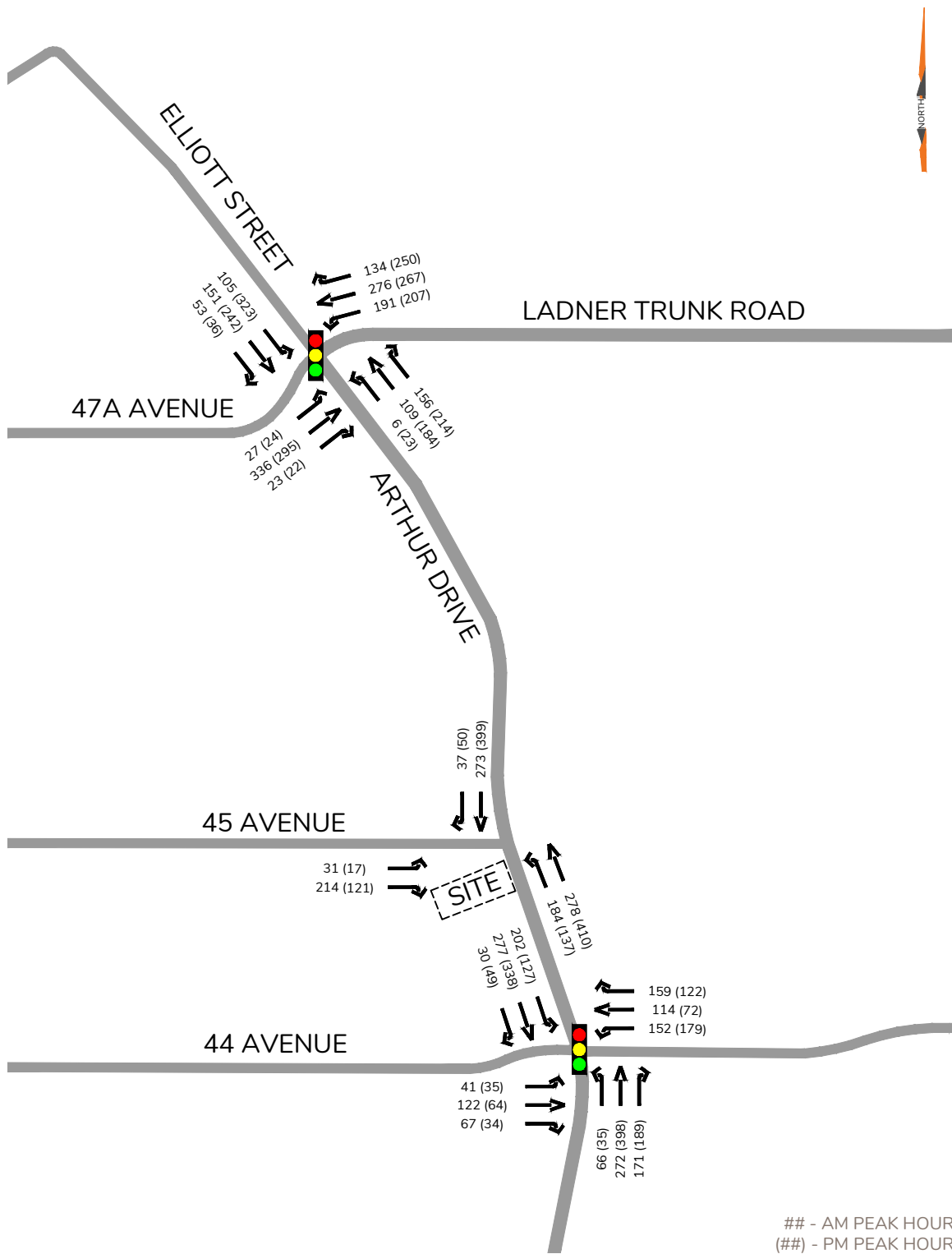
Route	From /To	AM Peak Hour		PM Peak Hour	
		Inbound	Outbound	Inbound	Outbound
44 Avenue	West	4%	3%	3%	5%
	East	17%	21%	12%	12%
Arthur Drive	South	28%	28%	37%	32%
45 Avenue	West	23%	0%	11%	0%
Elliott Street	North	11%	20%	19%	22%
47A Avenue	West	2%	0%	2%	3%
Ladner Trunk Road	East	15%	28%	16%	26%
Total		100%	100%	100%	100%

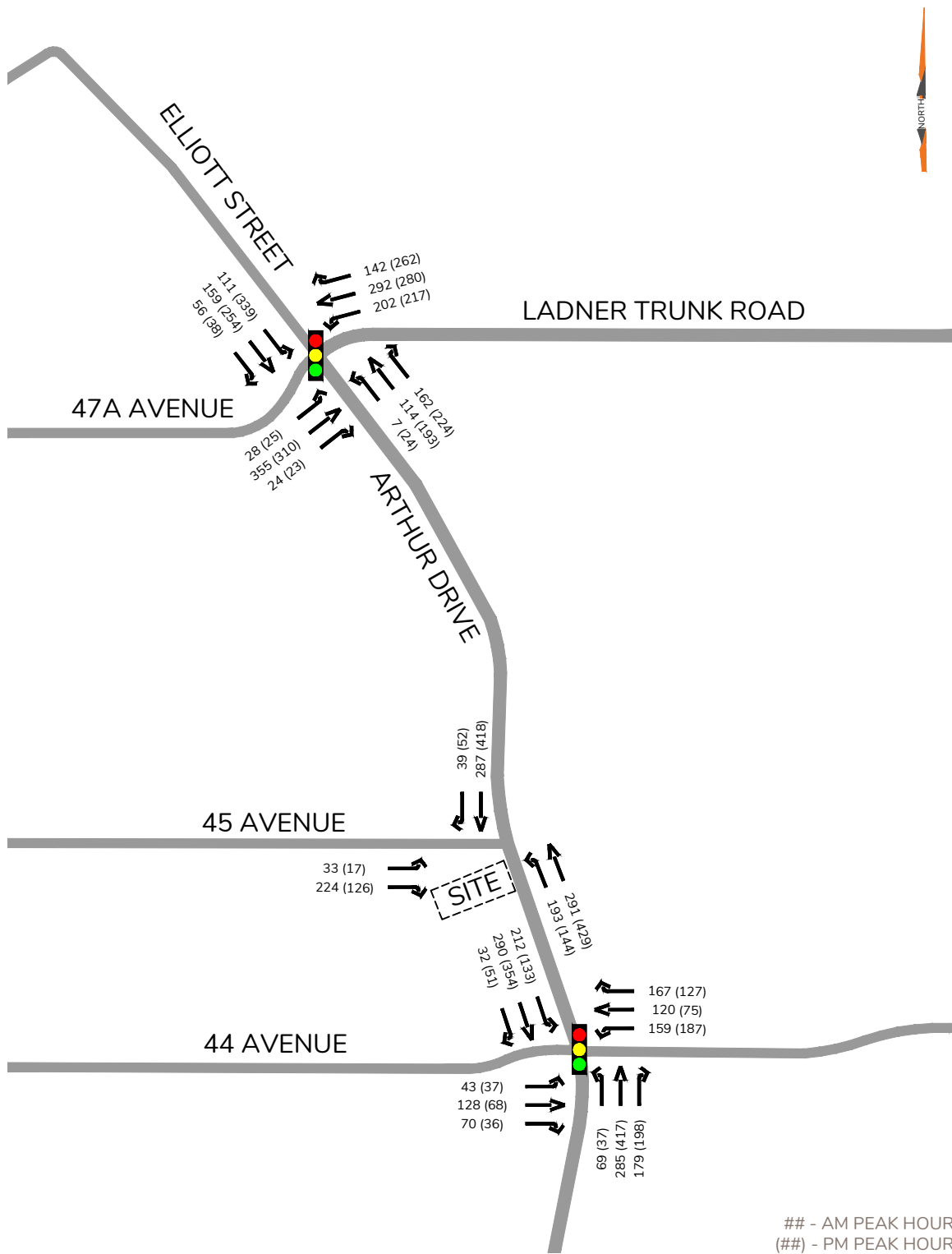


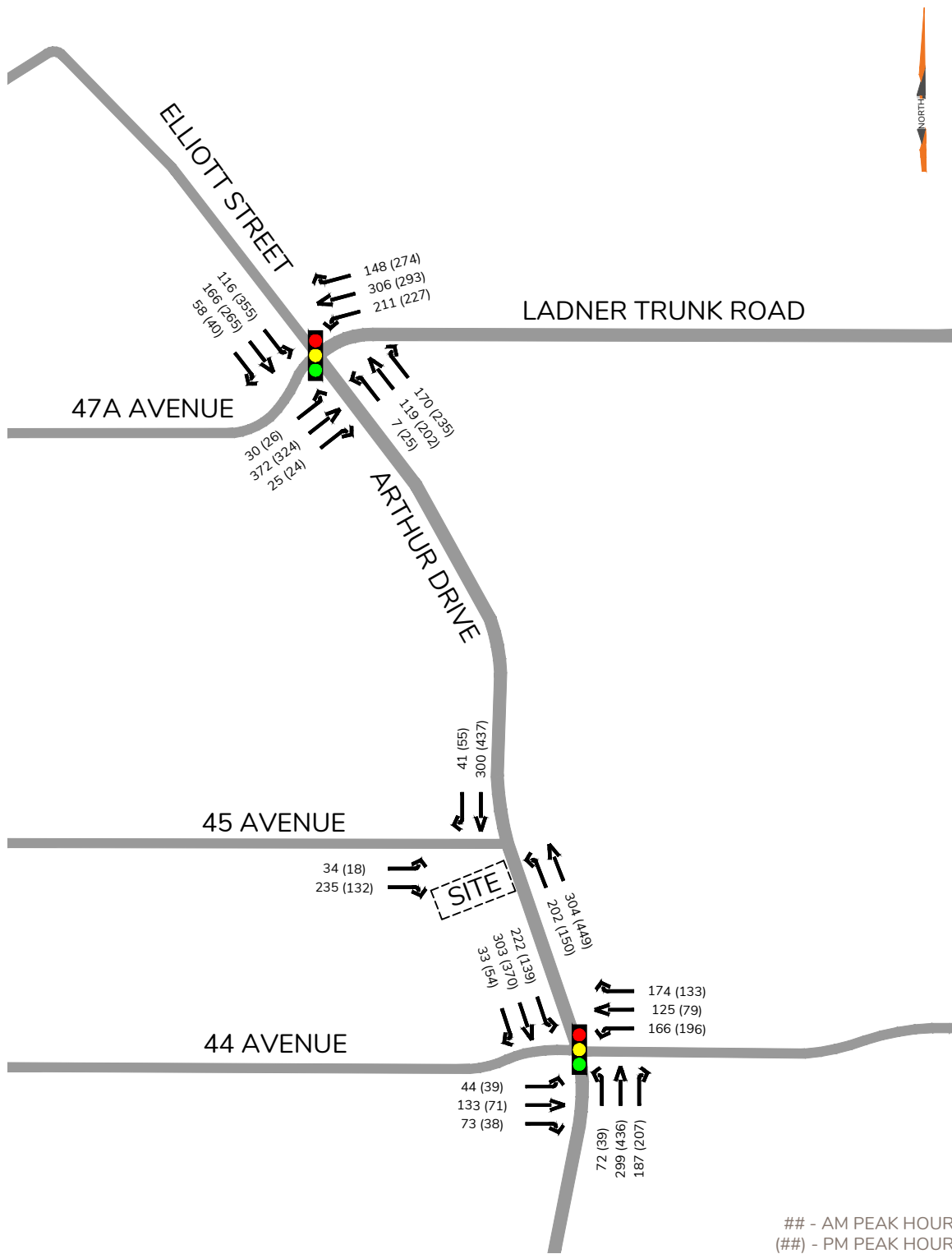


4.5 Post-Development Traffic Volumes

Post-development traffic volumes are the sum of the background traffic volumes and net new site traffic volumes. Post-development traffic volumes for opening day (2027), five-year horizon (2032), and ten-year horizon (2037) are illustrated in **Figure 9**, **Figure 10**, and **Figure 11** respectively.









5.0 TRAFFIC OPERATIONS ANALYSIS

5.1 Methodology

Analysis of vehicular traffic conditions at the study area intersections was undertaken using Synchro version 11. Synchro and SimTraffic is a two-part traffic modelling software that provides analysis of traffic conditions based on Highway Capacity Manual sixth edition evaluation methodology. A detailed description is provided in **Appendix B**.

5.2 Input and Calibration Parameters

Heavy Vehicle

Heavy vehicle percentages incorporated into the analysis were based on information provided as part of the intersection turning movement counts.

Signal Timings

Signal timing at all signalized intersections were established based on signal timing sheets provided by the City.

Peak Hour Factor

Peak hour factors (PHF) incorporated into the analysis were calculated from the intersection turning movement counts.

Lane Configuration

Lane configuration mirrored existing conditions for all scenarios within the report.



5.3 Arthur Drive/Elliott Street & Ladner Trunk Road/47A Avenue

Traffic analysis results for the Arthur Drive/Elliott Street & Ladner Trunk Road/47A Avenue intersection are summarized in **Table 6**. Detailed synchro reports are included in Appendix C.

Under existing conditions, Arthur Drive/Elliott Street & Ladner Trunk Road/47A Avenue operates at Level of Service (LOS) D or better during the AM and PM peak hours. In the AM and PM peak hours, 95th percentile queues for the westbound through-right and all southbound movements spill back into adjacent intersections.

Under the 2027 background conditions, the LOS for all movements is forecasted to remain unchanged and queuing does not significantly worsen.

Under the 2032 background conditions, in the AM peak hour, LOS remains unchanged except for the westbound through-right movement which goes from C to D. In the PM peak hour, the westbound left movement and the southbound through-right movement go from LOS B to C and C to D respectively. 95th percentile queues for the westbound through-right movement increase to 206m in the PM peak hour, compared to 184m under existing conditions.

In the 2037 background conditions, LOS for the westbound through-right movement reduces from D to E during the PM peak hour and 95th percentile queues increase to 225m. LOS and queues for other movements are generally similar to existing conditions.

The post-development scenario does not affect LOS and queuing at the intersection for any of the Opening Day, 5-year post development, or 10-year post development horizons.



Table 6 – Arthur Drive/Elliott Street & Ladner Trunk Road/47A Avenue Traffic Operations

Key Movement	Existing (2025)				Background				Post Development			
	LOS	V/C Ratio	Delay (s)	Queue (m)	LOS	V/C Ratio	Delay (s)	Queue (m)	LOS	V/C Ratio	Delay (s)	Queue (m)
2025/27 Horizon Year (Opening Day)												
EBL	D (D)	0.22 (0.18)	44.6 (48.7)	14.0 (13.9)	D (D)	0.22 (0.19)	44.8 (50.3)	14.0 (14.1)	D (D)	0.22 (0.20)	44.9 (50.4)	14.0 (14.1)
EBTR	C (C)	0.45 (0.36)	27.3 (30.3)	46.5 (44.1)	C (C)	0.46 (0.34)	27.7 (29.6)	47.6 (45.1)	C (C)	0.46 (0.34)	27.8 (29.7)	47.6 (45.1)
WBL	B (B)	0.52 (0.46)	17.7 (19.6)	38.2 (43.9)	B (B)	0.53 (0.46)	18.1 (19.2)	39.0 (44.8)	B (B)	0.53 (0.46)	18.2 (19.3)	39.2 (45.0)
WBTR	C (D)	0.77 (0.82)	33.7 (37.5)	#130.1 (#183.7)	C (D)	0.79 (0.87)	34.9 (42.9)	#135.2 (#190.0)	C (D)	0.79 (0.87)	35.0 (43.0)	#135.2 (#189.8)
NBL	D (D)	0.06 (0.18)	44.5 (49.0)	5.6 (13.4)	D (D)	0.06 (0.20)	44.7 (50.6)	5.6 (13.9)	D (D)	0.06 (0.20)	44.7 (50.6)	5.6 (13.7)
NBT	D (D)	0.50 (0.63)	42.2 (47.9)	35.3 (61.3)	D (D)	0.50 (0.66)	42.3 (50.6)	35.7 (62.4)	D (D)	0.51 (0.66)	42.4 (50.5)	36.4 (62.6)
NBR	B (A)	0.51 (0.51)	10.6 (9.7)	11.1 (19.6)	B (A)	0.51 (0.53)	10.5 (9.8)	11.2 (19.8)	B (A)	0.51 (0.53)	10.5 (9.8)	11.2 (20.0)
SBL	D (D)	0.39 (0.68)	42.1 (47.7)	19.3 (53.4)	D (D)	0.39 (0.71)	42.2 (50.5)	19.5 (#55.3)	D (D)	0.39 (0.71)	42.3 (50.6)	19.5 (#55.4)
SBTR	C (C)	0.46 (0.49)	28.2 (31.9)	58.1 (86.4)	C (C)	0.47 (0.51)	28.3 (33.6)	58.9 (87.9)	C (C)	0.47 (0.51)	28.2 (33.6)	58.9 (88.6)
2032 Horizon Year (5-Year Post Build)												
EBL	-	-	-	-	D (D)	0.22 (0.20)	45.4 (51.0)	14.5 (14.7)	D (D)	0.22 (0.20)	45.4 (51.0)	14.5 (14.7)
EBTR	-	-	-	-	C (C)	0.49 (0.37)	28.7 (30.6)	50.7 (47.7)	C (C)	0.49 (0.37)	28.8 (30.7)	50.7 (47.7)
WBL	-	-	-	-	B (C)	0.57 (0.49)	19.4 (20.2)	42.2 (47.6)	B (C)	0.58 (0.49)	19.6 (20.3)	42.5 (47.9)
WBTR	-	-	-	-	D (D)	0.84 (0.92)	38.8 (49.6)	#149.3 (#206.0)	D (D)	0.84 (0.92)	38.9 (49.8)	#149.3 (#206.0)
NBL	-	-	-	-	D (D)	0.07 (0.20)	45.3 (51.1)	6.0 (14.2)	D (D)	0.07 (0.20)	45.3 (51.1)	6.0 (14.2)
NBT	-	-	-	-	D (D)	0.51 (0.67)	42.4 (50.8)	37.4 (65.4)	D (D)	0.52 (0.67)	42.5 (50.7)	37.8 (65.7)
NBR	-	-	-	-	B (A)	0.52 (0.53)	10.3 (9.6)	11.2 (20.4)	B (A)	0.52 (0.53)	10.2 (9.6)	11.2 (20.1)
SBL	-	-	-	-	D (D)	0.41 (0.74)	42.6 (52.1)	20.6 (#61.9)	D (D)	0.41 (0.74)	42.7 (52.2)	20.6 (#61.9)
SBTR	-	-	-	-	C (D)	0.49 (0.58)	28.5 (37.5)	62.0 (93.0)	C (D)	0.48 (0.58)	28.5 (37.5)	62.0 (93.2)
2037 Horizon Year (10-Year Post Build)												
EBL	-	-	-	-	D (D)	0.24 (0.21)	45.7 (51.8)	15.5 (15.2)	D (D)	0.24 (0.21)	45.7 (51.9)	15.5 (15.2)
EBTR	-	-	-	-	C (C)	0.53 (0.40)	29.5 (32.0)	53.3 (50.6)	C (C)	0.53 (0.40)	29.6 (32.0)	53.3 (50.7)
WBL	-	-	-	-	C (C)	0.61 (0.53)	20.8 (21.5)	44.1 (51.4)	C (C)	0.61 (0.53)	21.0 (21.6)	44.3 (51.7)
WBTR	-	-	-	-	D (E)	0.88 (0.97)	43.0 (60.3)	#160.2 (#224.8)	D (E)	0.88 (0.97)	43.2 (60.6)	#160.2 (#225.1)
NBL	-	-	-	-	D (D)	0.07 (0.21)	45.6 (52.1)	6.1 (15.0)	D (D)	0.07 (0.21)	45.6 (52.1)	6.1 (15.0)
NBT	-	-	-	-	D (D)	0.53 (0.67)	43.0 (50.4)	39.1 (68.1)	D (D)	0.54 (0.67)	43.2 (50.5)	39.7 (68.4)
NBR	-	-	-	-	B (A)	0.53 (0.54)	10.3 (9.3)	11.3 (20.5)	B (A)	0.53 (0.54)	10.3 (9.3)	11.3 (20.7)
SBL	-	-	-	-	D (D)	0.42 (0.76)	42.8 (53.7)	21.2 (#68.4)	D (D)	0.42 (0.76)	42.9 (53.8)	21.2 (#68.5)
SBTR	-	-	-	-	C (D)	0.50 (0.59)	28.8 (37.5)	64.9 (97.5)	C (D)	0.50 (0.59)	28.8 (37.5)	64.9 (97.7)

Notes: XX (XX) = AM (PM); # = 95th percentile queue lengths exceed lane storage length



5.4 45 Avenue & Arthur Drive

Traffic analysis results for the 45 Avenue & Arthur Drive intersection are summarized in **Table 7**. Detailed synchro reports are included in Appendix C.

Under existing conditions, 45 Avenue & Arthur Drive operates at LOS D or better during the AM and PM peak hours. Queues of up to 40-meters long are reported for the eastbound approach, which does not spill back into the adjacent intersection at Evergreen Lane.

Under the 2027 background conditions, LOS and queues for all movements are forecasted to not significantly change.

Under the 2032 background conditions, LOS for the eastbound movement decreases from LOS D to LOS E in the AM peak hour. LOS for other movements remains unchanged. 95th percentile queues do not significantly worsen, with eastbound queue lengths increasing from 41m under existing conditions to 57m in the AM peak hour.

In the 2037 background conditions, the LOS for the eastbound movement further decreases to LOS F and 95th percentile queue lengths for the eastbound movement increase to 72m in the AM peak hour. Delays and queues for the north and south movements remain unchanged from existing conditions.

The post-development scenario does not affect LOS and queuing at the intersection for any of the Opening Day, 5-year post development, or 10-year post development horizons.



Table 7 – 45 Avenue & Arthur Drive Traffic Operations

Key Movement	Existing (2025)				Background				Post Development			
	LOS	V/C Ratio	Delay (s)	Queue (m)	LOS	V/C Ratio	Delay (s)	Queue (m)	LOS	V/C Ratio	Delay (s)	Queue (m)
2025/27 Horizon Year (Opening Day)												
EBLR	D (C)	0.71 (0.31)	31.1 (16.3)	40.9 (9.7)	D (C)	0.73 (0.32)	33.3 (16.9)	43.9 (10.5)	D (C)	0.74 (0.33)	34.0 (17.1)	44.7 (10.7)
NBLT	A (A)	0.21 (0.13)	5.1 (3.4)	6.0 (3.5)	A (A)	0.21 (0.14)	5.2 (3.4)	6.1 (3.6)	A (A)	0.21 (0.14)	5.2 (3.4)	6.2 (3.6)
SBTR	A (A)	0.23 (0.27)	0.0 (0.0)	0.0 (0.0)	A (A)	0.23 (0.28)	0.0 (0.0)	0.0 (0.0)	A (A)	0.23 (0.28)	0.0 (0.0)	0.0 (0.0)
2032 Horizon Year (5-Year Post Build)												
EBLR	-	-	-	-	E (C)	0.82 (0.35)	44.9 (18.1)	57.1 (12.0)	E (C)	0.83 (0.36)	46.0 (18.3)	58.3 (12.2)
NBLT	-	-	-	-	A (A)	0.23 (0.15)	5.4 (3.6)	6.7 (3.9)	A (A)	0.23 (0.15)	5.4 (3.6)	6.7 (3.9)
SBTR	-	-	-	-	A (A)	0.24 (0.29)	0.0 (0.0)	0.0 (0.0)	A (A)	0.24 (0.29)	0.0 (0.0)	0.0 (0.0)
2037 Horizon Year (10-Year Post Build)												
EBLR	-	-	-	-	F (C)	0.92 (0.40)	61.8 (19.9)	72.1 (14.1)	F (C)	0.92 (0.40)	63.6 (20.1)	73.5 (14.3)
NBLT	-	-	-	-	A (A)	0.24 (0.15)	5.6 (3.8)	7.2 (4.1)	A (A)	0.24 (0.15)	5.6 (3.8)	7.2 (4.1)
SBTR	-	-	-	-	A (A)	0.25 (0.30)	0.0 (0.0)	0.0 (0.0)	A (A)	0.25 (0.30)	0.0 (0.0)	0.0 (0.0)

Notes: XX (XX) = AM (PM); # = 95th percentile queue lengths exceed lane storage length



5.5 44 Avenue & Arthur Drive

Traffic analysis results for the 44 Avenue & Arthur Drive intersection are summarized in **Table 8**. Detailed synchro reports are included in Appendix C.

Under existing conditions, 44 Avenue & Arthur Drive operates at LOS D or better during the AM and PM peak hours. The westbound left has queues up to 43-meters long in PM peak hour, which exceeds the storage length for the movement. The northbound approach has significant queues which exceed 100 meters although queues don't reach adjacent intersections.

Under the 2027 background conditions, the LOS for all movements is forecasted to remain unchanged, except for the northbound right movement which goes from LOS A to LOS B in the AM peak hour. 95th percentile queues do not significantly increase compared to existing conditions.

Under the 2032 background conditions, the LOS for the southbound movements go from B to C during PM peak hour. LOS for all other movements remains unchanged and 95th percentile queues do not significantly worsen.

In the 2037 background conditions, the LOS for all movements stays the same as the 2032 background condition, apart from the westbound through-right movement which goes from LOS B to LOS C in the AM peak hour. 95th percentile queues do not significantly increase compared to existing conditions, with the exception of the northbound approach which as queues exceeding 120 meters.

The post-development scenario does not affect LOS and queuing at the intersection for any of the Opening Day, 5-year post development, or 10-year post development horizons.



Table 8 – 44 Avenue & Arthur Drive Traffic Operations

Key Movement	Existing (2025)				Background				Post Development			
	LOS	V/C Ratio	Delay (s)	Queue (m)	LOS	V/C Ratio	Delay (s)	Queue (m)	LOS	V/C Ratio	Delay (s)	Queue (m)
2025/27 Horizon Year (Opening Day)												
EBL	C (C)	0.19 (0.14)	32.7 (33.3)	17.0 (15.1)	C (C)	0.20 (0.14)	33.1 (33.4)	17.4 (15.1)	C (C)	0.20 (0.14)	33.1 (33.5)	17.4 (15.1)
EBTR	C (C)	0.44 (0.24)	30.7 (26.7)	53.1 (28.0)	C (C)	0.46 (0.24)	31.4 (27.2)	55.1 (28.7)	C (C)	0.46 (0.24)	31.4 (27.2)	55.1 (28.7)
WBL	C (C)	0.38 (0.39)	20.9 (23.1)	36.9 (43.2)	C (C)	0.39 (0.40)	21.4 (23.3)	37.7 (44.2)	C (C)	0.39 (0.40)	21.4 (23.4)	37.7 (44.2)
WBTR	B (B)	0.46 (0.30)	17.9 (13.1)	56.4 (31.8)	B (B)	0.47 (0.31)	18.3 (13.5)	57.6 (33.2)	B (B)	0.47 (0.31)	18.3 (13.5)	57.6 (33.2)
NBL	C (C)	0.28 (0.13)	29.5 (25.3)	20.5 (12.9)	C (C)	0.29 (0.13)	29.5 (25.3)	21.5 (12.9)	C (C)	0.29 (0.13)	29.5 (25.3)	21.5 (12.9)
NBT	D (D)	0.63 (0.76)	36.3 (40.1)	70.2 (107.8)	D (D)	0.64 (0.77)	36.3 (40.7)	71.5 (109.9)	D (D)	0.64 (0.78)	36.3 (40.9)	71.7 (111.0)
NBR	A (B)	0.38 (0.36)	10.0 (10.6)	19.4 (24.4)	B (B)	0.38 (0.37)	10.4 (10.8)	20.3 (25.0)	B (B)	0.38 (0.37)	10.3 (10.8)	20.3 (25.0)
SBL	C (B)	0.60 (0.45)	23.2 (19.6)	38.4 (24.8)	C (B)	0.61 (0.47)	23.6 (20.0)	38.9 (25.4)	C (C)	0.62 (0.48)	23.9 (20.2)	39.6 (25.5)
SBTR	B (B)	0.43 (0.50)	19.2 (19.7)	57.4 (75.2)	B (B)	0.44 (0.51)	19.3 (19.8)	59.1 (77.0)	B (B)	0.44 (0.51)	19.4 (19.9)	59.5 (77.7)
2032 Horizon Year (5-Year Post Build)												
EBL	-	-	-	-	C (C)	0.21 (0.15)	33.8 (34.0)	18.3 (15.9)	C (C)	0.21 (0.15)	33.8 (34.0)	18.3 (15.9)
EBTR	-	-	-	-	C (C)	0.48 (0.26)	32.4 (28.0)	57.8 (30.3)	C (C)	0.48 (0.26)	32.4 (28.0)	57.8 (30.3)
WBL	-	-	-	-	C (C)	0.42 (0.42)	22.1 (24.1)	39.3 (46.2)	C (C)	0.42 (0.42)	22.1 (24.1)	39.3 (46.2)
WBTR	-	-	-	-	B (B)	0.49 (0.32)	19.2 (14.1)	61.8 (34.8)	B (B)	0.49 (0.32)	19.3 (14.1)	61.8 (35.2)
NBL	-	-	-	-	C (C)	0.30 (0.14)	29.7 (25.5)	22.2 (13.6)	C (C)	0.30 (0.14)	29.7 (25.5)	22.2 (13.6)
NBT	-	-	-	-	D (D)	0.65 (0.80)	36.8 (42.0)	75.3 (116.6)	D (D)	0.66 (0.80)	36.8 (42.3)	75.3 (117.5)
NBR	-	-	-	-	B (B)	0.40 (0.38)	11.2 (11.5)	22.4 (27.4)	B (B)	0.40 (0.38)	11.2 (11.5)	22.4 (27.4)
SBL	-	-	-	-	C (C)	0.65 (0.51)	25.2 (21.0)	40.7 (26.5)	C (C)	0.66 (0.52)	25.4 (21.2)	41.1 (26.6)
SBTR	-	-	-	-	B (C)	0.46 (0.52)	19.5 (20.2)	62.4 (81.8)	B (C)	0.46 (0.53)	19.5 (20.2)	62.7 (82.2)
2037 Horizon Year (10-Year Post Build)												
EBL	-	-	-	-	C (C)	0.22 (0.16)	34.6 (34.3)	18.5 (16.7)	C (C)	0.22 (0.16)	34.6 (34.4)	18.5 (16.7)
EBTR	-	-	-	-	C (C)	0.51 (0.28)	33.7 (28.4)	60.1 (31.9)	C (C)	0.51 (0.28)	33.7 (28.4)	60.1 (31.9)
WBL	-	-	-	-	C (C)	0.45 (0.45)	23.2 (24.7)	40.8 (48.2)	C (C)	0.46 (0.45)	23.3 (24.8)	40.8 (48.2)
WBTR	-	-	-	-	C (B)	0.52 (0.34)	20.4 (14.9)	65.5 (37.5)	C (B)	0.52 (0.34)	20.4 (15.0)	65.5 (37.8)
NBL	-	-	-	-	C (C)	0.31 (0.15)	29.6 (25.6)	23.2 (14.3)	C (C)	0.31 (0.15)	29.7 (25.6)	23.2 (14.3)
NBT	-	-	-	-	D (D)	0.67 (0.82)	36.9 (43.9)	79.1 (123.4)	D (D)	0.67 (0.82)	37.0 (43.9)	79.6 (124.4)
NBR	-	-	-	-	B (B)	0.40 (0.39)	11.7 (12.2)	24.4 (29.6)	B (B)	0.40 (0.39)	11.7 (12.1)	24.4 (29.6)
SBL	-	-	-	-	C (C)	0.69 (0.56)	27.0 (22.5)	42.8 (27.6)	C (C)	0.70 (0.56)	27.3 (22.7)	43.1 (27.8)
SBTR	-	-	-	-	B (C)	0.47 (0.54)	19.6 (20.5)	65.5 (86.3)	B (C)	0.47 (0.54)	19.6 (20.5)	65.8 (86.9)

Notes: XX (XX) = AM (PM); # = 95th percentile queue lengths exceed lane storage length



6.0 POTENTIAL MITIGATION MEASURES

6.1 Arthur Drive/Elliott Street & Ladner Trunk Road/47A Avenue

In the existing conditions, the queues from the southbound and westbound approaches are already spilling back onto subsequent intersections. The existing crosshatch line at Elliott Street & 48 Avenue confirms the existing queueing issue for the southbound traffic. A potential mitigation measure would be to adjust the signal phasing accordingly to better accommodate the traffic volumes.

Table 9 shows a comparison between the existing signal timing plan and an optimized signal timing plan for the 10-year post development horizon. The optimization allows for all movements to perform at LOS D or better during the AM and PM peak hours and prevents westbound queues from spilling back into the preceding intersection during the AM peak hour. Further study should be conducted to determine the cycle length and phasing split.

The intersection should also be monitored in the long term to determine the trends in traffic volumes, which can help to understand the need for improvements. Detailed synchro reports are included in Appendix C.

Table 9 – Arthur Drive/Elliott Street & Ladner Trunk Road/47A Avenue Signal Timing Optimization

Movement	Post Development (Existing Signal Timing)				Post Development (Optimized Signal Timing)			
	LOS	V/C Ratio	Delay (s)	Queue (m)	LOS	V/C Ratio	Delay (s)	Queue (m)
2037 Horizon Year (10-Year Post Build)								
EBL	D (D)	0.24 (0.21)	45.7 (51.9)	15.5 (15.2)	D (D)	0.28 (0.24)	47.6 (52.0)	15.1 (14.5)
EBTR	C (C)	0.53 (0.40)	29.6 (32.0)	53.3 (50.7)	C (C)	0.54 (0.38)	27.9 (29.2)	49.1 (44.7)
WBL	C (C)	0.61 (0.53)	21.0 (21.6)	44.3 (51.7)	B (B)	0.59 (0.52)	18.0 (19.9)	37.1 (45.3)
WBTR	D (E)	0.88 (0.97)	43.2 (60.6)	#160.2 (#225.1)	C (D)	0.82 (0.91)	32.8 (46.6)	114.5 (#189.9)
NBL	D (D)	0.07 (0.21)	45.6 (52.1)	6.1 (15.0)	D (D)	0.07 (0.25)	44.0 (52.4)	5.9 (14.1)
NBT	D (D)	0.54 (0.67)	43.2 (50.5)	39.7 (68.4)	D (D)	0.53 (0.72)	41.8 (53.1)	37.9 (66.7)
NBR	B (A)	0.53 (0.54)	10.3 (9.3)	11.3 (20.7)	A (A)	0.48 (0.55)	6.3 (9.8)	4.5 (20.9)
SBL	D (D)	0.42 (0.76)	42.9 (53.8)	21.2 (#68.5)	D (D)	0.54 (0.79)	49.1 (54.5)	21.4 (#63.9)
SBTR	C (D)	0.50 (0.59)	28.8 (37.5)	64.9 (97.7)	C (D)	0.52 (0.60)	30.8 (36.6)	65.9 (91.4)
Overall	C (D)	-	30.7 (38.7)	-	C (D)	-	29.0 (38.1)	-



6.2 45 Avenue & Arthur Drive

To mitigate the poor LOS that is forecasted for 45 Avenue & Arthur Drive that is currently stop-controlled, a traffic signal warrant was conducted as per the Transportation Association of Canada (TAC) 2014 *Signal Warrant Handbook*.

The 10-year (2037) background scenario volumes and post-development scenario volumes were used for the signal warrant to understand a long-term worst-case scenario and what prompted the signalization.

The analysis suggests a signal is not warranted on opening day, 5-year (2032), or 10-year (2037) horizon years for either background or post-development conditions. The signal warrant is provided in **Appendix D**.

Traffic volumes and patterns may change over time, especially over a period of 10 years. It is recommended that the City of Delta monitor conditions at the 45 Avenue & Arthur Drive intersection over time and consider implementation of a traffic signal should operations deteriorate.

Not only can the signal improve the LOS for eastbound movements but can also provide a safer pedestrian crossing opportunity for students from the adjacent Delta Secondary School and transit riders. While the signal timing and phasing should be determined through further study, a signal at this intersection should be coordinated with the signal at 44 Avenue & Arthur Drive due to their proximity. In consideration of the lengthy queues for northbound traffic at 44 Avenue & Arthur Drive, the coordinated signal can control the queueing accordingly during peak hour and ensure the queue does not spill back onto the 44 Avenue & Arthur Drive intersection.

6.3 44 Avenue & Arthur Drive

The analysis shows that the left turn queue for the westbound approach exceeds the lane storage capacity as well as lengthy queues for the northbound approach, although there are no queues that spill back into adjacent intersections and overall level of service is LOS D or better in both the background and post development scenarios for the 10-year (2037) horizon.



Table 10 shows a comparison between the existing signal timing plan and an optimized signal timing plan for the 10-year post development horizon. The optimization allows for all movements to perform at LOS C or better during the AM and PM peak hours and reduces 95th percentile queues for most movements, particularly for the northbound approach and the westbound left movement. Further study should be conducted to determine the cycle length and phasing split.

In addition to signal timing optimization, the Multi-Use Pathway (MUP) has newly opened for 44 Avenue west of Arthur Drive. This can encourage and facilitate a modal shift towards active modes, hence reducing vehicle traffic at this intersection. The intersection should also be monitored in the long term to determine the trends in traffic volumes, which can help to understand further needs for improvements.

Table 10– 44 Avenue & Arthur Drive Signal Timing Optimization

Movement	Post Development (Existing Signal Timing)				Post Development (Optimized Signal Timing)			
	LOS	V/C Ratio	Delay (s)	Queue (m)	LOS	V/C Ratio	Delay (s)	Queue (m)
2037 Horizon Year (10-Year Post Build)								
EBL	C (C)	0.22 (0.16)	34.6 (34.4)	18.5 (16.7)	C (D)	0.30 (0.31)	32.2 (35.8)	15.8 (14.7)
EBTR	C (C)	0.51 (0.28)	33.7 (28.4)	60.1 (31.9)	C (C)	0.66 (0.49)	34.9 (30.7)	49.5 (27.1)
WBL	C (C)	0.46 (0.45)	23.3 (24.8)	40.8 (48.2)	C (C)	0.58 (0.60)	26.1 (27.4)	34.9 (41.0)
WBTR	C (B)	0.52 (0.34)	20.4 (15.0)	65.5 (37.8)	B (B)	0.58 (0.41)	19.4 (12.9)	53.3 (29.4)
NBL	C (C)	0.31 (0.15)	29.7 (25.6)	23.2 (14.3)	C (B)	0.29 (0.14)	25.1 (18.6)	21.5 (11.5)
NBT	D (D)	0.67 (0.82)	37.0 (43.9)	79.6 (124.4)	C (C)	0.64 (0.76)	30.3 (31.1)	73.1 (97.8)
NBR	B (B)	0.40 (0.39)	11.7 (12.1)	24.4 (29.6)	A (A)	0.38 (0.36)	8.4 (7.7)	18.9 (20.2)
SBL	C (C)	0.70 (0.56)	27.3 (22.7)	43.1 (27.8)	C (B)	0.64 (0.49)	21.1 (15.0)	39.9 (21.6)
SBTR	B (C)	0.47 (0.54)	19.6 (20.5)	65.8 (86.9)	B (B)	0.44 (0.50)	15.3 (13.8)	61.0 (67.3)
Overall	C (C)	-	24.6 (25.2)	-	C (C)	-	22.4 (20.4)	-



7.0 SITE REVIEW

Access to the site is provided from a proposed driveway that connects the site to Arthur Drive south of 45 Avenue. The Transportation Association of Canada (TAC) *Geometric Design Guide for Canadian Roads* (2017) provides recommended minimum corner clearances and intersection sight distances for drivers turning onto a road from a stop-controlled intersection.

7.1 SITE ACCESS REVIEW

The available space between the proposed access and the intersection at 45 Avenue and Arthur Drive is 25 meters. The site plan, including the driveway location, will be reviewed and approved by the City as part of the development application process.

7.2 SIGHT DISTANCE REVIEW

The TAC *Geometric Design Guide for Canadian Roads* (2017) provides recommended minimum intersection sight distances for drivers turning onto a road from a stop-controlled intersection. For this study, the design vehicle used was a passenger vehicle and the design speed was set to 50 km/h. Drivers should be provided with 105 meters of sight distance in each direction per Table 9.9.4 of TAC.

The intersection/turning sight distance, per TAC 9.9.4, at the Site Access & Arthur Drive, 45 Avenue & Arthur Drive, and 47 Avenue & Arthur Drive have been reviewed. The requirement is met in both directions at all three intersections. No sight line obstructions have been observed.

The intersection/turning sight distance review can be found in **Appendix E**.



8.0 PARKING REVIEW

The onsite parking supply for the proposed development is reviewed by comparing to the City's Zoning Bylaw. **Table 11** and **Table 12** summarize the bylaw required and proposed parking supply for the development on vehicle parking and loading respectively.

The proposed parking supply for the development satisfies all the bylaw and the recommended requirements for all user types.

Table 11 - Vehicle Parking Requirements

User Type	Bylaw Reference	Required		Proposed	
		Rate	Number	Rate	Number
Duplex Dwelling Resident	Bylaw No. 7600, Section 8.4.2	1.0/unit	15	2.0/unit	30
Townhouse Resident		1.5/unit	14	2.0/unit	18
Townhouse Visitor		0.1/6 units	2	2.0/6 units	3

Table 12 - Loading Requirements

User Type	Bylaw Reference	Required		Proposed	
		Rate	Number	Rate	Number
Residential	Bylaw No. 7600, Section 9.2.1	1.0 per building with more than 80 dwelling units	0	0.0	0

The RT76 Townhouse zoning does not have bicycling parking requirements, although a review of requirements from nearby municipalities is shown in **Table 13** to provide guidance on best practices for bicycle parking in townhome developments.

Visitor bicycle parking supply in the proposed development satisfies the City of Richmond and the City of Coquitlam's requirements. It is assumed that resident bicycle parking will be available through garage access and thus meets recommended requirements as well.



Table 13 - Bicycle Parking Requirements

User Type	Bylaw Reference	Required Resident		Required Visitor	
		Rate	Number	Rate	Number
Townhousing	City of Delta Bylaw No. 7600, Section 8.4.2	-	0	-	0
Townhousing Apartment Housing Mixed Commercial/Residential Uses	City of Richmond Bylaw No. 8500, Section 7.14.10	1.25/unit	30	0.2/unit	5
Apartment; Townhouse	City of Coquitlam Bylaw No. 3000, Section 711	1.25/unit	30	6.0	6

9.0 CONCLUSIONS

Under existing conditions (2025), the study area intersections operate at LOS D or better. Some queues are exceeding available storage lengths and/or spilling back onto subsequent intersections, including the westbound approach and southbound approach at the Arthur Drive/Elliott Street & Ladner Trunk Road/47A Avenue intersection, and the westbound left 44 Avenue & Arthur Drive intersection.

As a potential mitigation measure, a signal warrant was conducted to determine if the 45 Avenue & Arthur Drive intersection should be signalized. The analysis suggests a signal is not warranted on opening day, 5-year (2032), or 10-year (2037) horizon years for either background or post-development conditions. A continuous effort on modal shift can also help to reduce capacity and delay issues, hence reducing the need for intersection improvements.

10.0 RECOMMENDATIONS

It is recommended that the City:

1. Monitor performance at the 45 Avenue & Arthur Drive intersection over time to assess the need for signalization.
2. Consider optimizing the signal phasing at the Arthur Drive/Elliott Street & Ladner Trunk Road/47A Avenue intersection and the 44 Avenue & Arthur Drive intersection



APPENDIX A: SITE PLAN

Notes
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2025-07-24	CONCEPT FOR REVIEW
Date	Description

Issues / Revisions

Seal

Project Title

**TOWNHOUSE
DEVELOPMENT**

Project Address

**4501 ARTHUR DRIVE,
DELTA,
BRITISH COLUMBIA**

Drawn By

GC

Date

2025-07-23

Checked By

MS

Project ID

SU75

Sheet Title

SITE PLAN

Scale

N.T.S

Sheet No.

A-1.0



APPENDIX B: SYNCHRO BACKGROUND



SYNCHRO MODELLING SOFTWARE DESCRIPTION

The traffic analysis was completed using Synchro and SimTraffic traffic modelling software. Results were measured in delay, level of service (LOS), and 95th percentile queue length.

SimTraffic integrates established driver behaviours and characteristics to simulate actual conditions by randomly “seeding” or positioning vehicles travelling throughout the network. The simulation is run ten times (ten different random seedings of vehicle types, behaviours and arrivals) to obtain statistical significance of the results.

Levels of Service

Traffic operations are typically described in terms of levels of service, which rates the amount of delay per vehicle for each movement and the entire intersection. Levels of service range from LOS A (representing best operations) to LOS E/F (LOS E being poor operations and LOS F being unpredictable/disruptive operations). LOS E/F are generally unacceptable levels of service under normal everyday conditions. A LOS C or better is considered acceptable operations, while D is considered to be on the threshold between acceptable and unacceptable operations. Operations will typically need to operate at LOS C or better for through movements and LOS E or better for other traffic movements with lower order roads.

The hierarchy of criteria for grading an intersection or movement not only includes delay times, but also takes into account traffic control type (stop signs or traffic signal). For example, if a vehicle is delayed for 19 seconds at an unsignalized intersection, it is considered to have an average operation, and would therefore be graded as an LOS C. However, at a signalized intersection, a 19 second delay would be considered a good operation and therefore it would be given an LOS B. The table below indicates the range of delay for LOS for signalized and unsignalized intersections.

Table B1 – LOS Criteria by Intersection Traffic Control

Level of Service (LOS)	Unsignalized Intersection Average Vehicle Delay (sec/veh)	Signalized Intersection Average Vehicle Delay (sec/veh)
A	0 – 10	0 – 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80



APPENDIX C: SYNCHRO REPORTS

Lanes, Volumes, Timings
1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2025 AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	333	22	188	273	133	6	105	150	104	149	52
Future Volume (vph)	27	333	22	188	273	133	6	105	150	104	149	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	31.7		0.0	52.8		0.0	50.9		54.5	34.3		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	14.8			2.5			83.2			14.4		
Satd. Flow (prot)	1825	3422	0	1738	1564	0	1825	1865	1541	3248	1751	0
Flt Permitted	0.950			0.338			0.950			0.950		
Satd. Flow (perm)	1521	3422	0	605	1564	0	1721	1865	1490	3160	1751	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			21				190		14	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.6			82.4			174.9			266.7	
Travel Time (s)		6.7			5.9			12.6			19.2	
Confl. Peds. (#/hr)	92		21	21		92	26		11	11		26
Confl. Bikes (#/hr)									2			
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	9%	5%	4%	2%	0%	3%	6%	9%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	450	0	238	514	0	8	133	190	132	255	0
Turn Type	Prot	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6					8			
Total Split (s)	20.4	39.8		21.5	40.7		21.8	35.2	35.2	21.4	35.2	
Total Lost Time (s)	6.4	5.8		6.5	5.7		7.8	7.2	7.2	7.4	7.2	
Act Effct Green (s)	7.4	24.9		42.6	35.9		6.4	12.3	12.3	9.0	26.5	
Actuated g/C Ratio	0.09	0.29		0.50	0.42		0.07	0.14	0.14	0.10	0.31	
v/c Ratio	0.22	0.45		0.52	0.77		0.06	0.50	0.51	0.39	0.46	
Control Delay	44.6	27.3		17.7	33.7		44.5	42.2	10.6	42.1	28.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	44.6	27.3		17.7	33.7		44.5	42.2	10.6	42.1	28.2	
LOS	D	C		B	C		D	D	B	D	C	
Approach Delay		28.5			28.6			24.1			33.0	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	5.6	30.6		20.9	74.8		1.3	21.7	0.0	11.1	32.8	
Queue Length 95th (m)	14.0	46.5		38.2	#130.1		5.6	35.3	11.1	19.3	58.1	
Internal Link Dist (m)		68.6			58.4			150.9			242.7	
Turn Bay Length (m)	31.7			52.8			50.9		54.5	34.3		
Base Capacity (vph)	304	1392		504	669		304	632	630	543	606	
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	0.11	0.32		0.47	0.77		0.03	0.21	0.30	0.24	0.42	
Intersection Summary												
Area Type:	Other											
Cycle Length: 118.3												
Actuated Cycle Length: 85.9												

Lanes, Volumes, Timings

1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2025 AM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 28.7

Intersection LOS: C

Intersection Capacity Utilization 59.5%

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: 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

 Ø1	 Ø2	 Ø3	 Ø4
21.5 s	39.8 s	21.8 s	35.2 s
 Ø5	 Ø6	 Ø7	 Ø8
20.4 s	40.7 s	21.4 s	35.2 s

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	31	209	181	268	267	37
Future Volume (vph)	31	209	181	268	267	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1684	0	0	1853	1813	0
Flt Permitted	0.994			0.980		
Satd. Flow (perm)	1684	0	0	1853	1813	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	253.5			245.2	206.9	
Travel Time (s)	18.3			17.7	14.9	
Confl. Peds. (#/hr)	21		40			40
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	0%	1%	2%	4%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	304	0	0	568	385	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	65.5%			ICU Level of Service C		
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2025 AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	119	65	149	112	156	64	266	167	197	269	30
Future Volume (vph)	40	119	65	149	112	156	64	266	167	197	269	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.8		0.0	29.1		0.0	20.5		2.5	68.3		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			33.0			41.9			97.3		
Satd. Flow (prot)	1772	1767	0	1825	1495	0	1825	1883	1633	1807	1833	0
Flt Permitted	0.569			0.440			0.551			0.297		
Satd. Flow (perm)	920	1767	0	821	1495	0	1036	1883	1570	561	1833	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			77				148			8
Link Speed (k/h)		50			50			50				50
Link Distance (m)		105.7			210.0			162.2			245.2	
Travel Time (s)		7.6			15.1			11.7			17.7	
Confl. Peds. (#/hr)	86		22	22		86	13		7	7		13
Confl. Bikes (#/hr)			8			22			2			1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	3%	0%	0%	0%	1%	1%	0%	2%	0%	1%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	216	0	175	316	0	75	313	196	232	351	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	29.8	29.8		16.5	45.8		41.9	41.9	41.9	17.0	59.1	
Total Lost Time (s)	5.8	5.8		5.5	5.8		5.9	5.9	5.9	6.0	6.1	
Act Effct Green (s)	25.2	25.2		40.9	40.6		24.6	24.6	24.6	41.2	41.1	
Actuated g/C Ratio	0.27	0.27		0.44	0.43		0.26	0.26	0.26	0.44	0.44	
v/c Ratio	0.19	0.44		0.38	0.46		0.28	0.63	0.38	0.60	0.43	
Control Delay	32.7	30.7		20.9	17.9		29.5	36.3	10.0	23.2	19.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	32.7	30.7		20.9	17.9		29.5	36.3	10.0	23.2	19.2	
LOS	C	C		C	B		C	D	A	C	B	
Approach Delay		31.1			19.0			26.6			20.8	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	6.7	29.2		19.3	29.1		10.8	50.1	6.6	26.0	41.5	
Queue Length 95th (m)	17.0	53.1		36.9	56.4		20.5	70.2	19.4	38.4	57.4	
Internal Link Dist (m)		81.7			186.0			138.2			221.2	
Turn Bay Length (m)	29.8			29.1			20.5		2.5	68.3		
Base Capacity (vph)	247	492		477	694		403	733	701	394	1048	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.19	0.44		0.37	0.46		0.19	0.43	0.28	0.59	0.33	
Intersection Summary												
Area Type:	Other											
Cycle Length:	105.4											
Actuated Cycle Length:	93.6											

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 23.5

Intersection LOS: C

Intersection Capacity Utilization 72.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Arthur Dr & 44 Ave



Lanes, Volumes, Timings
1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2025 PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	290	21	202	262	245	22	180	208	317	237	36
Future Volume (vph)	23	290	21	202	262	245	22	180	208	317	237	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	31.7		0.0	52.8		0.0	50.9		54.5	34.3		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	14.8			2.5			83.2			14.4		
Satd. Flow (prot)	1825	3520	0	1755	1535	0	1738	1902	1601	3506	1832	0
Flt Permitted	0.950			0.414			0.950			0.950		
Satd. Flow (perm)	1610	3520	0	731	1535	0	1558	1902	1538	3386	1832	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			42				226		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.6			82.4			174.9			266.7	
Travel Time (s)		6.7			5.9			12.6			19.2	
Confl. Peds. (#/hr)	68		37	37		68	50		15	15		50
Confl. Bikes (#/hr)			7			1			1			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 (%)	0%	2%	0%	4%	2%	0%	5%	1%	2%	1%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	338	0	220	551	0	24	196	226	345	297	0
Turn Type	Prot	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6					8			
Total Split (s)	16.4	36.8		24.5	44.7		22.8	35.2	35.2	22.4	35.2	
Total Lost Time (s)	6.4	5.8		6.5	5.7		7.8	7.2	7.2	7.4	7.2	
Act Effct Green (s)	7.1	25.1		44.0	39.7		7.1	15.4	15.4	13.7	31.0	
Actuated g/C Ratio	0.08	0.27		0.47	0.42		0.08	0.16	0.16	0.14	0.33	
v/c Ratio	0.18	0.36		0.46	0.82		0.18	0.63	0.51	0.68	0.49	
Control Delay	48.7	30.3		19.6	37.5		49.0	47.9	9.7	47.7	31.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	48.7	30.3		19.6	37.5		49.0	47.9	9.7	47.7	31.9	
LOS	D	C		B	D		D	D	A	D	C	
Approach Delay		31.5			32.4			28.6			40.4	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	4.1	26.3		24.4	74.9		4.0	31.5	0.0	28.7	33.6	
Queue Length 95th (m)	13.9	44.1		43.9	#183.7		13.4	61.3	19.6	53.4	86.4	
Internal Link Dist (m)		68.6			58.4			150.9			242.7	
Turn Bay Length (m)	31.7			52.8			50.9		54.5	34.3		
Base Capacity (vph)	196	1179		538	672		280	581	627	566	616	
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	0.29		0.41	0.82		0.09	0.34	0.36	0.61	0.48	
Intersection Summary												
Area Type:	Other											
Cycle Length: 119.3												
Actuated Cycle Length: 94.6												

Lanes, Volumes, Timings
 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
 2025 PM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 33.8

Intersection LOS: C

Intersection Capacity Utilization 79.7%

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: 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

 Ø1	 Ø2	 Ø3	 Ø4
24.5 s	36.8 s	22.8 s	35.2 s
 Ø5	 Ø6	 Ø7	 Ø8
16.4 s	44.7 s	22.4 s	35.2 s

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	16	117	135	399	389	49
Future Volume (vph)	16	117	135	399	389	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1668	0	0	1861	1863	0
Flt Permitted	0.994			0.988		
Satd. Flow (perm)	1668	0	0	1861	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	253.5			245.2	206.9	
Travel Time (s)	18.3			17.7	14.9	
Confl. Peds. (#/hr)	7		14			14
Confl. Bikes (#/hr)						4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	2%	2%	1%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	140	0	0	562	461	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	70.2%			ICU Level of Service C		
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2025 PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	63	34	175	70	118	35	388	186	123	329	48
Future Volume (vph)	35	63	34	175	70	118	35	388	186	123	329	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.8		0.0	29.1		0.0	20.5		2.5	68.3		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			33.0			41.9			97.3		
Satd. Flow (prot)	1825	1793	0	1807	1632	0	1825	1883	1617	1807	1861	0
Flt Permitted	0.623			0.561			0.511			0.193		
Satd. Flow (perm)	1150	1793	0	1056	1632	0	976	1883	1564	367	1861	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			94				148		10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.7			210.0			162.2			245.2	
Travel Time (s)		7.6			15.1			11.7			17.7	
Confl. Peds. (#/hr)	22		6	6		22	4		3	3		4
Confl. Bikes (#/hr)			5			9			5			2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	2%	1%	1%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	111	0	201	216	0	40	446	214	141	433	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	29.8	29.8		16.5	45.8		41.9	41.9	41.9	17.0	59.1	
Total Lost Time (s)	5.8	5.8		5.5	5.8		5.9	5.9	5.9	6.0	6.1	
Act Effct Green (s)	24.7	24.7		40.8	40.5		30.5	30.5	30.5	45.9	45.8	
Actuated g/C Ratio	0.25	0.25		0.42	0.41		0.31	0.31	0.31	0.47	0.47	
v/c Ratio	0.14	0.24		0.39	0.30		0.13	0.76	0.36	0.45	0.50	
Control Delay	33.3	26.7		23.1	13.1		25.3	40.1	10.6	19.6	19.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	33.3	26.7		23.1	13.1		25.3	40.1	10.6	19.6	19.7	
LOS	C	C		C	B		C	D	B	B	B	
Approach Delay		28.5			17.9			30.3			19.7	
Approach LOS		C			B			C			B	
Queue Length 50th (m)	6.3	13.8		26.1	15.3		5.5	76.6	9.0	15.0	53.9	
Queue Length 95th (m)	15.1	28.0		43.2	31.8		12.9	107.8	24.4	24.8	75.2	
Internal Link Dist (m)		81.7			186.0			138.2			221.2	
Turn Bay Length (m)	29.8			29.1			20.5		2.5	68.3		
Base Capacity (vph)	289	469		523	731		361	697	672	333	1014	
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	0.14	0.24		0.38	0.30		0.11	0.64	0.32	0.42	0.43	
Intersection Summary												
Area Type:	Other											
Cycle Length:	105.4											
Actuated Cycle Length:	98.3											

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 24.0

Intersection LOS: C

Intersection Capacity Utilization 72.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Arthur Dr & 44 Ave



Lanes, Volumes, Timings
1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2027 Background AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 								 		
Traffic Volume (vph)	27	339	23	191	279	135	6	107	153	106	152	53
Future Volume (vph)	27	339	23	191	279	135	6	107	153	106	152	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	31.7		0.0	52.8		0.0	50.9		54.5	34.3		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	14.8			2.5			83.2			14.4		
Satd. Flow (prot)	1825	3422	0	1738	1564	0	1825	1865	1541	3248	1751	0
Flt Permitted	0.950			0.331			0.950			0.950		
Satd. Flow (perm)	1525	3422	0	592	1564	0	1722	1865	1490	3161	1751	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			21				194		14	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.6			82.4			174.9			266.7	
Travel Time (s)		6.7			5.9			12.6			19.2	
Confl. Peds. (#/hr)	92		21	21		92	26		11	11		26
Confl. Bikes (#/hr)									2			
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	9%	5%	4%	2%	0%	3%	6%	9%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	458	0	242	524	0	8	135	194	134	259	0
Turn Type	Prot	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6					8			
Total Split (s)	20.4	39.8		21.5	40.7		21.8	35.2	35.2	21.4	35.2	
Total Lost Time (s)	6.4	5.8		6.5	5.7		7.8	7.2	7.2	7.4	7.2	
Act Effect Green (s)	7.4	24.8		42.6	35.9		6.4	12.4	12.4	9.1	26.7	
Actuated g/C Ratio	0.09	0.29		0.49	0.42		0.07	0.14	0.14	0.11	0.31	
v/c Ratio	0.22	0.46		0.53	0.79		0.06	0.50	0.51	0.39	0.47	
Control Delay	44.8	27.7		18.1	34.9		44.7	42.3	10.5	42.2	28.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	44.8	27.7		18.1	34.9		44.7	42.3	10.5	42.2	28.3	
LOS	D	C		B	C		D	D	B	D	C	
Approach Delay		28.9			29.6			24.0			33.0	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	5.6	31.4		21.4	77.4		1.3	22.1	0.0	11.3	33.4	
Queue Length 95th (m)	14.0	47.6		39.0	#135.2		5.6	35.7	11.2	19.5	58.9	
Internal Link Dist (m)		68.6			58.4			150.9			242.7	
Turn Bay Length (m)	31.7			52.8			50.9		54.5	34.3		
Base Capacity (vph)	304	1389		498	667		304	631	632	541	607	
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	

Lanes, Volumes, Timings

1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA

2027 Background AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.11	0.33		0.49	0.79		0.03	0.21	0.31	0.25	0.43	

Intersection Summary

Area Type: Other

Cycle Length: 118.3

Actuated Cycle Length: 86.1

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 29.1

Intersection LOS: C

Intersection Capacity Utilization 60.0%

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: 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

 Ø1	 Ø2	 Ø3	 Ø4
21.5 s	39.8 s	21.8 s	35.2 s
 Ø5	 Ø6	 Ø7	 Ø8
20.4 s	40.7 s	21.4 s	35.2 s

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	31	213	184	274	272	37
Future Volume (vph)	31	213	184	274	272	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)	0%			0%	0%	
Storage Length (m)	0.0	0.0	0.0			0.0
Storage Lanes	1	0	0			0
Taper Length (m)	2.5		2.5			
Satd. Flow (prot)	1684	0	0	1853	1813	0
Flt Permitted	0.994			0.980		
Satd. Flow (perm)	1684	0	0	1853	1813	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	253.5			245.2	206.9	
Travel Time (s)	18.3			17.7	14.9	
Confl. Peds. (#/hr)	21		40			40
Confl. Bikes (#/hr)						
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	1%	2%	4%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	309	0	0	580	391	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	66.4%			ICU Level of Service C		
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2027 Background AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	122	67	152	114	159	66	271	171	201	275	30
Future Volume (vph)	41	122	67	152	114	159	66	271	171	201	275	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	29.8		0.0	29.1		0.0	20.5		2.5	68.3		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			33.0			41.9			97.3		
Satd. Flow (prot)	1772	1767	0	1825	1495	0	1825	1883	1633	1807	1833	0
Flt Permitted	0.566			0.429			0.547			0.292		
Satd. Flow (perm)	916	1767	0	801	1495	0	1029	1883	1570	551	1833	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			77				148		7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.7			210.0			162.2			245.2	
Travel Time (s)		7.6			15.1			11.7			17.7	
Confl. Peds. (#/hr)	86		22	22		86	13		7	7		13
Confl. Bikes (#/hr)			8			22			2			1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	0%	0%	0%	1%	1%	0%	2%	0%	1%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	223	0	179	321	0	78	319	201	236	359	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	29.8	29.8		16.5	45.8		41.9	41.9	41.9	17.0	59.1	
Total Lost Time (s)	5.8	5.8		5.5	5.8		5.9	5.9	5.9	6.0	6.1	
Act Effect Green (s)	25.1	25.1		40.9	40.6		25.0	25.0	25.0	41.6	41.5	
Actuated g/C Ratio	0.27	0.27		0.43	0.43		0.27	0.27	0.27	0.44	0.44	
v/c Ratio	0.20	0.46		0.39	0.47		0.29	0.64	0.38	0.61	0.44	
Control Delay	33.1	31.4		21.4	18.3		29.5	36.3	10.4	23.6	19.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	33.1	31.4		21.4	18.3		29.5	36.3	10.4	23.6	19.3	
LOS	C	C		C	B		C	D	B	C	B	
Approach Delay		31.7			19.4			26.7			21.0	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	6.9	30.6		19.9	30.1		11.3	51.3	7.3	26.5	42.9	
Queue Length 95th (m)	17.4	55.1		37.7	57.6		21.5	71.5	20.3	38.9	59.1	
Internal Link Dist (m)		81.7			186.0			138.2			221.2	
Turn Bay Length (m)	29.8			29.1			20.5		2.5	68.3		
Base Capacity (vph)	244	489		468	691		398	729	698	391	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	

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2027 Background AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.20	0.46		0.38	0.46		0.20	0.44	0.29	0.60	0.34	

Intersection Summary

Area Type: Other

Cycle Length: 105.4

Actuated Cycle Length: 94.1

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 23.8

Intersection LOS: C

Intersection Capacity Utilization 73.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Arthur Dr & 44 Ave

 Ø1	 Ø2	 Ø3	 Ø4
17 s	41.9 s	16.5 s	29.8 s
 Ø6	 Ø8		
59.1 s	45.8 s		

Lanes, Volumes, Timings
1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2027 Background PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 								 		
Traffic Volume (vph)	24	295	22	206	267	250	23	183	212	323	241	36
Future Volume (vph)	24	295	22	206	267	250	23	183	212	323	241	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	31.7		0.0	52.8		0.0	50.9		54.5	34.3		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	14.8			2.5			83.2			14.4		
Satd. Flow (prot)	1825	3519	0	1755	1533	0	1738	1902	1601	3506	1834	0
Flt Permitted	0.950			0.413			0.950			0.950		
Satd. Flow (perm)	1613	3519	0	730	1533	0	1559	1902	1538	3387	1834	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			42				230		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.6			82.4			174.9			266.7	
Travel Time (s)		6.7			5.9			12.6			19.2	
Confl. Peds. (#/hr)	68		37	37		68	50		15	15		50
Confl. Bikes (#/hr)			7			1			1			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 (%)	0%	2%	0%	4%	2%	0%	5%	1%	2%	1%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	345	0	224	562	0	25	199	230	351	301	0
Turn Type	Prot	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6					8			
Total Split (s)	16.4	36.8		24.5	44.7		22.8	35.2	35.2	22.4	35.2	
Total Lost Time (s)	6.4	5.8		6.5	5.7		7.8	7.2	7.2	7.4	7.2	
Act Effct Green (s)	7.2	27.7		46.7	39.7		7.2	15.5	15.5	13.7	31.0	
Actuated g/C Ratio	0.07	0.28		0.48	0.41		0.07	0.16	0.16	0.14	0.32	
v/c Ratio	0.19	0.34		0.46	0.87		0.20	0.66	0.53	0.71	0.51	
Control Delay	50.3	29.6		19.2	42.9		50.6	50.6	9.8	50.5	33.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	50.3	29.6		19.2	42.9		50.6	50.6	9.8	50.5	33.6	
LOS	D	C		B	D		D	D	A	D	C	
Approach Delay		31.1			36.1			30.0			42.7	
Approach LOS		C			D			C			D	
Queue Length 50th (m)	5.1	27.1		25.0	100.6		4.9	38.3	0.0	35.0	44.0	
Queue Length 95th (m)	14.1	45.1		44.8	#190.0		13.9	62.4	19.8	#55.3	87.9	
Internal Link Dist (m)		68.6			58.4			150.9			242.7	
Turn Bay Length (m)	31.7			52.8			50.9		54.5	34.3		
Base Capacity (vph)	190	1155		542	652		272	564	618	549	598	
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	0.14	0.30		0.41	0.86		0.09	0.35	0.37	0.64	0.50	
Intersection Summary												
Area Type:	Other											
Cycle Length: 119.3												
Actuated Cycle Length: 97.5												

Lanes, Volumes, Timings

1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2027 Background PM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 36.0

Intersection LOS: D

Intersection Capacity Utilization 80.5%

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: 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

 Ø1	 Ø2	 Ø3	 Ø4
24.5 s	36.8 s	22.8 s	35.2 s
 Ø5	 Ø6	 Ø7	 Ø8
16.4 s	44.7 s	22.4 s	35.2 s

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	17	120	137	407	396	50
Future Volume (vph)	17	120	137	407	396	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1670	0	0	1861	1863	0
Flt Permitted	0.994			0.988		
Satd. Flow (perm)	1670	0	0	1861	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	253.5			245.2	206.9	
Travel Time (s)	18.3			17.7	14.9	
Confl. Peds. (#/hr)	7		14			14
Confl. Bikes (#/hr)						4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	2%	2%	1%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	144	0	0	572	470	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	71.4%			ICU Level of Service C		
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2027 Background PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	64	34	179	72	121	35	395	189	126	336	49
Future Volume (vph)	35	64	34	179	72	121	35	395	189	126	336	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.8		0.0	29.1		0.0	20.5		2.5	68.3		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			33.0			41.9			97.3		
Satd. Flow (prot)	1825	1795	0	1807	1633	0	1825	1883	1617	1807	1861	0
Flt Permitted	0.620			0.560			0.507			0.187		
Satd. Flow (perm)	1145	1795	0	1054	1633	0	968	1883	1564	356	1861	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			93				148		10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.7			210.0			162.2			245.2	
Travel Time (s)		7.6			15.1			11.7			17.7	
Confl. Peds. (#/hr)	22		6	6		22	4		3	3		4
Confl. Bikes (#/hr)			5			9			5			2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	2%	1%	1%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	113	0	206	222	0	40	454	217	145	442	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	29.8	29.8		16.5	45.8		41.9	41.9	41.9	17.0	59.1	
Total Lost Time (s)	5.8	5.8		5.5	5.8		5.9	5.9	5.9	6.0	6.1	
Act Effct Green (s)	24.7	24.7		40.9	40.6		30.8	30.8	30.8	46.2	46.1	
Actuated g/C Ratio	0.25	0.25		0.41	0.41		0.31	0.31	0.31	0.47	0.47	
v/c Ratio	0.14	0.24		0.40	0.31		0.13	0.77	0.37	0.47	0.51	
Control Delay	33.4	27.2		23.3	13.5		25.3	40.7	10.8	20.0	19.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	33.4	27.2		23.3	13.5		25.3	40.7	10.8	20.0	19.8	
LOS	C	C		C	B		C	D	B	B	B	
Approach Delay		28.8			18.2			30.7			19.9	
Approach LOS		C			B			C			B	
Queue Length 50th (m)	6.3	14.4		27.1	16.4		5.5	78.6	9.5	15.4	55.4	
Queue Length 95th (m)	15.1	28.7		44.2	33.2		12.9	109.9	25.0	25.4	77.0	
Internal Link Dist (m)		81.7			186.0			138.2			221.2	
Turn Bay Length (m)	29.8			29.1			20.5		2.5	68.3		
Base Capacity (vph)	286	466		521	728		357	694	670	329	1009	
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	0.14	0.24		0.40	0.30		0.11	0.65	0.32	0.44	0.44	
Intersection Summary												
Area Type:	Other											
Cycle Length:	105.4											
Actuated Cycle Length:	98.7											

Lanes, Volumes, Timings 3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2027 Background PM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 24.3

Intersection LOS: C

Intersection Capacity Utilization 73.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Arthur Dr & 44 Ave



Lanes, Volumes, Timings
1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2032 Background AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 								 		
Traffic Volume (vph)	28	355	24	201	292	142	7	112	160	111	159	56
Future Volume (vph)	28	355	24	201	292	142	7	112	160	111	159	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	31.7		0.0	52.8		0.0	50.9		54.5	34.3		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	14.8			2.5			83.2			14.4		
Satd. Flow (prot)	1825	3422	0	1738	1563	0	1825	1865	1541	3248	1750	0
Flt Permitted	0.950			0.313			0.950			0.950		
Satd. Flow (perm)	1536	3422	0	561	1563	0	1724	1865	1490	3162	1750	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			21				203		14	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.6			82.4			174.9			266.7	
Travel Time (s)		6.7			5.9			12.6			19.2	
Confl. Peds. (#/hr)	92		21	21		92	26		11	11		26
Confl. Bikes (#/hr)									2			
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	9%	5%	4%	2%	0%	3%	6%	9%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	479	0	254	550	0	9	142	203	141	272	0
Turn Type	Prot	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6					8			
Total Split (s)	20.4	39.8		21.5	40.7		21.8	35.2	35.2	21.4	35.2	
Total Lost Time (s)	6.4	5.8		6.5	5.7		7.8	7.2	7.2	7.4	7.2	
Act Effct Green (s)	7.4	24.5		42.7	35.9		6.4	12.9	12.9	9.3	27.4	
Actuated g/C Ratio	0.09	0.28		0.49	0.41		0.07	0.15	0.15	0.11	0.32	
v/c Ratio	0.22	0.49		0.57	0.84		0.07	0.51	0.52	0.41	0.49	
Control Delay	45.4	28.7		19.4	38.8		45.3	42.4	10.3	42.6	28.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	45.4	28.7		19.4	38.8		45.3	42.4	10.3	42.6	28.5	
LOS	D	C		B	D		D	D	B	D	C	
Approach Delay		29.9			32.6			24.1			33.3	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	5.8	33.8		23.0	84.8		1.5	23.4	0.0	12.0	35.6	
Queue Length 95th (m)	14.5	50.7		42.2	#149.3		6.0	37.4	11.2	20.6	62.0	
Internal Link Dist (m)		68.6			58.4			150.9			242.7	
Turn Bay Length (m)	31.7			52.8			50.9		54.5	34.3		
Base Capacity (vph)	302	1378		485	662		302	625	635	537	607	
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	0.35		0.52	0.83		0.03	0.23	0.32	0.26	0.45	
Intersection Summary												
Area Type:	Other											
Cycle Length: 118.3												
Actuated Cycle Length: 86.9												

Lanes, Volumes, Timings

1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2032 Background AM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 30.6

Intersection LOS: C

Intersection Capacity Utilization 61.4%

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: 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

 Ø1	 Ø2	 Ø3	 Ø4
21.5 s	39.8 s	21.8 s	35.2 s
 Ø5	 Ø6	 Ø7	 Ø8
20.4 s	40.7 s	21.4 s	35.2 s

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	33	223	193	287	286	39
Future Volume (vph)	33	223	193	287	286	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1684	0	0	1853	1814	0
Flt Permitted	0.994			0.980		
Satd. Flow (perm)	1684	0	0	1853	1814	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	253.5			245.2	206.9	
Travel Time (s)	18.3			17.7	14.9	
Confl. Peds. (#/hr)	21		40			40
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	0%	1%	2%	4%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	324	0	0	607	411	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 69.2%				ICU Level of Service C		
Analysis Period (min) 15						

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2032 Background AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	128	70	159	120	167	69	284	179	210	288	32
Future Volume (vph)	43	128	70	159	120	167	69	284	179	210	288	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.8		0.0	29.1		0.0	20.5		2.5	68.3		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			33.0			41.9			97.3		
Satd. Flow (prot)	1772	1767	0	1825	1495	0	1825	1883	1633	1807	1833	0
Flt Permitted	0.558			0.412			0.538			0.278		
Satd. Flow (perm)	906	1767	0	770	1495	0	1013	1883	1570	525	1833	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			77				148		8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.7			210.0			162.2			245.2	
Travel Time (s)		7.6			15.1			11.7			17.7	
Confl. Peds. (#/hr)	86		22	22		86	13		7	7		13
Confl. Bikes (#/hr)			8			22			2			1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	3%	0%	0%	0%	1%	1%	0%	2%	0%	1%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	233	0	187	337	0	81	334	211	247	377	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	29.8	29.8		16.5	45.8		41.9	41.9	41.9	17.0	59.1	
Total Lost Time (s)	5.8	5.8		5.5	5.8		5.9	5.9	5.9	6.0	6.1	
Act Effct Green (s)	25.0	25.0		40.9	40.6		25.7	25.7	25.7	42.3	42.2	
Actuated g/C Ratio	0.26	0.26		0.43	0.43		0.27	0.27	0.27	0.45	0.45	
v/c Ratio	0.21	0.48		0.42	0.49		0.30	0.65	0.40	0.65	0.46	
Control Delay	33.8	32.4		22.1	19.2		29.7	36.8	11.2	25.2	19.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	33.8	32.4		22.1	19.2		29.7	36.8	11.2	25.2	19.5	
LOS	C	C		C	B		C	D	B	C	B	
Approach Delay		32.6			20.3			27.2			21.8	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	7.5	32.7		21.2	33.2		11.8	54.2	8.8	28.0	45.4	
Queue Length 95th (m)	18.3	57.8		39.3	61.8		22.2	75.3	22.4	40.7	62.4	
Internal Link Dist (m)		81.7			186.0			138.2			221.2	
Turn Bay Length (m)	29.8			29.1			20.5		2.5	68.3		
Base Capacity (vph)	238	483		455	687		389	724	694	384	1035	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.21	0.48		0.41	0.49		0.21	0.46	0.30	0.64	0.36	
Intersection Summary												
Area Type:	Other											
Cycle Length:	105.4											
Actuated Cycle Length:	94.8											

Lanes, Volumes, Timings 3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2032 Background AM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 24.5

Intersection LOS: C

Intersection Capacity Utilization 74.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Arthur Dr & 44 Ave



Lanes, Volumes, Timings
1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2032 Background PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 								 		
Traffic Volume (vph)	25	310	23	216	280	262	24	192	222	339	253	38
Future Volume (vph)	25	310	23	216	280	262	24	192	222	339	253	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	31.7		0.0	52.8		0.0	50.9		54.5	34.3		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	14.8			2.5			83.2			14.4		
Satd. Flow (prot)	1825	3519	0	1755	1533	0	1738	1902	1601	3506	1834	0
Flt Permitted	0.950			0.398			0.950			0.950		
Satd. Flow (perm)	1621	3519	0	705	1533	0	1562	1902	1538	3388	1834	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			42				241		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.6			82.4			174.9			266.7	
Travel Time (s)		6.7			5.9			12.6			19.2	
Confl. Peds. (#/hr)	68		37	37		68	50		15	15		50
Confl. Bikes (#/hr)			7			1			1			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 (%)	0%	2%	0%	4%	2%	0%	5%	1%	2%	1%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	362	0	235	589	0	26	209	241	368	316	0
Turn Type	Prot	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6					8			
Total Split (s)	16.4	36.8		24.5	44.7		22.8	35.2	35.2	22.4	35.2	
Total Lost Time (s)	6.4	5.8		6.5	5.7		7.8	7.2	7.2	7.4	7.2	
Act Effct Green (s)	7.2	27.3		46.8	39.7		7.3	16.2	16.2	14.0	29.1	
Actuated g/C Ratio	0.07	0.28		0.48	0.40		0.07	0.16	0.16	0.14	0.30	
v/c Ratio	0.20	0.37		0.49	0.92		0.20	0.67	0.53	0.74	0.58	
Control Delay	51.0	30.6		20.2	49.6		51.1	50.8	9.6	52.1	37.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	51.0	30.6		20.2	49.6		51.1	50.8	9.6	52.1	37.5	
LOS	D	C		C	D		D	D	A	D	D	
Approach Delay		32.1			41.2			30.0			45.4	
Approach LOS		C			D			C			D	
Queue Length 50th (m)	5.3	29.1		26.8	110.4		5.1	40.5	0.0	37.2	58.5	
Queue Length 95th (m)	14.7	47.7		47.6	#206.0		14.2	65.4	20.4	#61.9	93.0	
Internal Link Dist (m)		68.6			58.4			150.9			242.7	
Turn Bay Length (m)	31.7			52.8			50.9		54.5	34.3		
Base Capacity (vph)	188	1140		530	646		269	558	622	544	564	
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	0.14	0.32		0.44	0.91		0.10	0.37	0.39	0.68	0.56	
Intersection Summary												
Area Type:	Other											
Cycle Length:	119.3											
Actuated Cycle Length:	98.5											

Lanes, Volumes, Timings

1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2032 Background PM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 38.7

Intersection LOS: D

Intersection Capacity Utilization 82.7%

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: 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

 Ø1	 Ø2	 Ø3	 Ø4
24.5 s	36.8 s	22.8 s	35.2 s
 Ø5	 Ø6	 Ø7	 Ø8
16.4 s	44.7 s	22.4 s	35.2 s

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	17	125	144	426	415	52
Future Volume (vph)	17	125	144	426	415	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1668	0	0	1859	1863	0
Flt Permitted	0.994			0.987		
Satd. Flow (perm)	1668	0	0	1859	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	253.5			245.2	206.9	
Travel Time (s)	18.3			17.7	14.9	
Confl. Peds. (#/hr)	7		14			14
Confl. Bikes (#/hr)						4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	2%	2%	1%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	150	0	0	600	492	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	74.2%			ICU Level of Service D		
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2032 Background PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	68	36	187	75	126	37	414	198	132	352	51
Future Volume (vph)	37	68	36	187	75	126	37	414	198	132	352	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.8		0.0	29.1		0.0	20.5		2.5	68.3		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			33.0			41.9			97.3		
Satd. Flow (prot)	1825	1795	0	1807	1633	0	1825	1883	1617	1807	1861	0
Flt Permitted	0.615			0.557			0.496			0.171		
Satd. Flow (perm)	1136	1795	0	1049	1633	0	948	1883	1564	325	1861	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			94				148		10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.7			210.0			162.2			245.2	
Travel Time (s)		7.6			15.1			11.7			17.7	
Confl. Peds. (#/hr)	22		6	6		22	4		3	3		4
Confl. Bikes (#/hr)			5			9			5			2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	2%	1%	1%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	119	0	215	231	0	43	476	228	152	464	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	29.8	29.8		16.5	45.8		41.9	41.9	41.9	17.0	59.1	
Total Lost Time (s)	5.8	5.8		5.5	5.8		5.9	5.9	5.9	6.0	6.1	
Act Effct Green (s)	24.6	24.6		40.9	40.6		31.7	31.7	31.7	47.2	47.1	
Actuated g/C Ratio	0.25	0.25		0.41	0.41		0.32	0.32	0.32	0.47	0.47	
v/c Ratio	0.15	0.26		0.42	0.32		0.14	0.80	0.38	0.51	0.52	
Control Delay	34.0	28.0		24.1	14.1		25.5	42.0	11.5	21.0	20.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	34.0	28.0		24.1	14.1		25.5	42.0	11.5	21.0	20.2	
LOS	C	C		C	B		C	D	B	C	C	
Approach Delay		29.6			18.9			31.8			20.4	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	7.0	16.0		29.8	18.3		6.0	84.1	11.2	16.3	59.1	
Queue Length 95th (m)	15.9	30.3		46.2	34.8		13.6	116.6	27.4	26.5	81.8	
Internal Link Dist (m)		81.7			186.0			138.2			221.2	
Turn Bay Length (m)	29.8			29.1			20.5		2.5	68.3		
Base Capacity (vph)	280	460		514	722		346	687	664	318	999	
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	0.15	0.26		0.42	0.32		0.12	0.69	0.34	0.48	0.46	

Intersection Summary

Area Type: Other

Cycle Length: 105.4

Actuated Cycle Length: 99.7

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2032 Background PM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 25.1

Intersection LOS: C

Intersection Capacity Utilization 75.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Arthur Dr & 44 Ave



Lanes, Volumes, Timings
1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2037 Background AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 								 		
Traffic Volume (vph)	30	372	25	210	306	148	7	117	168	116	166	58
Future Volume (vph)	30	372	25	210	306	148	7	117	168	116	166	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	31.7		0.0	52.8		0.0	50.9		54.5	34.3		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	14.8			2.5			83.2			14.4		
Satd. Flow (prot)	1825	3418	0	1738	1564	0	1825	1865	1541	3248	1751	0
Flt Permitted	0.950			0.294			0.950			0.950		
Satd. Flow (perm)	1545	3418	0	527	1564	0	1725	1865	1490	3162	1751	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			21				213		14	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.6			82.4			174.9			266.7	
Travel Time (s)		6.7			5.9			12.6			19.2	
Confl. Peds. (#/hr)	92		21	21		92	26		11	11		26
Confl. Bikes (#/hr)									2			
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	9%	5%	4%	2%	0%	3%	6%	9%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	503	0	266	574	0	9	148	213	147	283	0
Turn Type	Prot	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6					8			
Total Split (s)	20.4	39.8		21.5	40.7		21.8	35.2	35.2	21.4	35.2	
Total Lost Time (s)	6.4	5.8		6.5	5.7		7.8	7.2	7.2	7.4	7.2	
Act Effct Green (s)	7.6	24.4		42.9	35.9		6.4	13.1	13.1	9.5	27.8	
Actuated g/C Ratio	0.09	0.28		0.49	0.41		0.07	0.15	0.15	0.11	0.32	
v/c Ratio	0.24	0.53		0.61	0.88		0.07	0.53	0.53	0.42	0.50	
Control Delay	45.7	29.5		20.8	43.0		45.6	43.0	10.3	42.8	28.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	45.7	29.5		20.8	43.0		45.6	43.0	10.3	42.8	28.8	
LOS	D	C		C	D		D	D	B	D	C	
Approach Delay		30.7			36.0			24.2			33.6	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	6.4	36.6		24.7	92.0		1.5	24.6	0.0	12.6	37.5	
Queue Length 95th (m)	15.5	53.3		44.1	#160.2		6.1	39.1	11.3	21.2	64.9	
Internal Link Dist (m)		68.6			58.4			150.9			242.7	
Turn Bay Length (m)	31.7			52.8			50.9		54.5	34.3		
Base Capacity (vph)	300	1369		472	659		300	622	639	534	608	
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	0.37		0.56	0.87		0.03	0.24	0.33	0.28	0.47	
Intersection Summary												
Area Type:	Other											
Cycle Length:	118.3											
Actuated Cycle Length:	87.4											

Lanes, Volumes, Timings

1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2037 Background AM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 32.2

Intersection LOS: C

Intersection Capacity Utilization 62.7%

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: 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

 Ø1	 Ø2	 Ø3	 Ø4
21.5 s	39.8 s	21.8 s	35.2 s
 Ø5	 Ø6	 Ø7	 Ø8
20.4 s	40.7 s	21.4 s	35.2 s

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	234	202	300	299	41
Future Volume (vph)	34	234	202	300	299	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1684	0	0	1853	1813	0
Flt Permitted	0.994			0.980		
Satd. Flow (perm)	1684	0	0	1853	1813	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	253.5			245.2	206.9	
Travel Time (s)	18.3			17.7	14.9	
Confl. Peds. (#/hr)	21		40			40
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	0%	1%	2%	4%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	339	0	0	636	430	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	71.9%			ICU Level of Service C		
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2037 Background AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	133	73	166	125	174	72	298	187	220	301	33
Future Volume (vph)	44	133	73	166	125	174	72	298	187	220	301	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.8		0.0	29.1		0.0	20.5		2.5	68.3		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			33.0			41.9			97.3		
Satd. Flow (prot)	1772	1766	0	1825	1495	0	1825	1883	1633	1807	1833	0
Flt Permitted	0.550			0.395			0.530			0.266		
Satd. Flow (perm)	896	1766	0	739	1495	0	998	1883	1570	503	1833	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			77				148		8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.7			210.0			162.2			245.2	
Travel Time (s)		7.6			15.1			11.7			17.7	
Confl. Peds. (#/hr)	86		22	22		86	13		7	7		13
Confl. Bikes (#/hr)			8			22			2			1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	3%	0%	0%	0%	1%	1%	0%	2%	0%	1%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	242	0	195	352	0	85	351	220	259	393	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	29.8	29.8		16.5	45.8		41.9	41.9	41.9	17.0	59.1	
Total Lost Time (s)	5.8	5.8		5.5	5.8		5.9	5.9	5.9	6.0	6.1	
Act Effct Green (s)	24.9	24.9		40.9	40.6		26.8	26.8	26.8	43.5	43.4	
Actuated g/C Ratio	0.26	0.26		0.43	0.42		0.28	0.28	0.28	0.45	0.45	
v/c Ratio	0.22	0.51		0.45	0.52		0.31	0.67	0.40	0.69	0.47	
Control Delay	34.6	33.7		23.2	20.4		29.6	36.9	11.7	27.0	19.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	34.6	33.7		23.2	20.4		29.6	36.9	11.7	27.0	19.6	
LOS	C	C		C	C		C	D	B	C	B	
Approach Delay		33.8			21.4			27.5			22.5	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	7.8	35.5		23.2	37.2		12.4	57.6	10.1	29.6	48.0	
Queue Length 95th (m)	18.5	60.1		40.8	65.5		23.2	79.1	24.4	42.8	65.5	
Internal Link Dist (m)		81.7			186.0			138.2			221.2	
Turn Bay Length (m)	29.8			29.1			20.5		2.5	68.3		
Base Capacity (vph)	232	475		440	679		379	715	688	378	1022	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.22	0.51		0.44	0.52		0.22	0.49	0.32	0.69	0.38	

Intersection Summary

Area Type: Other

Cycle Length: 105.4

Actuated Cycle Length: 96

Lanes, Volumes, Timings 3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2037 Background AM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 25.3

Intersection LOS: C

Intersection Capacity Utilization 76.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Arthur Dr & 44 Ave



Lanes, Volumes, Timings
1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2037 Background PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	324	24	226	293	274	25	201	233	355	264	40
Future Volume (vph)	26	324	24	226	293	274	25	201	233	355	264	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	31.7		0.0	52.8		0.0	50.9		54.5	34.3		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	14.8			2.5			83.2			14.4		
Satd. Flow (prot)	1825	3519	0	1755	1533	0	1738	1902	1601	3506	1832	0
Flt Permitted	0.950			0.381			0.950			0.950		
Satd. Flow (perm)	1628	3519	0	676	1533	0	1566	1902	1538	3390	1832	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			42				253		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.6			82.4			174.9			266.7	
Travel Time (s)		6.7			5.9			12.6			19.2	
Confl. Peds. (#/hr)	68		37	37		68	50		15	15		50
Confl. Bikes (#/hr)			7			1			1			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 (%)	0%	2%	0%	4%	2%	0%	5%	1%	2%	1%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	378	0	246	616	0	27	218	253	386	330	0
Turn Type	Prot	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6					8			
Total Split (s)	16.4	36.8		24.5	44.7		22.8	35.2	35.2	22.4	35.2	
Total Lost Time (s)	6.4	5.8		6.5	5.7		7.8	7.2	7.2	7.4	7.2	
Act Effct Green (s)	7.3	26.9		46.8	39.7		7.3	17.1	17.1	14.4	30.3	
Actuated g/C Ratio	0.07	0.27		0.47	0.40		0.07	0.17	0.17	0.14	0.30	
v/c Ratio	0.21	0.40		0.53	0.97		0.21	0.67	0.54	0.76	0.59	
Control Delay	51.8	32.0		21.5	60.3		52.1	50.4	9.3	53.7	37.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	51.8	32.0		21.5	60.3		52.1	50.4	9.3	53.7	37.5	
LOS	D	C		C	E		D	D	A	D	D	
Approach Delay		33.3			49.2			29.6			46.3	
Approach LOS		C			D			C			D	
Queue Length 50th (m)	5.5	31.2		28.6	~129.8		5.3	42.5	0.0	39.6	61.8	
Queue Length 95th (m)	15.2	50.6		51.4	#224.8		15.0	68.1	20.5	#68.4	97.5	
Internal Link Dist (m)		68.6			58.4			150.9			242.7	
Turn Bay Length (m)	31.7			52.8			50.9		54.5	34.3		
Base Capacity (vph)	185	1119		515	638		266	551	625	536	573	
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	0.15	0.34		0.48	0.97		0.10	0.40	0.40	0.72	0.58	
Intersection Summary												
Area Type:	Other											
Cycle Length:	119.3											
Actuated Cycle Length:	99.8											

Lanes, Volumes, Timings

1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2037 Background PM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 41.8

Intersection LOS: D

Intersection Capacity Utilization 84.9%

ICU Level of Service E

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: 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

 Ø1	 Ø2	 Ø3	 Ø4
24.5 s	36.8 s	22.8 s	35.2 s
 Ø5	 Ø6	 Ø7	 Ø8
16.4 s	44.7 s	22.4 s	35.2 s

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	18	131	150	446	434	55
Future Volume (vph)	18	131	150	446	434	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1668	0	0	1861	1863	0
Flt Permitted	0.994			0.988		
Satd. Flow (perm)	1668	0	0	1861	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	253.5			245.2	206.9	
Travel Time (s)	18.3			17.7	14.9	
Confl. Peds. (#/hr)	7		14			14
Confl. Bikes (#/hr)						4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	2%	2%	1%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	157	0	0	627	515	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	77.2%			ICU Level of Service D		
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2037 Background PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	71	38	196	79	132	39	433	207	138	368	54
Future Volume (vph)	39	71	38	196	79	132	39	433	207	138	368	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.8		0.0	29.1		0.0	20.5		2.5	68.3		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			33.0			41.9			97.3		
Satd. Flow (prot)	1825	1795	0	1807	1633	0	1825	1883	1617	1807	1861	0
Flt Permitted	0.608			0.553			0.487			0.151		
Satd. Flow (perm)	1124	1795	0	1041	1633	0	931	1883	1564	287	1861	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			93				148		10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.7			210.0			162.2			245.2	
Travel Time (s)		7.6			15.1			11.7			17.7	
Confl. Peds. (#/hr)	22		6	6		22	4		3	3		4
Confl. Bikes (#/hr)			5			9			5			2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	2%	1%	1%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	126	0	225	243	0	45	498	238	159	485	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	29.8	29.8		16.5	45.8		41.9	41.9	41.9	17.0	59.1	
Total Lost Time (s)	5.8	5.8		5.5	5.8		5.9	5.9	5.9	6.0	6.1	
Act Effect Green (s)	24.5	24.5		40.9	40.6		32.4	32.4	32.4	48.1	48.0	
Actuated g/C Ratio	0.24	0.24		0.41	0.40		0.32	0.32	0.32	0.48	0.48	
v/c Ratio	0.16	0.28		0.45	0.34		0.15	0.82	0.39	0.56	0.54	
Control Delay	34.3	28.4		24.7	14.9		25.6	43.9	12.2	22.5	20.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	34.3	28.4		24.7	14.9		25.6	43.9	12.2	22.5	20.5	
LOS	C	C		C	B		C	D	B	C	C	
Approach Delay		29.9			19.6			33.2			21.0	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	7.4	17.1		31.4	20.3		6.3	89.6	12.7	17.0	62.7	
Queue Length 95th (m)	16.7	31.9		48.2	37.5		14.3	123.4	29.6	27.6	86.3	
Internal Link Dist (m)		81.7			186.0			138.2			221.2	
Turn Bay Length (m)	29.8			29.1			20.5		2.5	68.3		
Base Capacity (vph)	274	456		507	716		336	681	660	304	990	
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	0.16	0.28		0.44	0.34		0.13	0.73	0.36	0.52	0.49	

Intersection Summary

Area Type: Other

Cycle Length: 105.4

Actuated Cycle Length: 100.5

Lanes, Volumes, Timings 3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2037 Background PM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 26.0

Intersection LOS: C

Intersection Capacity Utilization 78.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Arthur Dr & 44 Ave



Lanes, Volumes, Timings
1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2027 Post Development AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	339	23	192	279	135	6	109	155	106	152	53
Future Volume (vph)	27	339	23	192	279	135	6	109	155	106	152	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	31.7		0.0	52.8		0.0	50.9		54.5	34.3		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	14.8			2.5			83.2			14.4		
Satd. Flow (prot)	1825	3422	0	1738	1564	0	1825	1865	1541	3248	1751	0
Flt Permitted	0.950			0.331			0.950			0.950		
Satd. Flow (perm)	1525	3422	0	592	1564	0	1722	1865	1490	3161	1751	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			21				196		14	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.6			82.4			174.9			266.7	
Travel Time (s)		6.7			5.9			12.6			19.2	
Confl. Peds. (#/hr)	92		21	21		92	26		11	11		26
Confl. Bikes (#/hr)									2			
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	9%	5%	4%	2%	0%	3%	6%	9%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	458	0	243	524	0	8	138	196	134	259	0
Turn Type	Prot	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6					8			
Total Split (s)	20.4	39.8		21.5	40.7		21.8	35.2	35.2	21.4	35.2	
Total Lost Time (s)	6.4	5.8		6.5	5.7		7.8	7.2	7.2	7.4	7.2	
Act Effct Green (s)	7.4	24.7		42.6	35.9		6.4	12.5	12.5	9.1	26.8	
Actuated g/C Ratio	0.09	0.29		0.49	0.42		0.07	0.15	0.15	0.11	0.31	
v/c Ratio	0.22	0.46		0.53	0.79		0.06	0.51	0.51	0.39	0.47	
Control Delay	44.9	27.8		18.2	35.0		44.7	42.4	10.5	42.3	28.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	44.9	27.8		18.2	35.0		44.7	42.4	10.5	42.3	28.2	
LOS	D	C		B	C		D	D	B	D	C	
Approach Delay		28.9			29.7			24.2			33.0	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	5.6	31.6		21.6	77.7		1.3	22.6	0.0	11.3	33.4	
Queue Length 95th (m)	14.0	47.6		39.2	#135.2		5.6	36.4	11.2	19.5	58.9	
Internal Link Dist (m)		68.6			58.4			150.9			242.7	
Turn Bay Length (m)	31.7			52.8			50.9		54.5	34.3		
Base Capacity (vph)	304	1387		498	667		304	630	633	541	607	
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	0.11	0.33		0.49	0.79		0.03	0.22	0.31	0.25	0.43	
Intersection Summary												
Area Type:	Other											
Cycle Length: 118.3												
Actuated Cycle Length: 86.2												

Lanes, Volumes, Timings

1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2027 Post Development AM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 29.2

Intersection LOS: C

Intersection Capacity Utilization 60.0%

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: 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

 Ø1	 Ø2	 Ø3	 Ø4
21.5 s	39.8 s	21.8 s	35.2 s
 Ø5	 Ø6	 Ø7	 Ø8
20.4 s	40.7 s	21.4 s	35.2 s

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	31	214	184	278	273	37
Future Volume (vph)	31	214	184	278	273	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1684	0	0	1853	1813	0
Flt Permitted	0.994			0.980		
Satd. Flow (perm)	1684	0	0	1853	1813	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	253.5			245.2	206.9	
Travel Time (s)	18.3			17.7	14.9	
Confl. Peds. (#/hr)	21		40			40
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	0%	1%	2%	4%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	310	0	0	585	393	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	66.8%			ICU Level of Service C		
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2027 Post Development AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	122	67	152	114	159	66	272	171	203	277	30
Future Volume (vph)	41	122	67	152	114	159	66	272	171	203	277	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.8		0.0	29.1		0.0	20.5		2.5	68.3		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			33.0			41.9			97.3		
Satd. Flow (prot)	1772	1767	0	1825	1495	0	1825	1883	1633	1807	1833	0
Flt Permitted	0.566			0.429			0.546			0.291		
Satd. Flow (perm)	916	1767	0	801	1495	0	1027	1883	1570	550	1833	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			77				148		7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.7			210.0			162.2			245.2	
Travel Time (s)		7.6			15.1			11.7			17.7	
Confl. Peds. (#/hr)	86		22	22		86	13		7	7		13
Confl. Bikes (#/hr)			8			22			2			1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	3%	0%	0%	0%	1%	1%	0%	2%	0%	1%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	223	0	179	321	0	78	320	201	239	361	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	29.8	29.8		16.5	45.8		41.9	41.9	41.9	17.0	59.1	
Total Lost Time (s)	5.8	5.8		5.5	5.8		5.9	5.9	5.9	6.0	6.1	
Act Effct Green (s)	25.1	25.1		40.9	40.6		25.1	25.1	25.1	41.7	41.6	
Actuated g/C Ratio	0.27	0.27		0.43	0.43		0.27	0.27	0.27	0.44	0.44	
v/c Ratio	0.20	0.46		0.39	0.47		0.29	0.64	0.38	0.62	0.44	
Control Delay	33.1	31.4		21.4	18.3		29.5	36.3	10.3	23.9	19.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	33.1	31.4		21.4	18.3		29.5	36.3	10.3	23.9	19.4	
LOS	C	C		C	B		C	D	B	C	B	
Approach Delay		31.7			19.4			26.7			21.2	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	6.9	30.6		19.9	30.1		11.3	51.5	7.3	26.9	43.1	
Queue Length 95th (m)	17.4	55.1		37.7	57.6		21.5	71.7	20.3	39.6	59.5	
Internal Link Dist (m)		81.7			186.0			138.2			221.2	
Turn Bay Length (m)	29.8			29.1			20.5		2.5	68.3		
Base Capacity (vph)	244	489		468	691		397	729	698	391	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	0.20	0.46		0.38	0.46		0.20	0.44	0.29	0.61	0.35	
Intersection Summary												
Area Type:	Other											
Cycle Length:	105.4											
Actuated Cycle Length:	94.2											

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 23.9

Intersection LOS: C

Intersection Capacity Utilization 73.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Arthur Dr & 44 Ave



Lanes, Volumes, Timings
1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2027 Post Development PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	295	22	207	267	250	23	184	214	323	242	36
Future Volume (vph)	24	295	22	207	267	250	23	184	214	323	242	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	31.7		0.0	52.8		0.0	50.9		54.5	34.3		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	14.8			2.5			83.2			14.4		
Satd. Flow (prot)	1825	3519	0	1755	1533	0	1738	1902	1601	3506	1834	0
Flt Permitted	0.950			0.412			0.950			0.950		
Satd. Flow (perm)	1613	3519	0	728	1533	0	1559	1902	1538	3387	1834	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			42				233		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.6			82.4			174.9			266.7	
Travel Time (s)		6.7			5.9			12.6			19.2	
Confl. Peds. (#/hr)	68		37	37		68	50		15	15		50
Confl. Bikes (#/hr)			7			1			1			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 (%)	0%	2%	0%	4%	2%	0%	5%	1%	2%	1%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	345	0	225	562	0	25	200	233	351	302	0
Turn Type	Prot	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6					8			
Total Split (s)	16.4	36.8		24.5	44.7		22.8	35.2	35.2	22.4	35.2	
Total Lost Time (s)	6.4	5.8		6.5	5.7		7.8	7.2	7.2	7.4	7.2	
Act Effct Green (s)	7.2	27.6		46.7	39.7		7.2	15.6	15.6	13.7	31.1	
Actuated g/C Ratio	0.07	0.28		0.48	0.41		0.07	0.16	0.16	0.14	0.32	
v/c Ratio	0.20	0.34		0.46	0.87		0.20	0.66	0.53	0.71	0.51	
Control Delay	50.4	29.7		19.3	43.0		50.6	50.5	9.8	50.6	33.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	50.4	29.7		19.3	43.0		50.6	50.5	9.8	50.6	33.6	
LOS	D	C		B	D		D	D	A	D	C	
Approach Delay		31.1			36.2			29.8			42.7	
Approach LOS		C			D			C			D	
Queue Length 50th (m)	5.1	27.2		25.2	100.9		4.9	38.5	0.0	35.1	44.2	
Queue Length 95th (m)	14.1	45.1		45.0	#189.8		13.7	62.6	20.0	#55.4	88.6	
Internal Link Dist (m)		68.6			58.4			150.9			242.7	
Turn Bay Length (m)	31.7			52.8			50.9		54.5	34.3		
Base Capacity (vph)	190	1153		541	652		272	563	619	549	598	
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	0.14	0.30		0.42	0.86		0.09	0.36	0.38	0.64	0.51	
Intersection Summary												
Area Type:	Other											
Cycle Length:	119.3											
Actuated Cycle Length:	97.6											

Lanes, Volumes, Timings

1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2027 Post Development PM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 36.0

Intersection LOS: D

Intersection Capacity Utilization 80.6%

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: 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

 Ø1	 Ø2	 Ø3	 Ø4
24.5 s	36.8 s	22.8 s	35.2 s
 Ø5	 Ø6	 Ø7	 Ø8
16.4 s	44.7 s	22.4 s	35.2 s

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	17	121	137	410	399	50
Future Volume (vph)	17	121	137	410	399	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1670	0	0	1861	1863	0
Flt Permitted	0.994			0.988		
Satd. Flow (perm)	1670	0	0	1861	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	253.5			245.2	206.9	
Travel Time (s)	18.3			17.7	14.9	
Confl. Peds. (#/hr)	7		14			14
Confl. Bikes (#/hr)						4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	2%	2%	1%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	145	0	0	576	473	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	71.8%			ICU Level of Service C		
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2027 Post Development PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	64	34	179	72	122	35	398	189	127	338	49
Future Volume (vph)	35	64	34	179	72	122	35	398	189	127	338	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.8		0.0	29.1		0.0	20.5		2.5	68.3		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			33.0			41.9			97.3		
Satd. Flow (prot)	1825	1795	0	1807	1633	0	1825	1883	1617	1807	1861	0
Flt Permitted	0.619			0.560			0.505			0.184		
Satd. Flow (perm)	1143	1795	0	1054	1633	0	965	1883	1564	350	1861	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			94				148		10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.7			210.0			162.2			245.2	
Travel Time (s)		7.6			15.1			11.7			17.7	
Confl. Peds. (#/hr)	22		6	6		22	4		3	3		4
Confl. Bikes (#/hr)			5			9			5			2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	2%	1%	1%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	113	0	206	223	0	40	457	217	146	445	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	29.8	29.8		16.5	45.8		41.9	41.9	41.9	17.0	59.1	
Total Lost Time (s)	5.8	5.8		5.5	5.8		5.9	5.9	5.9	6.0	6.1	
Act Effct Green (s)	24.7	24.7		40.9	40.6		30.9	30.9	30.9	46.3	46.2	
Actuated g/C Ratio	0.25	0.25		0.41	0.41		0.31	0.31	0.31	0.47	0.47	
v/c Ratio	0.14	0.24		0.40	0.31		0.13	0.78	0.37	0.48	0.51	
Control Delay	33.5	27.2		23.4	13.5		25.3	40.9	10.8	20.2	19.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	33.5	27.2		23.4	13.5		25.3	40.9	10.8	20.2	19.9	
LOS	C	C		C	B		C	D	B	C	B	
Approach Delay		28.9			18.2			30.8			20.0	
Approach LOS		C			B			C			B	
Queue Length 50th (m)	6.3	14.5		27.2	16.5		5.5	79.3	9.5	15.5	55.9	
Queue Length 95th (m)	15.1	28.7		44.2	33.2		12.9	111.0	25.0	25.5	77.7	
Internal Link Dist (m)		81.7			186.0			138.2			221.2	
Turn Bay Length (m)	29.8			29.1			20.5		2.5	68.3		
Base Capacity (vph)	285	465		520	728		355	693	670	327	1008	
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	0.14	0.24		0.40	0.31		0.11	0.66	0.32	0.45	0.44	
Intersection Summary												
Area Type:	Other											
Cycle Length:	105.4											
Actuated Cycle Length:	98.8											

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2027 Post Development PM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 24.4

Intersection LOS: C

Intersection Capacity Utilization 73.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Arthur Dr & 44 Ave



Lanes, Volumes, Timings
1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2032 Post Development AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	355	24	202	292	142	7	114	162	111	159	56
Future Volume (vph)	28	355	24	202	292	142	7	114	162	111	159	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	31.7		0.0	52.8		0.0	50.9		54.5	34.3		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	14.8			2.5			83.2			14.4		
Satd. Flow (prot)	1825	3422	0	1738	1563	0	1825	1865	1541	3248	1750	0
Flt Permitted	0.950			0.312			0.950			0.950		
Satd. Flow (perm)	1536	3422	0	559	1563	0	1724	1865	1490	3162	1750	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			21				205		14	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.6			82.4			174.9			266.7	
Travel Time (s)		6.7			5.9			12.6			19.2	
Confl. Peds. (#/hr)	92		21	21		92	26		11	11		26
Confl. Bikes (#/hr)									2			
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	9%	5%	4%	2%	0%	3%	6%	9%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	479	0	256	550	0	9	144	205	141	272	0
Turn Type	Prot	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6					8			
Total Split (s)	20.4	39.8		21.5	40.7		21.8	35.2	35.2	21.4	35.2	
Total Lost Time (s)	6.4	5.8		6.5	5.7		7.8	7.2	7.2	7.4	7.2	
Act Effct Green (s)	7.4	24.5		42.8	36.0		6.4	13.0	13.0	9.3	27.4	
Actuated g/C Ratio	0.09	0.28		0.49	0.41		0.07	0.15	0.15	0.11	0.31	
v/c Ratio	0.22	0.49		0.58	0.84		0.07	0.52	0.52	0.41	0.48	
Control Delay	45.4	28.8		19.6	38.9		45.3	42.5	10.2	42.7	28.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	45.4	28.8		19.6	38.9		45.3	42.5	10.2	42.7	28.5	
LOS	D	C		B	D		D	D	B	D	C	
Approach Delay		29.9			32.8			24.1			33.3	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	5.8	34.0		23.3	84.9		1.5	23.8	0.0	12.0	35.6	
Queue Length 95th (m)	14.5	50.7		42.5	#149.3		6.0	37.8	11.2	20.6	62.0	
Internal Link Dist (m)		68.6			58.4			150.9			242.7	
Turn Bay Length (m)	31.7			52.8			50.9		54.5	34.3		
Base Capacity (vph)	301	1377		484	661		301	625	635	536	607	
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	0.35		0.53	0.83		0.03	0.23	0.32	0.26	0.45	
Intersection Summary												
Area Type:	Other											
Cycle Length: 118.3												
Actuated Cycle Length: 87												

Lanes, Volumes, Timings

1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2032 Post Development AM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 30.7

Intersection LOS: C

Intersection Capacity Utilization 61.4%

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: 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

 Ø1	 Ø2	 Ø3	 Ø4
21.5 s	39.8 s	21.8 s	35.2 s
 Ø5	 Ø6	 Ø7	 Ø8
20.4 s	40.7 s	21.4 s	35.2 s

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	33	224	193	291	287	39
Future Volume (vph)	33	224	193	291	287	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1684	0	0	1853	1814	0
Flt Permitted	0.994			0.980		
Satd. Flow (perm)	1684	0	0	1853	1814	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	253.5			245.2	206.9	
Travel Time (s)	18.3			17.7	14.9	
Confl. Peds. (#/hr)	21		40			40
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	0%	1%	2%	4%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	326	0	0	612	412	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 69.5%				ICU Level of Service C		
Analysis Period (min) 15						

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2032 Post Development AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	128	70	159	120	167	69	285	179	212	290	32
Future Volume (vph)	43	128	70	159	120	167	69	285	179	212	290	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.8		0.0	29.1		0.0	20.5		2.5	68.3		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			33.0			41.9			97.3		
Satd. Flow (prot)	1772	1767	0	1825	1495	0	1825	1883	1633	1807	1833	0
Flt Permitted	0.558			0.412			0.537			0.278		
Satd. Flow (perm)	906	1767	0	770	1495	0	1011	1883	1570	525	1833	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			77				148		8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.7			210.0			162.2			245.2	
Travel Time (s)		7.6			15.1			11.7			17.7	
Confl. Peds. (#/hr)	86		22	22		86	13		7	7		13
Confl. Bikes (#/hr)			8			22			2			1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	3%	0%	0%	0%	1%	1%	0%	2%	0%	1%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	233	0	187	337	0	81	335	211	249	379	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	29.8	29.8		16.5	45.8		41.9	41.9	41.9	17.0	59.1	
Total Lost Time (s)	5.8	5.8		5.5	5.8		5.9	5.9	5.9	6.0	6.1	
Act Effct Green (s)	25.0	25.0		40.9	40.6		25.7	25.7	25.7	42.4	42.3	
Actuated g/C Ratio	0.26	0.26		0.43	0.43		0.27	0.27	0.27	0.45	0.45	
v/c Ratio	0.21	0.48		0.42	0.49		0.30	0.66	0.40	0.66	0.46	
Control Delay	33.8	32.4		22.1	19.3		29.7	36.8	11.2	25.4	19.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	33.8	32.4		22.1	19.3		29.7	36.8	11.2	25.4	19.5	
LOS	C	C		C	B		C	D	B	C	B	
Approach Delay		32.6			20.3			27.3			21.9	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	7.5	32.8		21.3	33.3		11.8	54.4	8.8	28.3	45.7	
Queue Length 95th (m)	18.3	57.8		39.3	61.8		22.2	75.3	22.4	41.1	62.7	
Internal Link Dist (m)		81.7			186.0			138.2			221.2	
Turn Bay Length (m)	29.8			29.1			20.5		2.5	68.3		
Base Capacity (vph)	238	483		454	686		388	723	694	384	1035	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.21	0.48		0.41	0.49		0.21	0.46	0.30	0.65	0.37	
Intersection Summary												
Area Type:	Other											
Cycle Length:	105.4											
Actuated Cycle Length:	94.8											

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 24.6

Intersection LOS: C

Intersection Capacity Utilization 74.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Arthur Dr & 44 Ave



Lanes, Volumes, Timings
1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2032 Post Development PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	310	23	217	280	262	24	193	224	339	254	38
Future Volume (vph)	25	310	23	217	280	262	24	193	224	339	254	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	31.7		0.0	52.8		0.0	50.9		54.5	34.3		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	14.8			2.5			83.2			14.4		
Satd. Flow (prot)	1825	3519	0	1755	1533	0	1738	1902	1601	3506	1834	0
Flt Permitted	0.950			0.398			0.950			0.950		
Satd. Flow (perm)	1621	3519	0	705	1533	0	1562	1902	1538	3388	1834	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			42				243		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.6			82.4			174.9			266.7	
Travel Time (s)		6.7			5.9			12.6			19.2	
Confl. Peds. (#/hr)	68		37	37		68	50		15	15		50
Confl. Bikes (#/hr)			7			1			1			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 (%)	0%	2%	0%	4%	2%	0%	5%	1%	2%	1%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	362	0	236	589	0	26	210	243	368	317	0
Turn Type	Prot	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6					8			
Total Split (s)	16.4	36.8		24.5	44.7		22.8	35.2	35.2	22.4	35.2	
Total Lost Time (s)	6.4	5.8		6.5	5.7		7.8	7.2	7.2	7.4	7.2	
Act Effct Green (s)	7.2	27.2		46.7	39.7		7.3	16.3	16.3	14.0	29.2	
Actuated g/C Ratio	0.07	0.28		0.47	0.40		0.07	0.17	0.17	0.14	0.30	
v/c Ratio	0.20	0.37		0.49	0.92		0.20	0.67	0.53	0.74	0.58	
Control Delay	51.0	30.7		20.3	49.8		51.1	50.7	9.6	52.2	37.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	51.0	30.7		20.3	49.8		51.1	50.7	9.6	52.2	37.5	
LOS	D	C		C	D		D	D	A	D	D	
Approach Delay		32.1			41.4			29.9			45.4	
Approach LOS		C			D			C			D	
Queue Length 50th (m)	5.3	29.2		27.0	110.5		5.1	40.7	0.0	37.3	58.8	
Queue Length 95th (m)	14.7	47.7		47.9	#206.0		14.2	65.7	20.1	#61.9	93.2	
Internal Link Dist (m)		68.6			58.4			150.9			242.7	
Turn Bay Length (m)	31.7			52.8			50.9		54.5	34.3		
Base Capacity (vph)	188	1139		529	646		269	558	623	543	565	
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	0.14	0.32		0.45	0.91		0.10	0.38	0.39	0.68	0.56	
Intersection Summary												
Area Type:	Other											
Cycle Length:	119.3											
Actuated Cycle Length:	98.5											

Lanes, Volumes, Timings

1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2032 Post Development PM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 38.7

Intersection LOS: D

Intersection Capacity Utilization 82.7%

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: 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

 Ø1	 Ø2	 Ø3	 Ø4
24.5 s	36.8 s	22.8 s	35.2 s
 Ø5	 Ø6	 Ø7	 Ø8
16.4 s	44.7 s	22.4 s	35.2 s

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	17	126	144	429	418	52
Future Volume (vph)	17	126	144	429	418	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1668	0	0	1861	1863	0
Flt Permitted	0.994			0.988		
Satd. Flow (perm)	1668	0	0	1861	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	253.5			245.2	206.9	
Travel Time (s)	18.3			17.7	14.9	
Confl. Peds. (#/hr)	7		14			14
Confl. Bikes (#/hr)						4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	2%	2%	1%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	151	0	0	604	495	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	74.6%			ICU Level of Service D		
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2032 Post Development PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	68	36	187	75	127	37	417	198	133	354	51
Future Volume (vph)	37	68	36	187	75	127	37	417	198	133	354	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.8		0.0	29.1		0.0	20.5		2.5	68.3		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			33.0			41.9			97.3		
Satd. Flow (prot)	1825	1795	0	1807	1633	0	1825	1883	1617	1807	1861	0
Flt Permitted	0.614			0.557			0.495			0.168		
Satd. Flow (perm)	1135	1795	0	1049	1633	0	946	1883	1564	320	1861	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			94				148		10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.7			210.0			162.2			245.2	
Travel Time (s)		7.6			15.1			11.7			17.7	
Confl. Peds. (#/hr)	22		6	6		22	4		3	3		4
Confl. Bikes (#/hr)			5			9			5			2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	2%	1%	1%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	119	0	215	232	0	43	479	228	153	466	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	29.8	29.8		16.5	45.8		41.9	41.9	41.9	17.0	59.1	
Total Lost Time (s)	5.8	5.8		5.5	5.8		5.9	5.9	5.9	6.0	6.1	
Act Effect Green (s)	24.6	24.6		40.9	40.6		31.8	31.8	31.8	47.3	47.2	
Actuated g/C Ratio	0.25	0.25		0.41	0.41		0.32	0.32	0.32	0.47	0.47	
v/c Ratio	0.15	0.26		0.42	0.32		0.14	0.80	0.38	0.52	0.53	
Control Delay	34.0	28.0		24.1	14.1		25.5	42.3	11.5	21.2	20.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	34.0	28.0		24.1	14.1		25.5	42.3	11.5	21.2	20.2	
LOS	C	C		C	B		C	D	B	C	C	
Approach Delay		29.6			18.9			32.0			20.4	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	7.0	16.0		29.8	18.5		6.0	84.8	11.2	16.4	59.5	
Queue Length 95th (m)	15.9	30.3		46.2	35.2		13.6	117.5	27.4	26.6	82.2	
Internal Link Dist (m)		81.7			186.0			138.2			221.2	
Turn Bay Length (m)	29.8			29.1			20.5		2.5	68.3		
Base Capacity (vph)	280	460		514	722		345	686	664	316	998	
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	0.15	0.26		0.42	0.32		0.12	0.70	0.34	0.48	0.47	
Intersection Summary												
Area Type:	Other											
Cycle Length:	105.4											
Actuated Cycle Length:	99.8											

Lanes, Volumes, Timings 3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2032 Post Development PM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 25.2

Intersection LOS: C

Intersection Capacity Utilization 75.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Arthur Dr & 44 Ave



Lanes, Volumes, Timings
1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2037 Post Development AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	372	25	211	306	148	7	119	170	116	166	58
Future Volume (vph)	30	372	25	211	306	148	7	119	170	116	166	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	31.7		0.0	52.8		0.0	50.9		54.5	34.3		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	14.8			2.5			83.2			14.4		
Satd. Flow (prot)	1825	3418	0	1738	1564	0	1825	1865	1541	3248	1751	0
Flt Permitted	0.950			0.294			0.950			0.950		
Satd. Flow (perm)	1545	3418	0	527	1564	0	1725	1865	1490	3163	1751	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			21				215		14	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.6			82.4			174.9			266.7	
Travel Time (s)		6.7			5.9			12.6			19.2	
Confl. Peds. (#/hr)	92		21	21		92	26		11	11		26
Confl. Bikes (#/hr)									2			
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	9%	5%	4%	2%	0%	3%	6%	9%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	503	0	267	574	0	9	151	215	147	283	0
Turn Type	Prot	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6					8			
Total Split (s)	20.4	39.8		21.5	40.7		21.8	35.2	35.2	21.4	35.2	
Total Lost Time (s)	6.4	5.8		6.5	5.7		7.8	7.2	7.2	7.4	7.2	
Act Effct Green (s)	7.6	24.4		42.9	35.9		6.4	13.2	13.2	9.5	27.9	
Actuated g/C Ratio	0.09	0.28		0.49	0.41		0.07	0.15	0.15	0.11	0.32	
v/c Ratio	0.24	0.53		0.61	0.88		0.07	0.54	0.53	0.42	0.50	
Control Delay	45.7	29.6		21.0	43.2		45.6	43.2	10.3	42.9	28.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	45.7	29.6		21.0	43.2		45.6	43.2	10.3	42.9	28.8	
LOS	D	C		C	D		D	D	B	D	C	
Approach Delay		30.7			36.1			24.4			33.6	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	6.4	36.7		24.8	92.2		1.5	25.2	0.0	12.6	37.5	
Queue Length 95th (m)	15.5	53.3		44.3	#160.2		6.1	39.7	11.3	21.2	64.9	
Internal Link Dist (m)		68.6			58.4			150.9			242.7	
Turn Bay Length (m)	31.7			52.8			50.9		54.5	34.3		
Base Capacity (vph)	299	1367		471	658		299	621	639	533	608	
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	0.37		0.57	0.87		0.03	0.24	0.34	0.28	0.47	
Intersection Summary												
Area Type:	Other											
Cycle Length: 118.3												
Actuated Cycle Length: 87.5												

Lanes, Volumes, Timings

1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2037 Post Development AM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 32.3

Intersection LOS: C

Intersection Capacity Utilization 62.7%

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: 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

 Ø1	 Ø2	 Ø3	 Ø4
21.5 s	39.8 s	21.8 s	35.2 s
 Ø5	 Ø6	 Ø7	 Ø8
20.4 s	40.7 s	21.4 s	35.2 s

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	235	202	304	300	41
Future Volume (vph)	34	235	202	304	300	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1684	0	0	1853	1813	0
Flt Permitted	0.994			0.980		
Satd. Flow (perm)	1684	0	0	1853	1813	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	253.5			245.2	206.9	
Travel Time (s)	18.3			17.7	14.9	
Confl. Peds. (#/hr)	21		40			40
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	0%	1%	2%	4%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	340	0	0	641	432	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	72.3%			ICU Level of Service C		
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2037 Post Development AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	133	73	166	125	174	72	299	187	222	303	33
Future Volume (vph)	44	133	73	166	125	174	72	299	187	222	303	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.8		0.0	29.1		0.0	20.5		2.5	68.3		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			33.0			41.9			97.3		
Satd. Flow (prot)	1772	1766	0	1825	1495	0	1825	1883	1633	1807	1833	0
Flt Permitted	0.550			0.394			0.529			0.266		
Satd. Flow (perm)	896	1766	0	737	1495	0	996	1883	1570	503	1833	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			77				148		8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.7			210.0			162.2			245.2	
Travel Time (s)		7.6			15.1			11.7			17.7	
Confl. Peds. (#/hr)	86		22	22		86	13		7	7		13
Confl. Bikes (#/hr)			8			22			2			1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	3%	0%	0%	0%	1%	1%	0%	2%	0%	1%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	242	0	195	352	0	85	352	220	261	395	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	29.8	29.8		16.5	45.8		41.9	41.9	41.9	17.0	59.1	
Total Lost Time (s)	5.8	5.8		5.5	5.8		5.9	5.9	5.9	6.0	6.1	
Act Effct Green (s)	24.9	24.9		40.9	40.6		26.8	26.8	26.8	43.6	43.5	
Actuated g/C Ratio	0.26	0.26		0.43	0.42		0.28	0.28	0.28	0.45	0.45	
v/c Ratio	0.22	0.51		0.46	0.52		0.31	0.67	0.40	0.70	0.47	
Control Delay	34.6	33.7		23.3	20.4		29.7	37.0	11.7	27.3	19.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	34.6	33.7		23.3	20.4		29.7	37.0	11.7	27.3	19.6	
LOS	C	C		C	C		C	D	B	C	B	
Approach Delay		33.9			21.5			27.6			22.7	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	7.8	35.5		23.2	37.2		12.4	57.8	10.1	29.8	48.3	
Queue Length 95th (m)	18.5	60.1		40.8	65.5		23.2	79.6	24.4	43.1	65.8	
Internal Link Dist (m)		81.7			186.0			138.2			221.2	
Turn Bay Length (m)	29.8			29.1			20.5		2.5	68.3		
Base Capacity (vph)	232	475		439	679		378	714	687	378	1022	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.22	0.51		0.44	0.52		0.22	0.49	0.32	0.69	0.39	

Intersection Summary

Area Type: Other

Cycle Length: 105.4

Actuated Cycle Length: 96

Lanes, Volumes, Timings 3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2037 Post Development AM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 25.4

Intersection LOS: C

Intersection Capacity Utilization 76.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Arthur Dr & 44 Ave



Lanes, Volumes, Timings
1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2037 Post Development PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	324	24	227	293	274	25	202	235	355	265	40
Future Volume (vph)	26	324	24	227	293	274	25	202	235	355	265	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	31.7		0.0	52.8		0.0	50.9		54.5	34.3		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	14.8			2.5			83.2			14.4		
Satd. Flow (prot)	1825	3519	0	1755	1533	0	1738	1902	1601	3506	1834	0
Flt Permitted	0.950			0.380			0.950			0.950		
Satd. Flow (perm)	1628	3519	0	674	1533	0	1566	1902	1538	3390	1834	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			42				255		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.6			82.4			174.9			266.7	
Travel Time (s)		6.7			5.9			12.6			19.2	
Confl. Peds. (#/hr)	68		37	37		68	50		15	15		50
Confl. Bikes (#/hr)			7			1			1			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 (%)	0%	2%	0%	4%	2%	0%	5%	1%	2%	1%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	378	0	247	616	0	27	220	255	386	331	0
Turn Type	Prot	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6					8			
Total Split (s)	16.4	36.8		24.5	44.7		22.8	35.2	35.2	22.4	35.2	
Total Lost Time (s)	6.4	5.8		6.5	5.7		7.8	7.2	7.2	7.4	7.2	
Act Effct Green (s)	7.3	26.9		46.8	39.7		7.3	17.2	17.2	14.4	30.4	
Actuated g/C Ratio	0.07	0.27		0.47	0.40		0.07	0.17	0.17	0.14	0.30	
v/c Ratio	0.21	0.40		0.53	0.97		0.21	0.67	0.54	0.76	0.59	
Control Delay	51.9	32.0		21.6	60.6		52.1	50.5	9.3	53.8	37.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	51.9	32.0		21.6	60.6		52.1	50.5	9.3	53.8	37.5	
LOS	D	C		C	E		D	D	A	D	D	
Approach Delay		33.4			49.5			29.6			46.3	
Approach LOS		C			D			C			D	
Queue Length 50th (m)	5.5	31.2		28.8	~130.0		5.3	42.9	0.0	39.6	62.1	
Queue Length 95th (m)	15.2	50.7		51.7	#225.1		15.0	68.4	20.7	#68.5	97.7	
Internal Link Dist (m)		68.6			58.4			150.9			242.7	
Turn Bay Length (m)	31.7			52.8			50.9		54.5	34.3		
Base Capacity (vph)	185	1118		513	637		265	550	626	535	574	
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	0.15	0.34		0.48	0.97		0.10	0.40	0.41	0.72	0.58	
Intersection Summary												
Area Type:	Other											
Cycle Length: 119.3												
Actuated Cycle Length: 99.9												

Lanes, Volumes, Timings

1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2037 Post Development PM

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 41.9

Intersection LOS: D

Intersection Capacity Utilization 84.9%

ICU Level of Service E

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: 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

 Ø1	 Ø2	 Ø3	 Ø4
24.5 s	36.8 s	22.8 s	35.2 s
 Ø5	 Ø6	 Ø7	 Ø8
16.4 s	44.7 s	22.4 s	35.2 s

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	18	132	150	449	437	55
Future Volume (vph)	18	132	150	449	437	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1668	0	0	1861	1863	0
Flt Permitted	0.994			0.988		
Satd. Flow (perm)	1668	0	0	1861	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	253.5			245.2	206.9	
Travel Time (s)	18.3			17.7	14.9	
Confl. Peds. (#/hr)	7		14			14
Confl. Bikes (#/hr)						4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	2%	2%	1%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	158	0	0	631	518	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	77.6%			ICU Level of Service D		
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2037 Post Development PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	71	38	196	79	133	39	436	207	139	370	54
Future Volume (vph)	39	71	38	196	79	133	39	436	207	139	370	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.8		0.0	29.1		0.0	20.5		2.5	68.3		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			33.0			41.9			97.3		
Satd. Flow (prot)	1825	1795	0	1807	1633	0	1825	1883	1617	1807	1861	0
Flt Permitted	0.607			0.553			0.486			0.150		
Satd. Flow (perm)	1122	1795	0	1041	1633	0	929	1883	1564	285	1861	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			93				148		10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.7			210.0			162.2			245.2	
Travel Time (s)		7.6			15.1			11.7			17.7	
Confl. Peds. (#/hr)	22		6	6		22	4		3	3		4
Confl. Bikes (#/hr)			5			9			5			2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	2%	1%	1%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	126	0	225	244	0	45	501	238	160	487	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	29.8	29.8		16.5	45.8		41.9	41.9	41.9	17.0	59.1	
Total Lost Time (s)	5.8	5.8		5.5	5.8		5.9	5.9	5.9	6.0	6.1	
Act Effct Green (s)	24.5	24.5		40.9	40.5		32.6	32.6	32.6	48.3	48.2	
Actuated g/C Ratio	0.24	0.24		0.41	0.40		0.32	0.32	0.32	0.48	0.48	
v/c Ratio	0.16	0.28		0.45	0.34		0.15	0.82	0.39	0.56	0.54	
Control Delay	34.4	28.4		24.8	15.0		25.6	43.9	12.1	22.7	20.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	34.4	28.4		24.8	15.0		25.6	43.9	12.1	22.7	20.5	
LOS	C	C		C	B		C	D	B	C	C	
Approach Delay		30.0			19.7			33.2			21.0	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	7.4	17.1		31.4	20.5		6.3	90.4	12.7	17.2	63.1	
Queue Length 95th (m)	16.7	31.9		48.2	37.8		14.3	124.4	29.6	27.8	86.9	
Internal Link Dist (m)		81.7			186.0			138.2			221.2	
Turn Bay Length (m)	29.8			29.1			20.5		2.5	68.3		
Base Capacity (vph)	273	455		506	714		335	679	659	303	988	
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	0.16	0.28		0.44	0.34		0.13	0.74	0.36	0.53	0.49	

Intersection Summary

Area Type: Other

Cycle Length: 105.4

Actuated Cycle Length: 100.7

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 26.1

Intersection LOS: C

Intersection Capacity Utilization 78.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Arthur Dr & 44 Ave



Lanes, Volumes, Timings

1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA

2037 Post Development AM Optimized

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	372	25	211	306	148	7	119	170	116	166	58
Future Volume (vph)	30	372	25	211	306	148	7	119	170	116	166	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	31.7		0.0	52.8		0.0	50.9		54.5	34.3		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	14.8			2.5			83.2			14.4		
Satd. Flow (prot)	1825	3420	0	1738	1594	0	1825	1865	1541	3248	1757	0
Flt Permitted	0.950			0.291			0.950			0.950		
Satd. Flow (perm)	1589	3420	0	524	1594	0	1741	1865	1494	3176	1757	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			29				256		16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.6			82.4			174.9			266.7	
Travel Time (s)		6.7			5.9			12.6			19.2	
Confl. Peds. (#/hr)	92		21	21		92	26		11	11		26
Confl. Bikes (#/hr)									2			
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	9%	5%	4%	2%	0%	3%	6%	9%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	503	0	267	574	0	9	151	215	147	283	0
Turn Type	Prot	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6					8			
Total Split (s)	12.4	34.6		24.1	46.3		13.8	27.3	27.3	14.0	27.5	
Total Lost Time (s)	6.4	5.8		6.5	5.7		7.8	7.2	7.2	7.4	7.2	
Act Effct Green (s)	6.2	22.2		41.1	35.4		6.2	12.5	12.5	6.9	24.8	
Actuated g/C Ratio	0.08	0.27		0.50	0.43		0.08	0.15	0.15	0.08	0.30	
v/c Ratio	0.28	0.54		0.59	0.82		0.07	0.53	0.48	0.54	0.52	
Control Delay	47.6	27.9		18.0	32.8		44.0	41.8	6.3	49.1	30.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	47.6	27.9		18.0	32.8		44.0	41.8	6.3	49.1	30.8	
LOS	D	C		B	C		D	D	A	D	C	
Approach Delay		29.3			28.1			21.5			37.1	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	6.3	34.2		22.9	82.2		1.5	24.5	0.0	12.8	37.8	
Queue Length 95th (m)	15.1	49.1		37.1	114.5		5.9	37.9	4.5	21.4	65.9	
Internal Link Dist (m)		68.6			58.4			150.9			242.7	
Turn Bay Length (m)	31.7			52.8			50.9		54.5	34.3		
Base Capacity (vph)	137	1276		530	830		137	472	569	270	540	
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	0.28	0.39		0.50	0.69		0.07	0.32	0.38	0.54	0.52	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 82.4

Lanes, Volumes, Timings 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
 2037 Post Development AM Optimized

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 29.0

Intersection LOS: C

Intersection Capacity Utilization 62.7%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

 Ø1 24.1 s		 Ø2 34.6 s		 Ø3 13.8 s		 Ø4 27.5 s	
 Ø5 12.4 s		 Ø6 46.3 s		 Ø7 14 s		 Ø8 27.3 s	

Lanes, Volumes, Timings
2: Arthur Dr & 45 Ave

4501 Arthur Dr TIA
2037 Post Development AM Optimized

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	235	202	304	300	41
Future Volume (vph)	34	235	202	304	300	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1684	0	0	1853	1813	0
Flt Permitted	0.994			0.980		
Satd. Flow (perm)	1684	0	0	1853	1813	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	253.5			245.2	206.9	
Travel Time (s)	18.3			17.7	14.9	
Confl. Peds. (#/hr)	21		40			40
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	0%	1%	2%	4%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	340	0	0	641	432	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	72.3%			ICU Level of Service C		
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2037 Post Development AM Optimized

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	133	73	166	125	174	72	299	187	222	303	33
Future Volume (vph)	44	133	73	166	125	174	72	299	187	222	303	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.8		0.0	35.0		0.0	20.5		2.5	68.3		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			33.0			41.9			97.3		
Satd. Flow (prot)	1772	1772	0	1825	1525	0	1825	1883	1633	1807	1833	0
Flt Permitted	0.550			0.332			0.529			0.292		
Satd. Flow (perm)	915	1772	0	623	1525	0	999	1883	1574	552	1833	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30			92				173			8
Link Speed (k/h)		50			50			50				50
Link Distance (m)		105.7			210.0			162.2			245.2	
Travel Time (s)		7.6			15.1			11.7			17.7	
Confl. Peds. (#/hr)	86		22	22		86	13		7	7		13
Confl. Bikes (#/hr)			8			22			2			1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	3%	0%	0%	0%	1%	1%	0%	2%	0%	1%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	242	0	195	352	0	85	352	220	261	395	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	28.8	28.8		12.5	41.3		33.9	33.9	33.9	14.8	48.7	
Total Lost Time (s)	5.8	5.8		5.5	5.8		5.9	5.9	5.9	6.0	6.1	
Act Effct Green (s)	14.8	14.8		27.9	27.5		22.3	22.3	22.3	37.1	37.0	
Actuated g/C Ratio	0.19	0.19		0.36	0.36		0.29	0.29	0.29	0.48	0.48	
v/c Ratio	0.30	0.66		0.58	0.58		0.29	0.64	0.38	0.64	0.44	
Control Delay	32.2	34.9		26.1	19.4		25.1	30.3	8.4	21.1	15.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	32.2	34.9		26.1	19.4		25.1	30.3	8.4	21.1	15.3	
LOS	C	C		C	B		C	C	A	C	B	
Approach Delay		34.4			21.8			22.3			17.6	
Approach LOS		C			C			C			B	
Queue Length 50th (m)	6.7	29.4		20.6	30.6		9.4	43.7	4.9	21.4	34.5	
Queue Length 95th (m)	15.8	49.5		34.9	53.3		21.5	73.1	18.9	39.9	61.0	
Internal Link Dist (m)		81.7			186.0			138.2			221.2	
Turn Bay Length (m)	29.8			35.0			20.5		2.5	68.3		
Base Capacity (vph)	280	563		338	769		372	702	695	414	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	0.19	0.43		0.58	0.46		0.23	0.50	0.32	0.63	0.38	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 76.7

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2037 Post Development AM Optimized

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 22.4

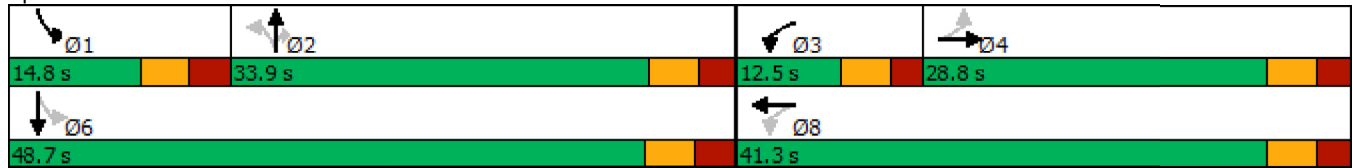
Intersection LOS: C

Intersection Capacity Utilization 74.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Arthur Dr & 44 Ave



Lanes, Volumes, Timings

1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA

2037 Post Development PM Optimized

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	324	24	227	293	274	25	202	235	355	265	40
Future Volume (vph)	26	324	24	227	293	274	25	202	235	355	265	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	31.7		0.0	52.8		0.0	50.9		54.5	34.3		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	14.8			2.5			83.2			14.4		
Satd. Flow (prot)	1825	3522	0	1755	1559	0	1738	1902	1601	3506	1838	0
Flt Permitted	0.950			0.387			0.950			0.950		
Satd. Flow (perm)	1652	3522	0	689	1559	0	1587	1902	1543	3404	1838	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			52				255		7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.6			82.4			174.9			266.7	
Travel Time (s)		6.7			5.9			12.6			19.2	
Confl. Peds. (#/hr)	68		37	37		68	50		15	15		50
Confl. Bikes (#/hr)			7			1			1			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 (%)	0%	2%	0%	4%	2%	0%	5%	1%	2%	1%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	378	0	247	616	0	27	220	255	386	331	0
Turn Type	Prot	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6					8			
Total Split (s)	12.4	36.0		21.8	45.4		13.8	26.2	26.2	21.0	33.4	
Total Lost Time (s)	6.4	5.8		6.5	5.7		7.8	7.2	7.2	7.4	7.2	
Act Effct Green (s)	6.1	26.7		45.5	39.5		6.1	15.4	15.4	13.3	28.6	
Actuated g/C Ratio	0.06	0.28		0.48	0.41		0.06	0.16	0.16	0.14	0.30	
v/c Ratio	0.24	0.38		0.52	0.91		0.25	0.72	0.55	0.79	0.60	
Control Delay	52.0	29.2		19.9	46.6		52.4	53.1	9.8	54.5	36.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	52.0	29.2		19.9	46.6		52.4	53.1	9.8	54.5	36.6	
LOS	D	C		B	D		D	D	A	D	D	
Approach Delay		30.8			39.0			31.1			46.2	
Approach LOS		C			D			C			D	
Queue Length 50th (m)	5.5	30.1		27.7	111.7		5.3	42.0	0.0	39.3	60.7	
Queue Length 95th (m)	14.5	44.7		45.3	#189.9		14.1	66.7	20.9	#63.9	91.4	
Internal Link Dist (m)		68.6			58.4			150.9			242.7	
Turn Bay Length (m)	31.7			52.8			50.9		54.5	34.3		
Base Capacity (vph)	116	1142		500	686		110	383	514	505	562	
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	0.24	0.33		0.49	0.90		0.25	0.57	0.50	0.76	0.59	

Intersection Summary

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 95.6

Lanes, Volumes, Timings

1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

4501 Arthur Dr TIA
2037 Post Development PM Optimized

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 38.1

Intersection LOS: D

Intersection Capacity Utilization 84.9%

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: 1: Arthur Dr/Elliott St & 47A Ave/Ladner Trunk Rd

 Ø1 21.8 s	 Ø2 36 s	 Ø3 13.8 s	 Ø4 33.4 s
 Ø5 12.4 s	 Ø6 45.4 s	 Ø7 21 s	 Ø8 26.2 s

Lanes, Volumes, Timings
2: Arthur Dr & 45 Ave

4501 Arthur Dr TIA
2037 Post Development PM Optimized

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	18	132	150	449	437	55
Future Volume (vph)	18	132	150	449	437	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1668	0	0	1861	1863	0
Flt Permitted	0.994			0.988		
Satd. Flow (perm)	1668	0	0	1861	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	253.5			245.2	206.9	
Travel Time (s)	18.3			17.7	14.9	
Confl. Peds. (#/hr)	7		14			14
Confl. Bikes (#/hr)						4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	2%	2%	1%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	158	0	0	631	518	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	77.6%			ICU Level of Service D		
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2037 Post Development PM Optimized

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	71	38	196	79	133	39	436	207	139	370	54
Future Volume (vph)	39	71	38	196	79	133	39	436	207	139	370	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.8		0.0	35.0		0.0	20.5		2.5	68.3		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	30.0			33.0			41.9			97.3		
Satd. Flow (prot)	1825	1797	0	1807	1642	0	1825	1883	1617	1807	1861	0
Flt Permitted	0.607			0.433			0.486			0.196		
Satd. Flow (perm)	1129	1797	0	816	1642	0	929	1883	1565	373	1861	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			115				173		11	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.7			210.0			162.2			245.2	
Travel Time (s)		7.6			15.1			11.7			17.7	
Confl. Peds. (#/hr)	22		6	6		22	4		3	3		4
Confl. Bikes (#/hr)			5			9			5			2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	2%	1%	1%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	126	0	225	244	0	45	501	238	160	487	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	28.8	28.8		14.2	43.0		34.0	34.0	34.0	13.0	47.0	
Total Lost Time (s)	5.8	5.8		5.5	5.8		5.9	5.9	5.9	6.0	6.1	
Act Effct Green (s)	9.7	9.7		24.2	23.9		26.1	26.1	26.1	39.0	38.9	
Actuated g/C Ratio	0.13	0.13		0.32	0.32		0.35	0.35	0.35	0.52	0.52	
v/c Ratio	0.31	0.49		0.60	0.41		0.14	0.76	0.36	0.49	0.50	
Control Delay	35.8	30.7		27.4	12.9		18.6	31.1	7.7	15.0	13.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	35.8	30.7		27.4	12.9		18.6	31.1	7.7	15.0	13.8	
LOS	D	C		C	B		B	C	A	B	B	
Approach Delay		32.0			19.9			23.3			14.1	
Approach LOS		C			B			C			B	
Queue Length 50th (m)	6.1	13.2		25.3	13.8		4.2	61.2	6.1	10.9	40.1	
Queue Length 95th (m)	14.7	27.1		41.0	29.4		11.5	97.8	20.2	21.6	67.3	
Internal Link Dist (m)		81.7			186.0			138.2			221.2	
Turn Bay Length (m)	29.8			35.0			20.5		2.5	68.3		
Base Capacity (vph)	349	575		379	878		351	711	698	329	1028	
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	0.22		0.59	0.28		0.13	0.70	0.34	0.49	0.47	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 74.8												

Lanes, Volumes, Timings 3: Arthur Dr & 44 Ave

4501 Arthur Dr TIA
2037 Post Development PM Optimized

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 20.4

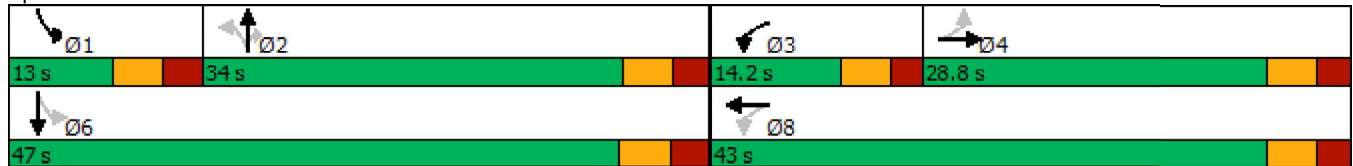
Intersection LOS: C

Intersection Capacity Utilization 72.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Arthur Dr & 44 Ave





APPENDIX D: SIGNAL WARRANT



Main Street (name)	Arthur Dr	Direction (EW or NS) NS	Road Authority:	City of Delta
Side Street (name)	45 Ave		City:	Delta
Quadrant / Int #			Analysis Date:	2025 Oct 07, Tue
or Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET		Count Date:	2023 Sep 27, Wed
			Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	RT	Channelization (y/n)	UpStream Signal (m)	# of Thru Lanes	LT Phase Type	RTOR Allowed (y/n)	Actuated Thru Phase
Arthur Dr	NB		1							215	1			
Arthur Dr	SB					1				578	1			
45 Ave	WB									2,000	0			
45 Ave	EB			1						1,150				

Saturation Flow Rates (if not default) (vphpl)		Default Saturation Flow Rates (vphpl)
Left Turn		1,650
Through		1,800
Right Turn		1,500

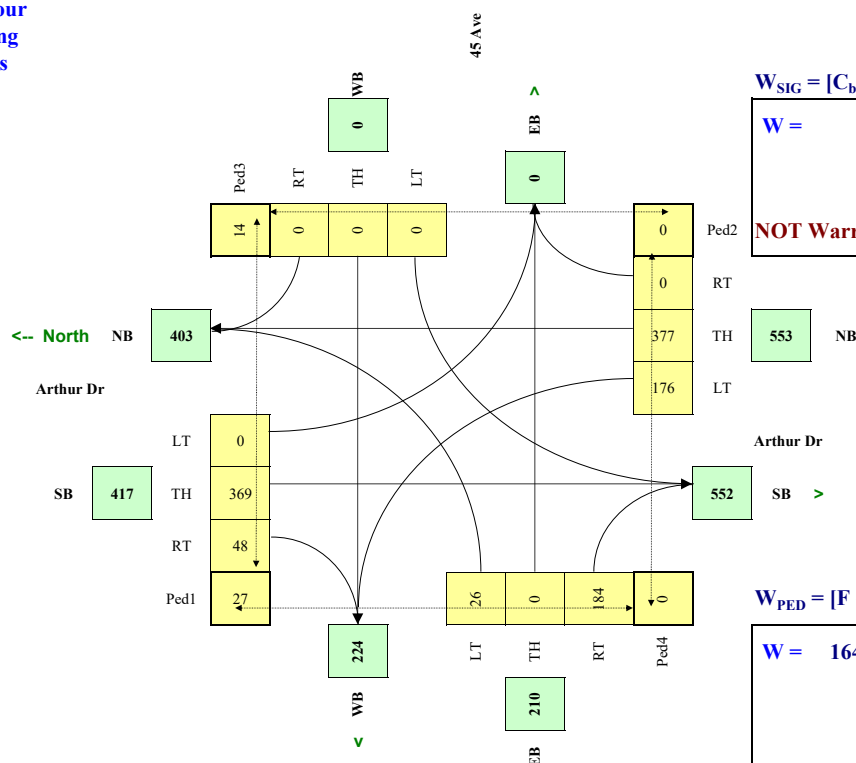
Are the 45 Ave EB right turns significantly impeded by through movements? (y/n)	y
Are the Arthur Dr SB right turns significantly impeded by through movements? (y/n)	n

Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	y
Metro Area Population	(#)	2,657,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Arthur Dr	NS	50	4.0%	y	0.0
45 Ave	EW		0.0%	n	0.0

45 Ave		EW			0.0%	0	0.0										
Set Peak Hours														Ped1	Ped2	Ped3	Ped4
Traffic Input		NB			SB			WB			EB			NS	NS	EW	EW
		LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
press 'Set Peak Hours' Button to set the peak hour periods		202	304	0	0	300	41	0	0	0	34	0	235	40	0	21	0
		202	304	0	0	300	41	0	0	0	34	0	235	40	0	21	0
		202	304	0	0	300	41	0	0	0	34	0	235	40	0	21	0
		150	449	0	0	437	55	0	0	0	18	0	132	14	0	7	0
		150	449	0	0	437	55	0	0	0	18	0	132	14	0	7	0
Total (6-hour peak)		1,056	2,259	0	0	2,211	288	0	0	0	156	0	1,101	162	0	84	0
Average (6-hour peak)		176	377	0	0	369	48	0	0	0	26	0	184	27	0	14	0
Actual Pedestrian Crossing Distance (m)													12.7	0.0	10.4	0.0	

Average 6-hour Peak Turning Movements



$$W_{SIG} = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p}) L) / K_2] \times C_i$$

W =	96	85	11
		<i>Veh</i>	<i>Ped</i>
NOT Warranted			

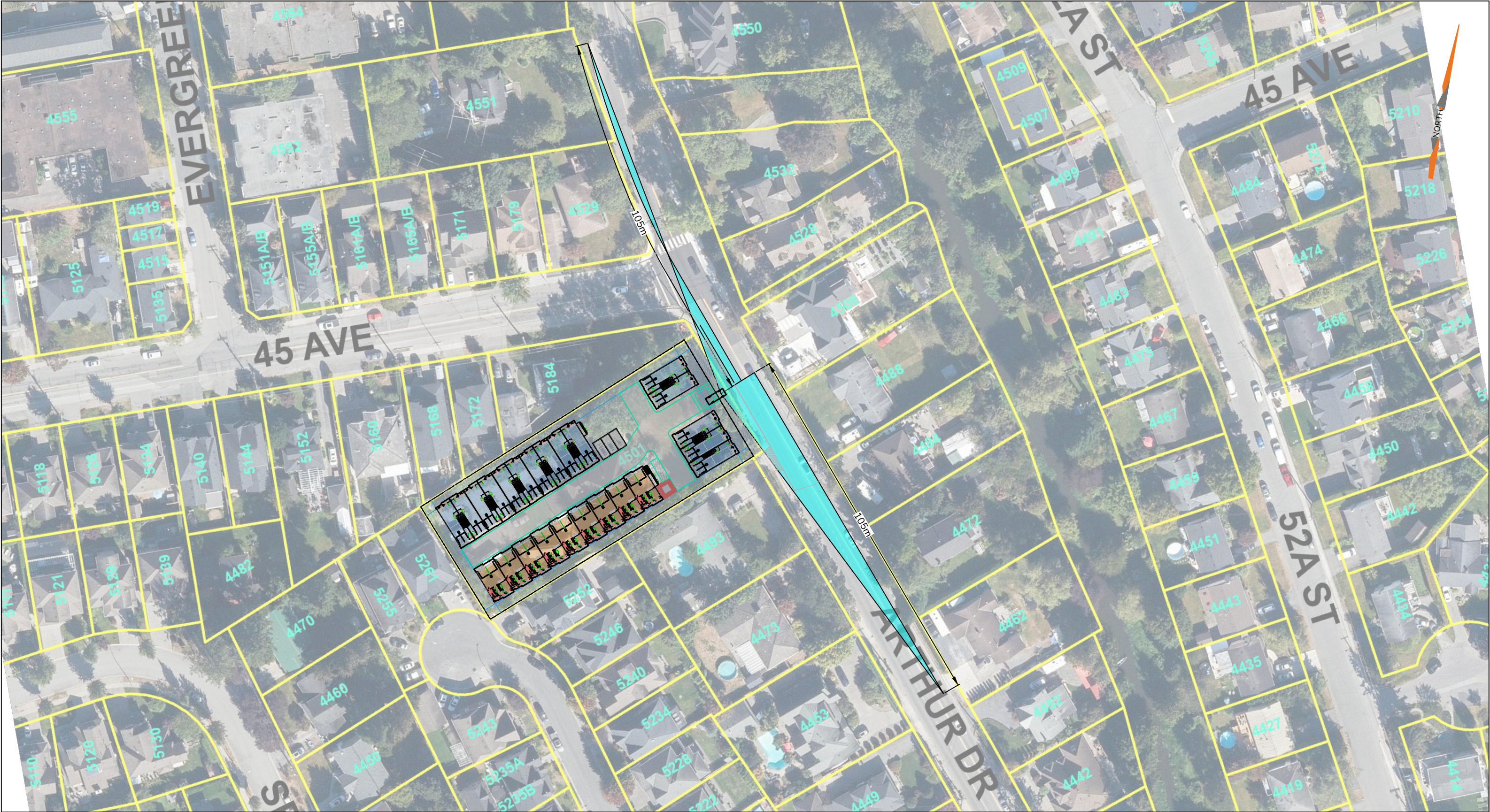
$$\mathbf{W}_{\text{PED}} = [\mathbf{F} ((\mathbf{X}_{\text{ped}_m})\mathbf{d}_m/\mathbf{K}_2) + (\mathbf{X}_{\text{ped}_s})\mathbf{d}_s/\mathbf{K}_3]$$

W = 164

Warranted - Complex Intersection



APPENDIX D: SIGHT DISTANCE REVIEW



LEGEND:

PERMIT TO PRACTICE:

SEAL:

THESE DESIGN DOCUMENTS ARE PREPARED SOLELY FOR THE USE BY THE PARTY WITH WHOM THE DESIGN PROFESSIONAL HAS ENTERED INTO A CONTRACT, AND THERE ARE NO REPRESENTATIONS OF ANY KIND MADE BY THE DESIGN PROFESSIONAL TO ANY PARTY WITH WHOM THE DESIGN PROFESSIONAL HAS NOT ENTERED INTO CONTRACT.

REVISIONS		
0	ISSUED FOR CLIENT REVIEW	2025-10-08
1	ISSUED FOR CLIENT REVIEW	2026-02-02
2		
3		
4		
5		
6		
7		

4501 ARTHUR DRIVE, DELTA

SIGHTLINE REVIEW - INTERSECTION SIGHT DISTANCE

SITE ACCESS & ARTHUR DRIVE

DRAWING NO:

DWG-01

DESIGN SPEED:

50 km/h

SCALE:

1:1000

DESIGN VEHICLE:

PASSENGER CAR

DRAWN:

BH

CHECKED:

KM

WATT

Consulting Group

WATTCONSULTINGGROUP.COM

PROJECT NO: 3597.B01



LEGEND:

PERMIT TO PRACTICE:

THESE DESIGN DOCUMENTS ARE PREPARED SOLELY FOR THE USE BY THE PARTY WITH WHOM THE DESIGN PROFESSIONAL HAS ENTERED INTO A CONTRACT, AND THERE ARE NO REPRESENTATIONS OF ANY KIND MADE BY THE DESIGN PROFESSIONAL TO ANY PARTY WITH WHOM THE DESIGN PROFESSIONAL HAS NOT ENTERED INTO CONTRACT.

SEAL:

REVISIONS		
0	ISSUED FOR CLIENT REVIEW	2025-10-08
1	ISSUED FOR CLIENT REVIEW	2026-02-02
2		
3		
4		
5		
6		
7		

4501 ARTHUR DRIVE, DELTA
SIGHTLINE REVIEW - INTERSECTION SIGHT DISTANCE
45 AVENUE & ARTHUR DRIVE

DRAWING NO: DWG-02	SCALE: 1:1000	DRAWN: BH
DESIGN SPEED: 50 km/h	DESIGN VEHICLE: PASSENGER CAR	CHECKED: KM

WATT
Consulting Group

WATTCONSULTINGGROUP.COM

PROJECT NO: 3597.B01



LEGEND:

PERMIT TO PRACTICE:

THESE DESIGN DOCUMENTS ARE PREPARED SOLELY FOR THE USE BY THE PARTY WITH WHOM THE DESIGN PROFESSIONAL HAS ENTERED INTO A CONTRACT, AND THERE ARE NO REPRESENTATIONS OF ANY KIND MADE BY THE DESIGN PROFESSIONAL TO ANY PARTY WITH WHOM THE DESIGN PROFESSIONAL HAS NOT ENTERED INTO CONTRACT.

SEAL:

REVISIONS		
0	ISSUED FOR CLIENT REVIEW	2025-10-08
1	ISSUED FOR CLIENT REVIEW	2026-02-02
2		
3		
4		
5		
6		
7		

4501 ARTHUR DRIVE, DELTA

SIGHTLINE REVIEW - INTERSECTION SIGHT DISTANCE

47 AVENUE & ARTHUR DRIVE

DRAWING NO:

DWG-03

SCALE:

1:1000

DRAWN:

BH

DESIGN SPEED:

50 km/h

DESIGN VEHICLE:

PASSENGER CAR

CHECKED:

KM

WATT

Consulting Group

WATTCONSULTINGGROUP.COM

PROJECT NO: 3597.B01



APPENDIX E: PRELIMINARY TRAFFIC IMPACT REVIEW – ACKNOWLEDGEMENT AND CONSENT FORM

Form AB – Preliminary Traffic Impact Review Acknowledgement and Consent Form



This submission form should be completed by a professional engineer in good standing with Engineers and Geoscientists BC and accompany the Preliminary Traffic Impact Review. Applicants are encouraged to discuss the requirements relating to their proposal with the Development Department prior to submitting an application and ensuring their consulting engineer is aware of or familiar with the minimum standards.

Note: The Preliminary Traffic Impact Review will determine whether a Traffic Impact Study is required to analyze the effects of new development on the local transportation network considering the scale of land use change and the capacity of existing infrastructure to handle future traffic volumes.

☒ Please check off which of the following has been included in the Preliminary Traffic Impact Review:

- ☒ Brief description of the proposal including reference to matters which will influence traffic volumes (e.g., increase in density, additional vehicle parking, container storage / warehousing capacity increase, etc.);
- ☒ Anticipated number of vehicle trips determined through the use of the most current edition of the Institute of Transportation Engineers (ITE) *Trip Generation Manual*. If no ITE rates exist for the type of development proposed, the City will consider traffic counts from similar uses, within similar contexts in the Lower Mainland;
- ☒ Reference to the adequacy of sightlines as they relate to ingress and egress to the subject property(ies), considering the design speed of the road(s) providing access to the site and the potential for obstructions;
- ☒ Internal site operation diagram which demonstrates vehicle flow / movement throughout the development. Note this may include a swept path analysis which clearly illustrates vehicle maneuverability within constrained portions of the site (e.g., at the terminus of laneways, driveway accesses, etc.); and
- ☒ Confirmation that the development will not result in any vehicle queuing within the municipal boulevard.

☒ If a Traffic Impact Study has been requested, please check off which of the following has been included in the Study:

Overview of Development and Transportation Network	
▪ Describe the development proposal including reference to any land use change and factors which may affect vehicle and pedestrian volumes observed within the transportation network	☒
▪ Provide a context map of the subject property(ies) and the abutting road network (approx. scale 1:1500)	☒
▪ Provide a broader area map illustrating roads, by classification, signalized intersections, pedestrian connections, bus stops and other related transportation network features within 1.5 km of the site, or as directed by the Engineering Department	☒

Site Layout and Access	
▪ Provide a detailed site plan illustrating vehicle drive aisles and access to the public road network.	☒
▪ Ensure the site plan is compliant with applicable zoning provisions, development standards, and building code requirements. Where standards are not met, identify the relief that may be required in support of the project.	☒
▪ Include a summary of required and proposed parking, as outlined in the City's Zoning Bylaw	☒
▪ Illustrate sight distances entering / exiting the site considering existing obstructions and the geometric design of the abutting road network	☒
▪ Demonstrate on-site circulation of vehicles and pedestrians, including a swath analysis where vehicle maneuverability may be constrained; reference to ICBC on-site parking guidelines may be advantageous	☐
▪ Review parking requirements, i.e. patrons/visitors, employees, loading, etc.	☒



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Form AB – Preliminary Traffic Impact Review Acknowledgement and Consent Form



Description of Existing Transportation Network Conditions	
▪ Describe the transportation network which serves the development including reference to intersection geometrics, road rights-of-way, traffic control measures at intersections, transit routes / bus stops, and related	☒
▪ Provide a quantified summary of average daily traffic (ADT), AM and PM peak hour turning movements, and levels of service within the transportation network serving the development site	☒
▪ Determine existing queue lengths at controlled intersections which may be impacted by the development	☒

Description of Future Transportation Network Conditions	
▪ Identify other projects / proposals within the transportation network servicing the site subject and determine the volume of traffic that may be generated by each over a 5 and 10 year planning horizon; identify all assumptions made in determining base and future traffic volumes	☒
▪ Provide a quantified summary of average daily traffic (ADT), AM and PM peak hour turning movements, and levels of service resulting from the development and other projects / proposals within the transportation network serving the development site; if relevant, show impact of traffic levels generated through development phases in addition to the cumulative impact of traffic within the overall network	☒
▪ Determine future queue lengths at controlled intersections which may be impacted by the development	☒

Recommendations	
▪ Identify the need for infrastructure improvements necessary to maintain an acceptable level of service at controlled intersections as well as any other improvements required to address existing deficiencies and / or to support the effective operation of the development (e.g., road widening, pedestrian connections, etc.)	☒
▪ Distinguish between short-term improvements and long-term improvements required to support the project	☒
▪ The report must be sealed and signed by a Professional Engineer registered in the Province of BC	☒

If any of the above has not been included, please explain below:

Swept path analysis was not conducted due to the simple nature of the internal site roadways.
Each individual townhouse unit has its own garage.



Form AB – Preliminary Traffic Impact Review Acknowledgement and Consent Form



Acknowledgement and Consent Form

When drawings, documents or reports are submitted to the City of Delta as part of the application process, the owner/author of these submissions (e.g., surveyors, consultants, etc.) must acknowledge they have met the minimum submission requirements and consent in writing to allow their work to be reproduced (e.g., photocopied, scanned, etc.) by the City of Delta and the Land Title Office.

1. The undersigned warrants that they are the owner(s) (the "Owner") of the copyright for the Preliminary Traffic Impact Review or the Traffic Impact Study (the "Work") prepared for:

4501 Arthur Drive, Delta, BC

SITE ADDRESS

Landvision Group

CLIENT NAME

2. The Owner acknowledges and consents to the reproduction of the Work by the City of Delta for the purpose of inclusion of the Work in Council reports and/or information packages prepared for any Public Hearing held pursuant to requirements of the *Local Government Act*, as amended, or any bylaw or policy of the City of Delta, and to the provision of copies to interested members of the public prior to or at the Public Hearing.
3. The Owner also acknowledges and consents to the reproduction of the Work and attachment of the reproduction to any document where such document may be required for filing in the Land Title Office.
4. The Owner understands it may, in writing, request the City of Delta that any reproductions made of the Work be stamped that it not be further reproduced or used without permission of the author.
5. The Owner also acknowledges and understands that the Work may also be made subject of a request under the *Freedom of Information and Protection of Privacy Act*, as amended, and that the reproduction by the City of Delta of the Work pursuant to such a request is not a breach of copyright.

2025-11-14

ENGINEER SIGNATURE

DATE

Kristen Machina

ENGINEER NAME (Please Print)



Application Centre, Development Department

Contact Us: 604-946-3380 or Development@delta.ca

June 2023

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