Our File: 2111-47226-01

TECHNICAL MEMO

To	Prepared by
Timothy Nye Real Estate Planning & Development Consultant	**Davis Su**, EIT., Traffic Engineer Branch 2111 / Traffic and Road Safety
	Reviewed by **Mark Merlo**, P.Eng., PTOE, Sr. Transportation Engineer Branch 2111 / Traffic and Road Safety
Re	**Date**
2650 Copperfield Road Traffic Impact Study	May 10, 2022

1. Introduction

The purpose of this technical memo is to review the traffic operations for the proposed development located at 2650 Copperfield Road in Courtenay, BC. The following presents our assumptions, analysis results, and recommendations.

2. Background Information

2.1. Project Description

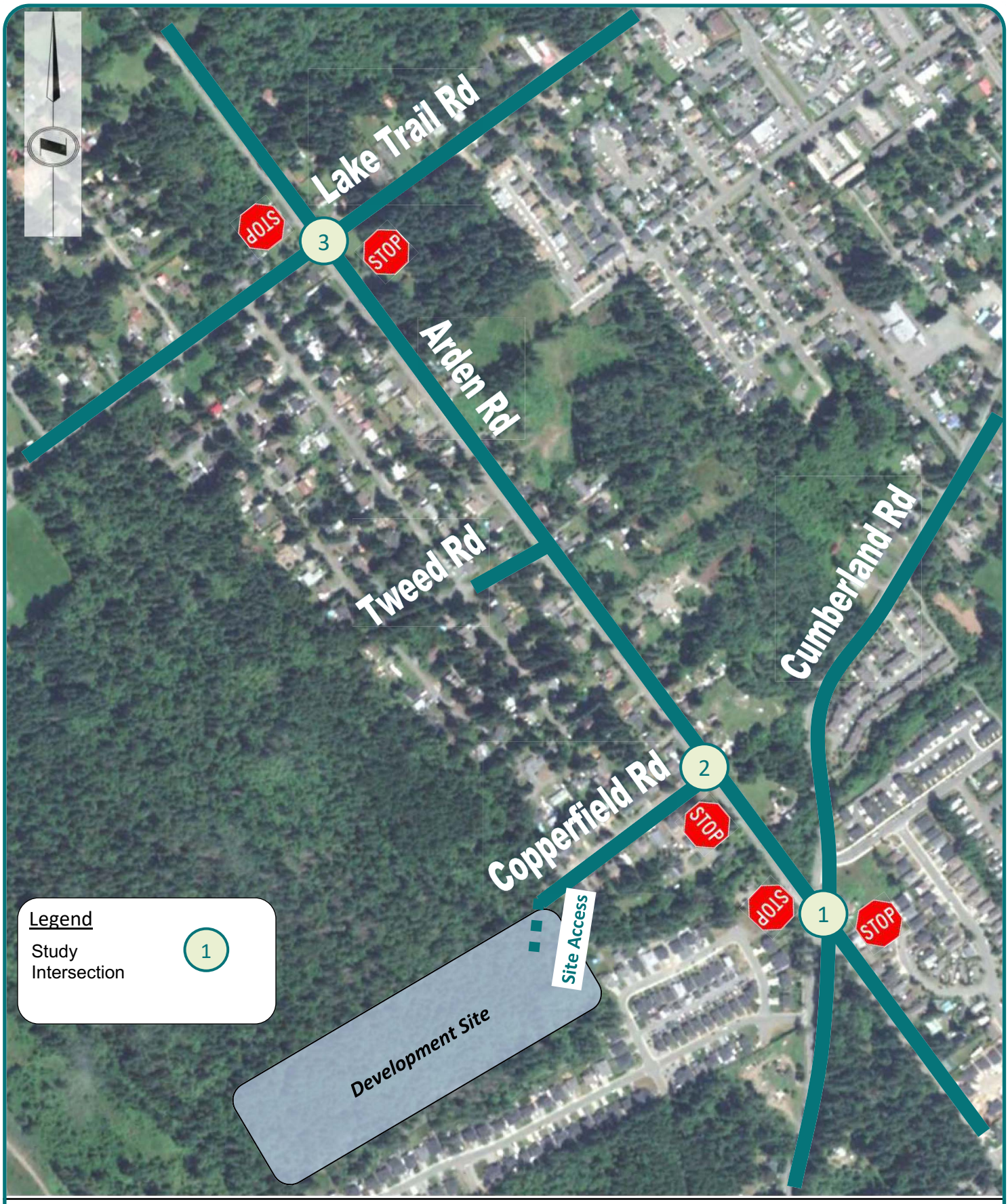
The proposed development site is located at 2650 Copperfield Road in Courtenay, BC. It is our understanding that Rosebery Investments Ltd, (the Client) plans to develop the existing vacant lot into 22 single-family homes, 2 duplex units, 15 townhomes, and a maximum of 7 carriage homes. Note that the carriage homes will be optional, some of which may never be constructed. Carriage homes are typically residential suites located above detached garages.

The development will have a single site access along Copperfield Road. An overview of the proposed development, including site access, is included in *Attachment A*.

2.2. Location

The proposed development is located at 2650 Copperfield Road in Courtenay, BC. The development is located at the west end of Copperfield Road. The study area for the proposed development is shown on *Figure 1*, which includes the following three study intersections:

- Arden Road / Lake Trail Road (2-way stop controlled on Arden Road),
- Arden Road / Copperfield Road (1-way stop controlled on Copperfield Road) and
- Arden Road / Cumberland Road (2-way stop controlled on Arden Road).



Roseberry Lot A Copperfield Rd TIA

Study Area

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FIGURE 1

Not to Scale

2.3. Existing Conditions

Existing conditions for roads within the study area are described in the following section. All road classifications are based on the latest *Draft City of Courtenay Official Community Plan* from January 2022.

Lake Trail Road

Lake Trail Road is an east-west running two-lane undivided road with a 50 km/h speed limit. The road has bicycle lanes east of Arden Road and paved roadside shoulders west of Arden Road. Lake Trail Road is classified as an arterial road and has a rural cross section with roadside ditches on both sides of the road.

Arden Road

Arden Road is a north-south running two-lane undivided road with a 50 km/h speed limit. The road has gravel shoulders on certain portions of the road, as well as a roadside ditch on the west side of the road. The road is fronted by driveways for various single-family homes. Arden Road is classified as a rural collector road.

Cumberland Road

Cumberland Road is a two-lane undivided road with a 50 km/h speed limit which transitions to 60 km/h further to the west of Arden Road. The road provides a connection to Comox Valley Parkway to the south, and thereby Highway 19, as well as Courtenay's commercial areas to the north. The road cross section includes painted bicycle lanes as well as roadside ditches. Cumberland Road is currently classified as an arterial road.

Copperfield Road

Copperfield road is a two-lane undivided local road with a 50 km/h speed limit. The road currently terminates in a dead-end approximately 250m west of Arden Road.

2.4. Future Road Network

In the *City of Courtenay Transportation Master Plan* (2019), Arden Road / Cumberland Road was identified as a location for potential safety and operational improvements. This may include traffic control upgrades including new signals and / or roundabouts. It is indicated in the report that "*in the long-term, it is recommended that the City monitor traffic growth and operations at unsignalized intersections to determine where and when new signals or roundabouts are needed*". The *Arden Corridor Local Area Plan* (2013) further indicates that roundabouts will be considered for intersection treatments along the Arden Road corridor.

Based on the City of Courtenay's existing Official Community Plan *Road Network Map No. 3*, last revised on September 21, 2007, an additional local road connection between Copperfield Road and Cumberland Road was previously considered as shown in *Figure 2;* however, the same road network additions have not been included in more recent documents and OCP updates including the *Draft Official Community Plan*

from January 2022, the *Arden Corridor Local Area Plan* (2013), or the *City of Courtenay Transportation Master Plan* (2019). As a result, no consideration for additional local road connections to Copperfield Road have been included in this study.

Figure 2: Future Road Network - City of Courtenay OCP Road Network Map No. 3 (2007) (Modified)

3. Multimodal Analysis

3.1. Cycling Network

There are currently several cycling facilities within the vicinity of the development. Painted bike lanes are currently available along Lake Trail Road east of Arden Road as well as along Cumberland Road.

Based on the City of Courtenay's Draft OCP, 2021, additional cycling infrastructure is planned along Arden Road as well as the Lake Trail Road as shown in *Figure 3*. Likewise, in the *Transportation Master Plan* (2019), several cycling improvements in the vicinity of the development have been recommended in a list of medium term (10 year) cycling improvements as shown in *Figure 4*. These improvements include:

- Paved multi-use pathway along Arden Road from Morrison Creek to Comox Valley Parkway
- Paved multi-use pathway along Lake Trail Road from Willemar Avenue to Webdon Road

Figure 3: Long Term Cycling Network Connectivity Opportunities – City of Courtenay OCP Draft, 2022 (Modified)

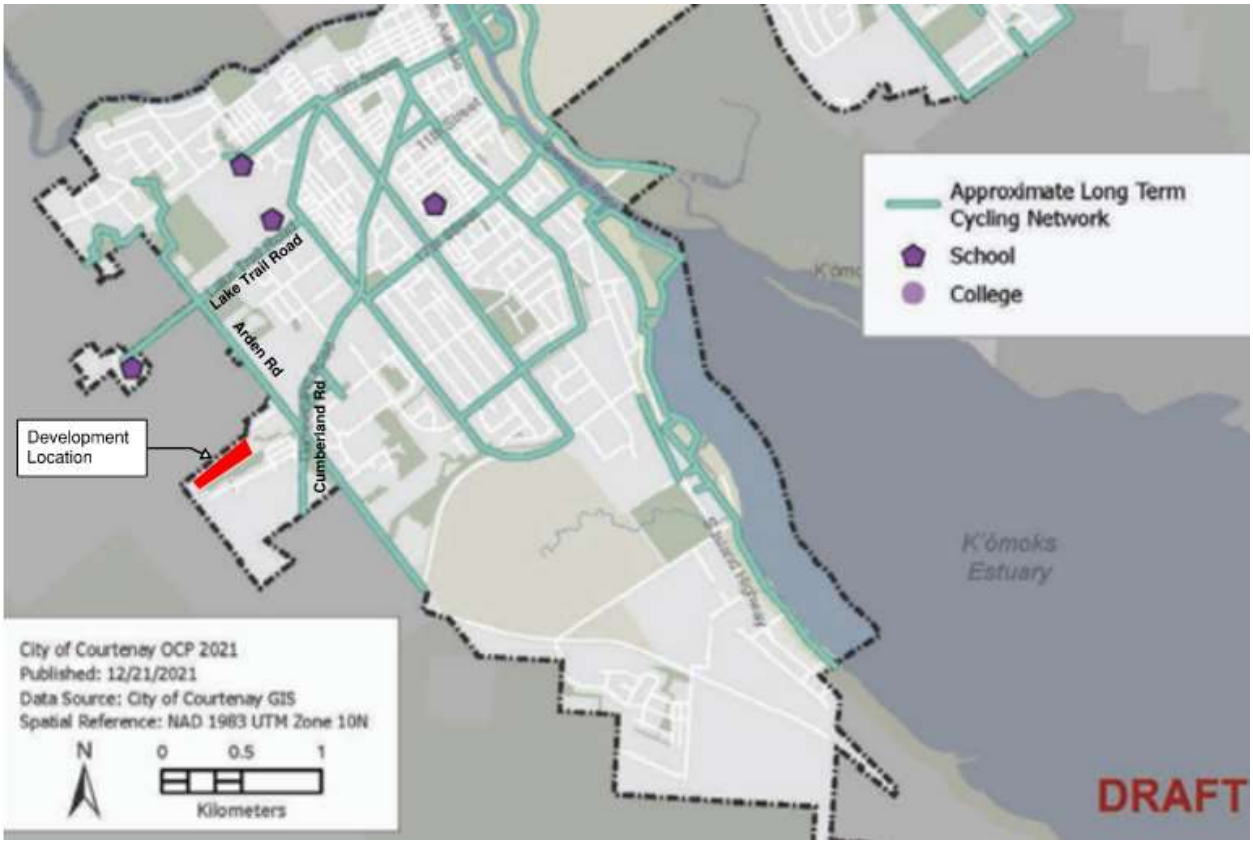
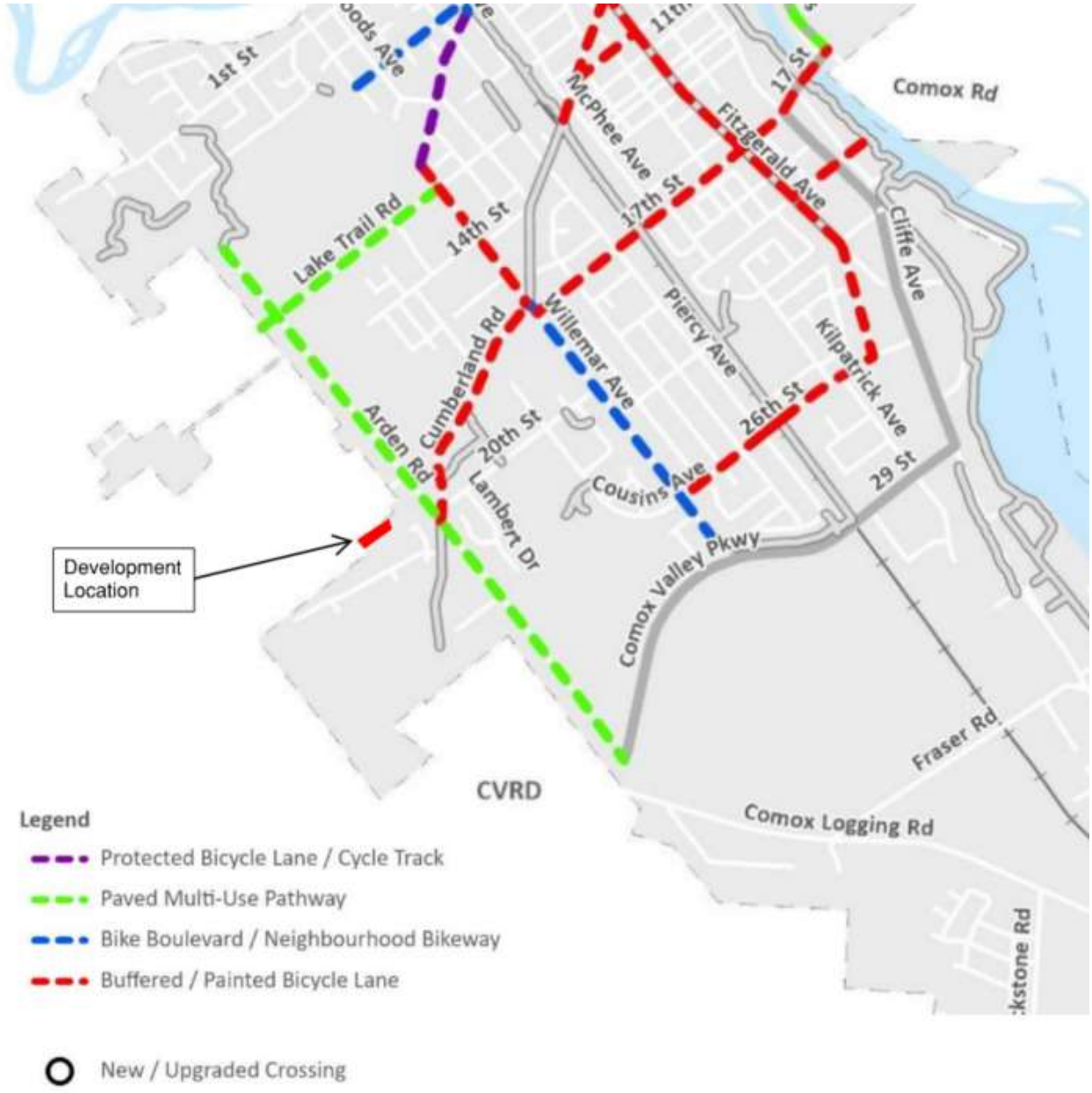


Figure 4: Medium-Term (10 Year) Cycling Improvement Priorities – Transportation Master Plan 2019 (Modified)



3.2. Pedestrian Network

There is currently limited sidewalk infrastructure in the vicinity of the development. No sidewalks are provided along Arden Road nor along Lake Trail Road. Sidewalks are available along Cumberland Road along one side of the road. Additionally, there are currently limited protected pedestrian crossings along Cumberland Road and along Lake Trail Road.

As shown in *Figure 5*, based on the City of Courtenay's draft OCP from 2022, paved multi-use pathways adjacent to the street have been recommended along Arden Road and along Lake Trail Road. Additionally, the *Transportation Master Plan* (2019) and the Draft OCP (2022) both identified the Arden Road and Cumberland Road intersection as a desirable location for an improved pedestrian crossing.

Additionally, multiple conceptual multi-purpose trails were proposed in the *Arden Corridor Local Area Plan* (2013) in the vicinity of the development as shown in *Figure 6*.

Figure 5: Recommended Pedestrian Network Plan City of Courtenay Draft OCP, 2022 (Modified)

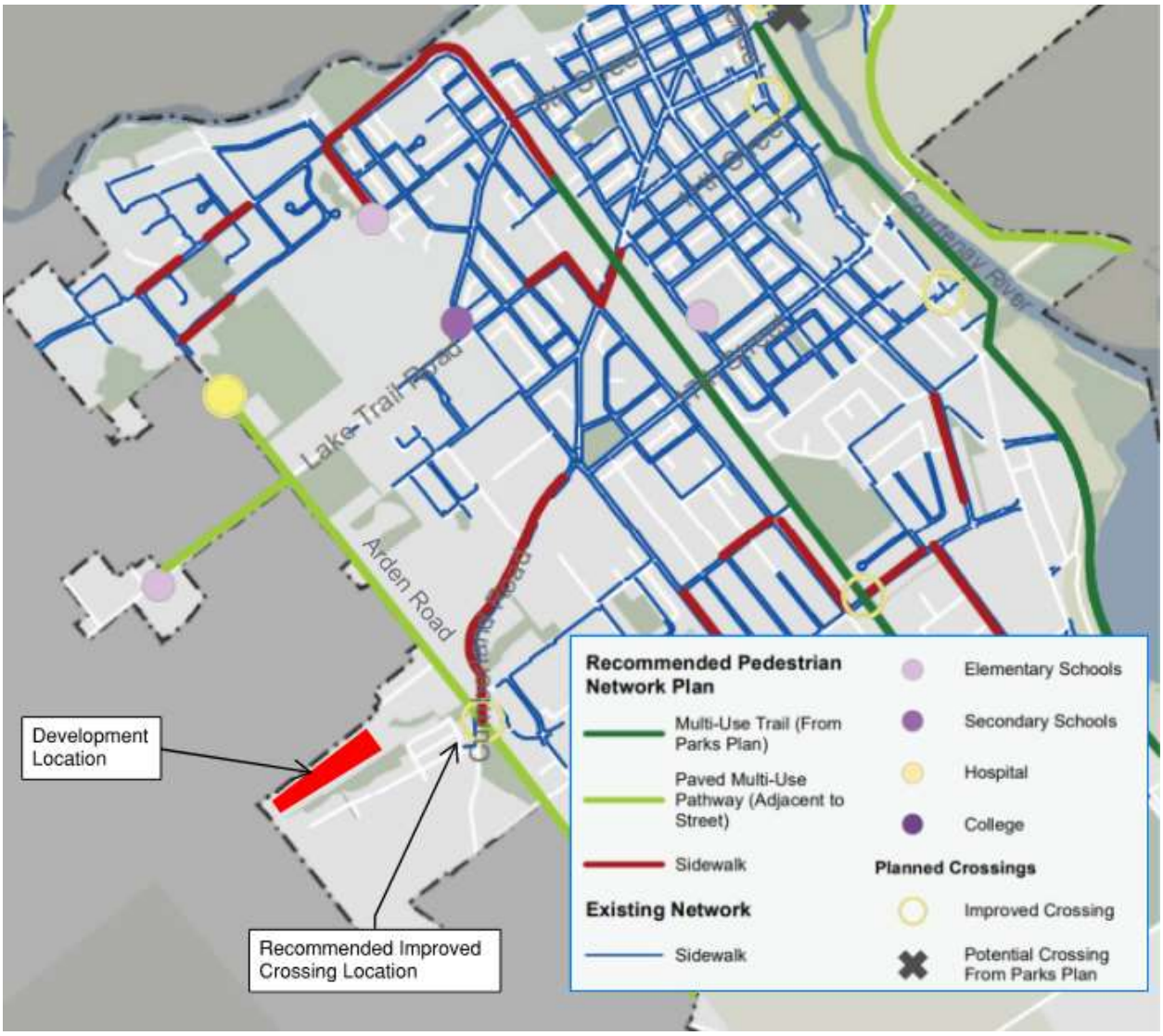


Figure 6: Conceptual Land Use Plan for the Arden Corridor – Arden Corridor Local Area Plan (2013) (Modified)

3.3. Transit Network

No BC Transit bus routes are within close walking distance to the development. The nearest bus stop is an approximately 800m walking distance away near 2100 Block of 20th Street for BC Transit Route 7 from Arden to Driftwood Mall; however, as noted in the *Arden Corridor Local Area Plan* (2013), although the Arden Corridor is not currently served by transit, this could change in the future when densities are high enough to support service in the area.

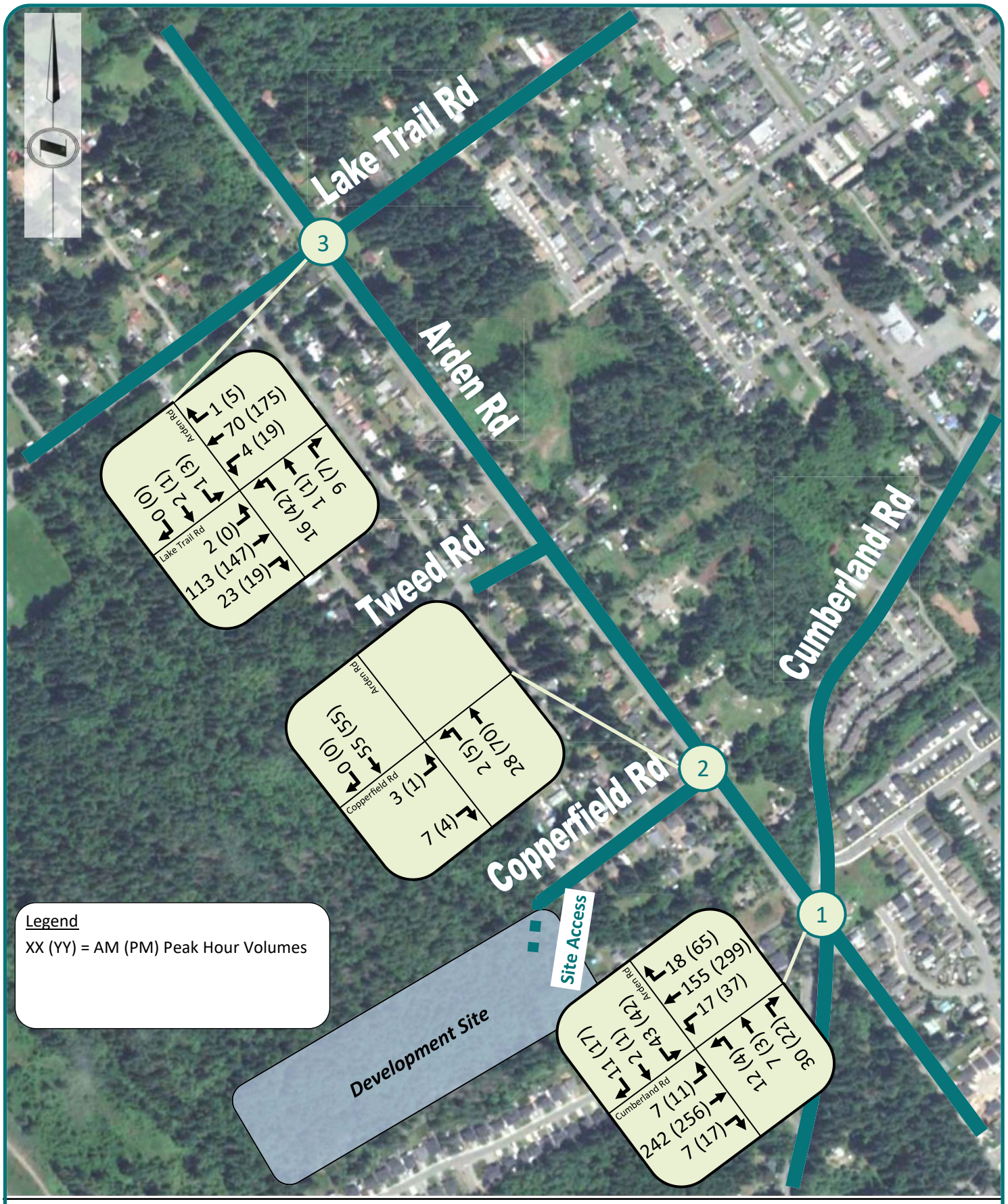
4. Traffic Volume Development

4.1. Existing 2022 Traffic Volumes

Traffic counts for the study intersections were collected by McElhanney between March 29 – 31, 2022, via single day counts from the weekday AM and PM peaks (7 – 9 AM and 3 – 6 PM respectively) for the following intersections:

- Lake Trail Road and Arden Road,
- Cumberland Road and Arden Road and
- Copperfield Road and Arden Road.

Existing Conditions (2022) Weekday AM and PM peak hour traffic volumes at the study intersections are shown in *Figure 7*. Detailed traffic count sheets are included in *Attachment B*.



Roseberry Lot A Copperfield Rd TIA

Existing Volumes (2022)

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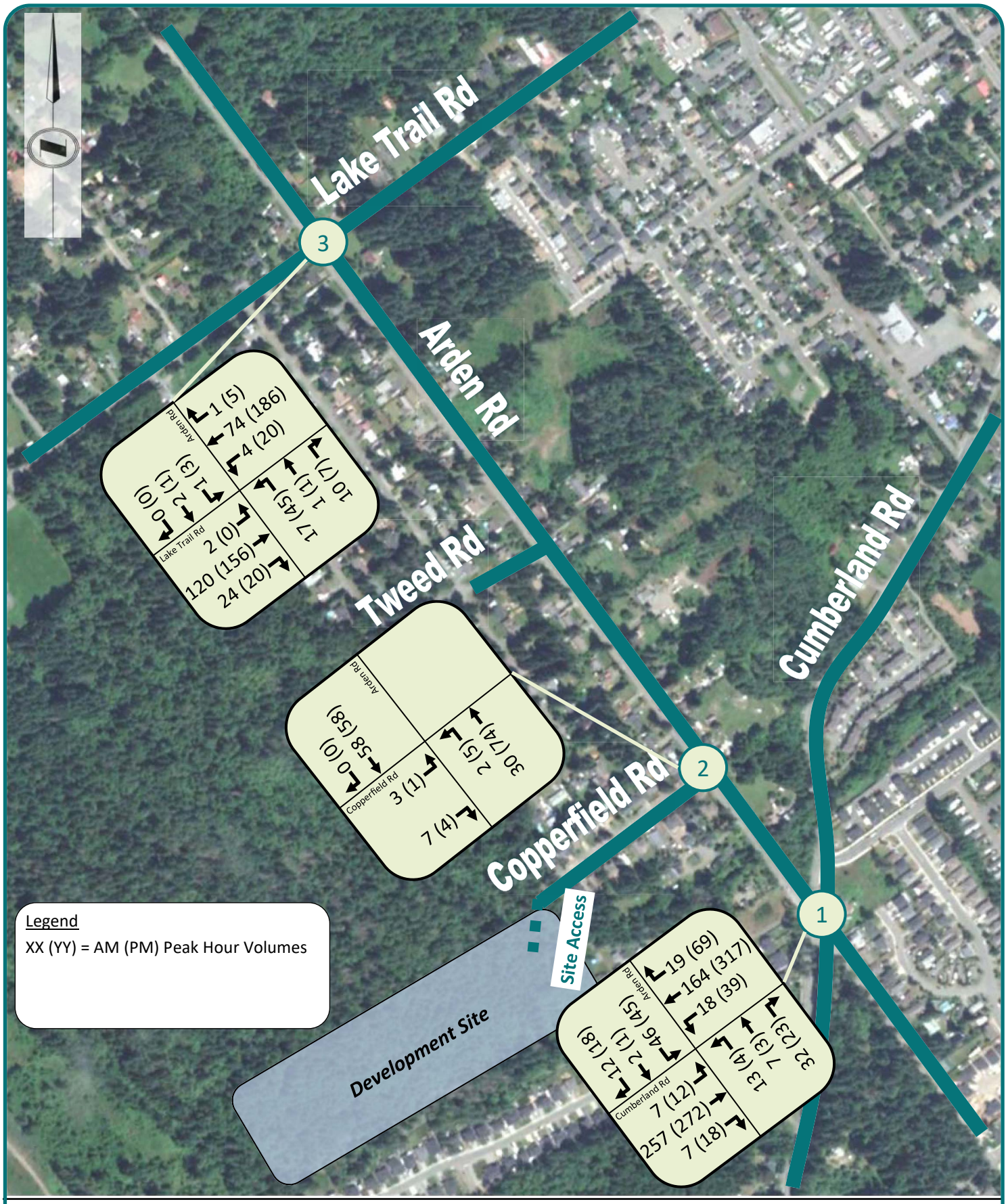
FIGURE 7

Not to Scale

4.2. Background Volumes

A 2% annual compound growth rate will be used to project future traffic volumes. This value is consistent with the City of Courtenay's annual population growth projections used in the *Transportation Master Plan* (2019).

A 2025 opening day has been assumed for the purposes of this memo. The opening day (2025) and future opening day + 10 years (2035) Weekday AM and PM peak hour background volumes are presented in *Figure 8* and *Figure 9* respectively.



Roseberry Lot A Copperfield Rd TIA

Background Volumes (2025)

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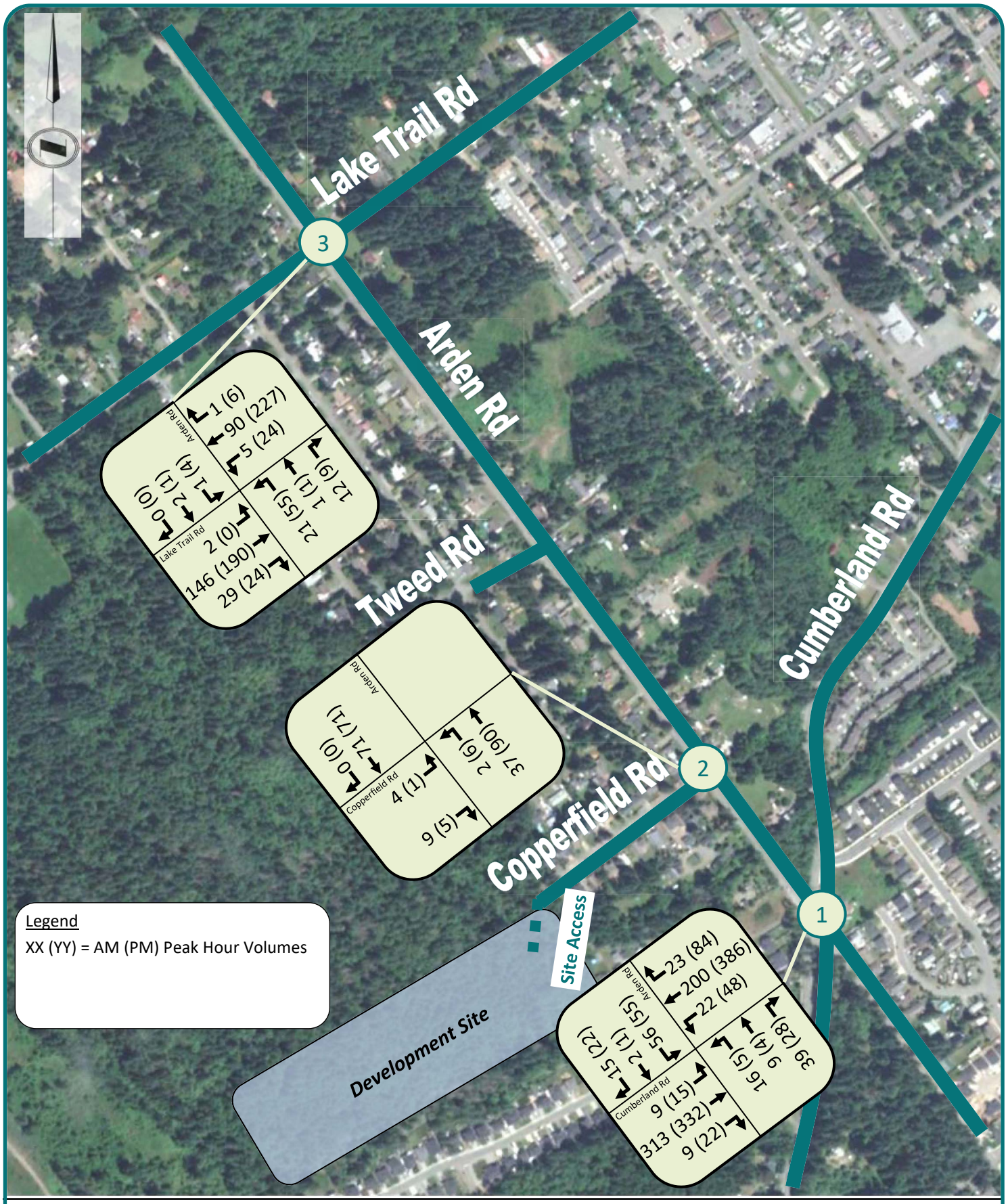
FIGURE 8

Not to Scale



Roseberry Lot A Copperfield Rd TIA

Background Volumes (2035)

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FIGURE 9

Not to Scale

4.3. Trip Generation

Project trip generation refers to the process of estimating the amount of vehicular traffic a development would add to the surrounding roadway system based on land use and development size. For the proposed development, the amount of traffic entering and exiting the road system was calculated for the weekday AM and PM peak hours and the daily totals. For the AM and PM peak hours, the trip rates represent the hourly trips that would occur between the hours of 7:00 – 9:00 AM and 4:00 – 6:00 PM, respectively.

Peak hour and daily trip generation estimates for the proposed development were developed using the ITE *Trip Generation, 10th Edition (2017)*. Peak AM and PM and daily ITE trip generation rates were then applied, as summarized in *Table 1* below.

Table 1: ITE Vehicle Trip Generation Rates

Land Use Description	Development Type	ITE Code	Unit[1]	Vehicle Trip Rate			In / Out Split		
				AM	PM	Daily	AM (%)	PM (%)	Daily (%)
Single-Family Detached Housing	Single-Family, Duplex	210	DU	0.74	0.99	9.44	25 / 75	63 / 37	50 / 50
Multi-Family Housing (Low-Rise)	Townhome	220	DU	0.46	0.56	7.32	23 / 77	63 / 37	50 / 50

Notes:

1. DU = dwelling units

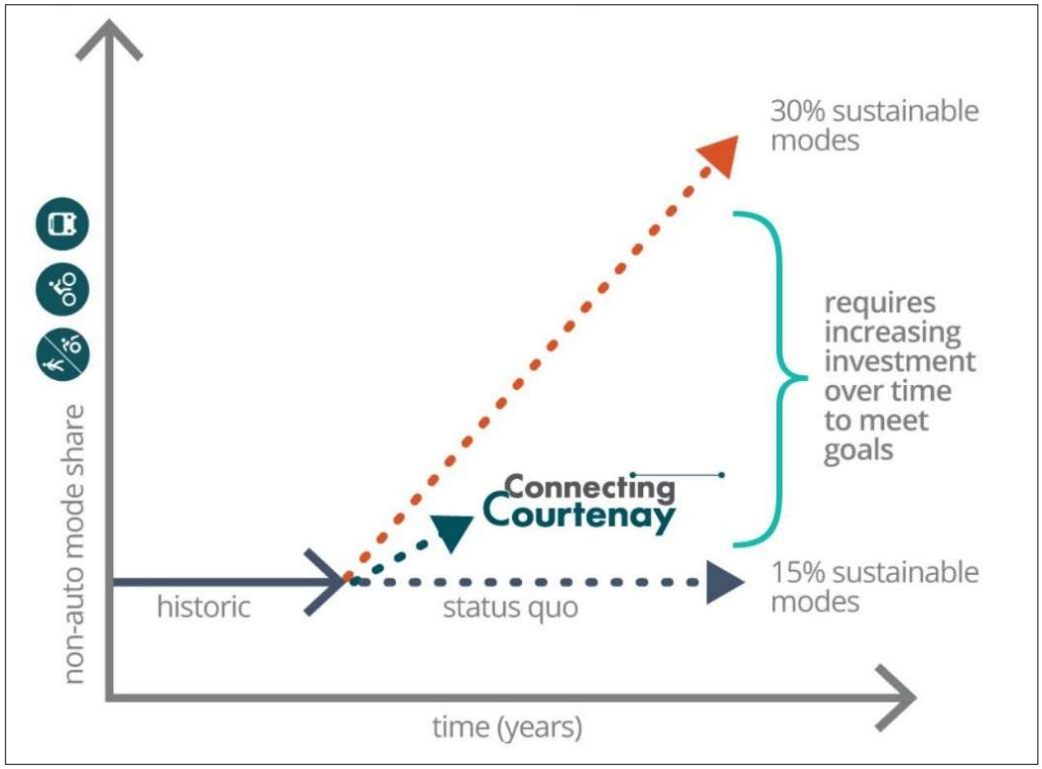
Note that carriage houses have not been explicitly accounted for in *Table 1*. The ITE *Trip Generation, 10th Edition (2017)* does not have a specific trip rate for lots that include both single-family homes and carriage houses. Similarly, specific trip rates are not provided for houses that include additional suites (e.g. basement suites). As a result, it is assumed that these types of land uses have already been incorporated in the trip rates for other land uses, which is in line with the typical methodology used for estimating development related trips.

4.3.1. Alternative Transportation Reductions

The City of Courtenay's *Connecting Courtenay – Transportation Master Plan* (Urban Systems, September 2019) states that passenger vehicles account for 85% of all weekday trips made within the City. Walking (8%), cycling (4%) and transit (3%) trips, i.e. sustainable travel modes, account for the remaining 15% of weekday trips. As shown in *Figure 10*, the City has targets to increase the sustainable mode share to 30% in the future. Without transportation investments aimed at improving the transit, walking and cycling infrastructure in the City, the 15% sustainable mode share is expected to continue.

Despite the projected sustainable mode increase, **no reductions for sustainable modes have been assumed** for the traffic analysis conducted in the following sections of the report in order to be conservative.

Figure 10: City of Courtenay Sustainable Mode Share Target – Connecting Courtenay – Transportation Master Plan



4.3.2. Net Vehicle Trip Generated by Development

Table 2 presents the net estimated vehicle trips generated from the development using the rates discussed in *Section 4.3*. No reduction has been applied to account for sustainable travel modes.

The proposed development is expected to generate 24 vehicle trips (6 inbound / 18 outbound) and 32 vehicle trips (20 inbound / 12 outbound) during the weekday AM and PM peak hours, respectively. Overall, the development will generate approximately 336 (168 inbound / 168 outbound) total weekday daily trips.

Table 2: Net Site Generated Vehicle Trips

Development Type	Land Use Code	Description	Units	# of Units	Period[1]	Trips		
						In	Out	Total
Single-Family	210	Single-Family Detached Housing	Dwelling Units	22	Daily	104	104	208
					AM	4	12	16
					PM	14	8	22
Duplex	210[2]	Single-Family Detached Housing	Dwelling Units	2	Daily	9	9	18
					AM	0	1	1
					PM	1	1	2
Townhome	220[3]	Low-Rise Multifamily Housing	Dwelling Units	15	Daily	55	55	110
					AM	2	5	7
					PM	5	3	8
Sub-Total Development Trips					Daily	168	168	336
					AM	6	18	24
					PM	20	12	32

Notes:

1. AM and PM rates correspond to peak hour of adjacent street traffic
2. Trip generation rates for single-family detached housing were used to remain conservative
3. Low-rise multifamily housing includes apartments and townhouses with at least three other units

4.4. Trip Distribution

The site generated vehicle trips shown in *Table 2* were distributed into the development's nearby road network. The existing 2022 traffic counts were reviewed to help estimate the trip distribution and assignment for the site generated trips for the weekday AM and PM peak hours. The majority of trips are expected to head to / from Downtown Courtenay to the northeast while a smaller portion of trips are expected to head south towards the highway. Additionally, a portion of trips are expected to head west along Lake Trail Road to go to Arden Elementary.

The trip distribution assumptions are listed below and are shown in *Figure 11.*

- 10% of traffic to / from west along Lake Trail Road,
- 20% of traffic to / from east along Lake Trail Road,
- 20% of traffic to / from west along Cumberland Road and
- 50% of traffic to / from east along Cumberland Road.

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Trip Distribution

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FIGURE 11

Not to Scale

4.5. With Project Volumes

To determine traffic volumes for Opening Day (2025) and Future Year (2035) with the development (i.e. combined), the development trips estimated for the project development (*Table 2*) were added to the background traffic for each of the study scenarios. The development generated traffic volumes are shown in *Figure 12* while the combined Weekday AM and PM peak hour traffic volumes are presented in *Figure 13* and *Figure 14* for the 2025 and 2035 post-development conditions, respectively.

Roseberry Lot A Copperfield Rd TIA

Site Generated Trips

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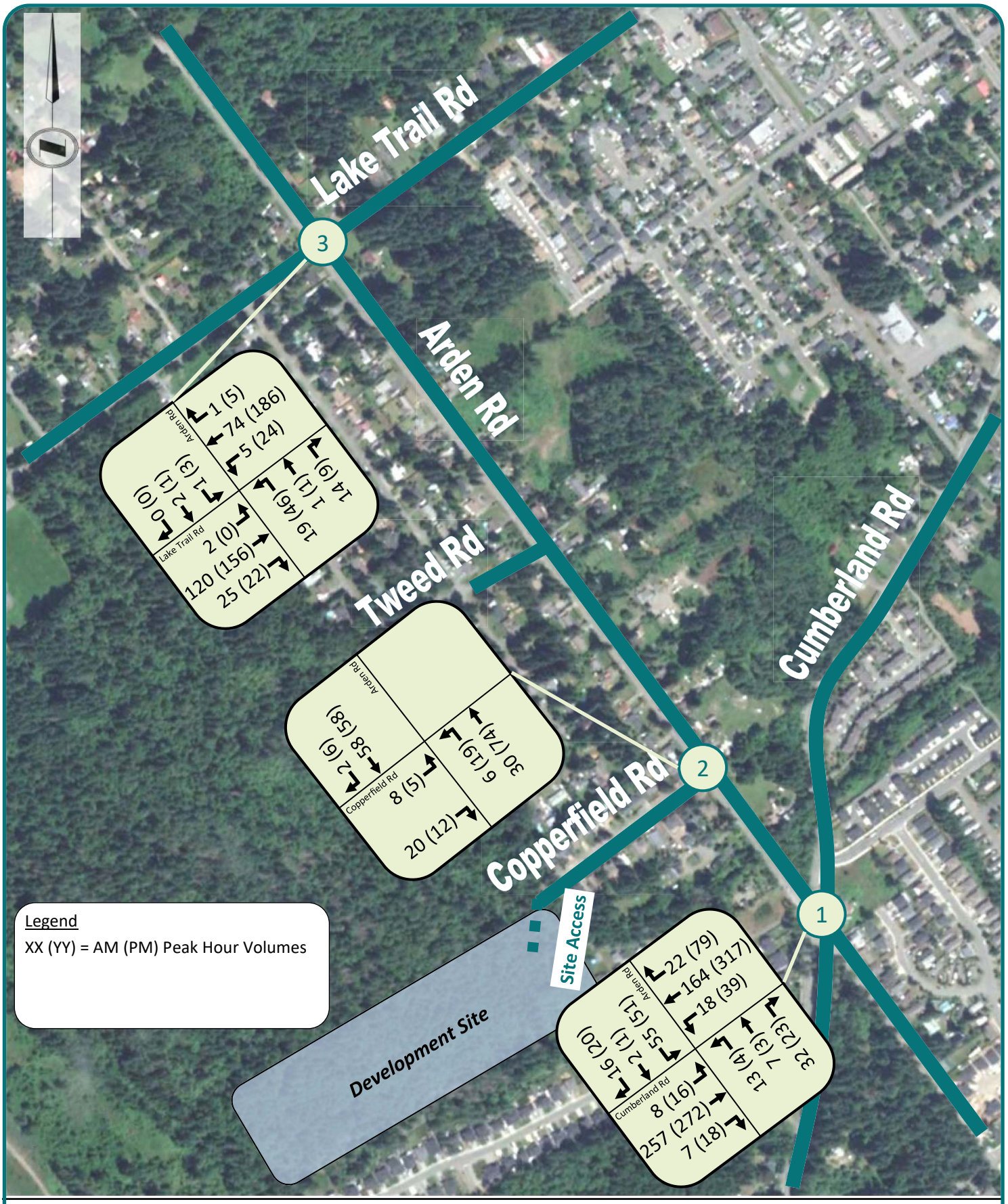
2211-47226-01

FIGURE 12

Not to Scale



Roseberry Lot A Copperfield Rd TIA

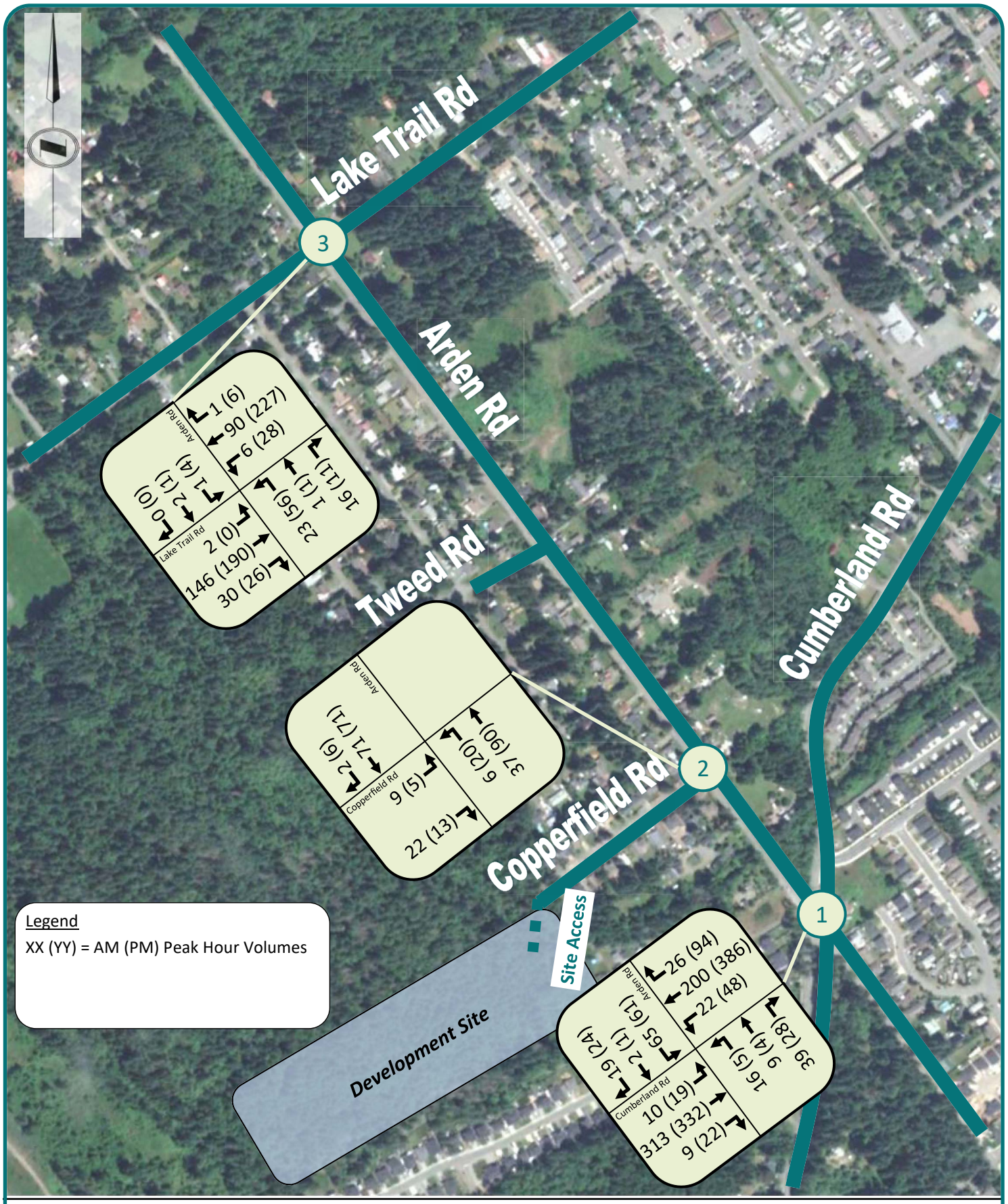
Combined Volumes (2025)

McElhanney

2211-47226-01

FIGURE 13

Not to Scale



Roseberry Lot A Copperfield Rd TIA

Combined Volumes (2035)

McElhanney

2211-47226-01

FIGURE 14

Not to Scale

5. Traffic Operational Analysis

Traffic operations analysis was conducted for two scenarios:

- Existing (2022)
- Opening Day (2025)
- Future Year (2035)

All scenarios were analyzed for two time periods:

- Weekday AM peak hour
- Weekday PM peak hour

All future scenarios (2025 and 2035) were analyzed with and without the additional trips generated by the proposed development.

5.1. Synchro Analysis Software

Synchro software, version 10.0, was used to report the Level of Service (LOS) and average delay at each of the study intersections. Synchro is a traffic software package used to determine traffic conditions based on volumes, laning, and type of traffic control. Synchro calculates average delays and queue lengths for each movement at an intersection. Average delays are then translated into LOS. Detailed Synchro analysis reports can be found in *Attachment C*.

5.2. Intersection Level of Service Criteria

Operations of roadway facilities are described in terms of Level of Service (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to manoeuvre. For intersections Level of Service is based on delay. Six service levels are defined, ranging from LOS A, the best operating conditions, to LOS F, the worst operating conditions. LOS E corresponds to “at or near capacity” operations. When volumes exceed capacity, it results in stop-and-go conditions, which is designated as LOS F. The delay thresholds and corresponding LOS are presented in *Table 3.* The typical criterion for acceptable operation is LOS D. Therefore, any movement or intersection operating at LOS E or worse may require improvement.

Table 3: Intersection Level of Service Definitions

Level of Service	Delay Criteria (sec / veh)		Description
	Signalized Intersections[1]	Unsignalized Intersections[2]	
A	≤ 10	≤ 10	Represents free flow. Individual users are virtually unaffected by others in the traffic stream. Usually no conflicting traffic.
B	> 10 to 20	> 10 to 15	Stable flow, but the presence of other users in the traffic stream begins to be noticeable. Occasionally some delay due to conflicting traffic.
C	> 20 to 35	> 15 to 25	Stable flow, but the operation of individual users becomes significantly affected by interactions with others in the traffic stream. Delay is noticeable, but not inconveniencing.
D	> 35 to 55	> 25 to 35	Represents high-density, but stable flow. Delay is noticeable and irritating; increased likelihood of risk taking.
E	**> 55 to 80**	**> 35 to 50**	**Represents operating conditions at or near the capacity level. Delay approaching tolerance levels; risk taking behaviour is likely.**
F	**> 80**	**> 50**	**Represents forced or breakdown flow. Delay exceeds tolerance level; high likelihood of risk taking.**

Notes:
Values shown are n seconds / vehicle. **BOLD** indicates unacceptable LOS.
1. HCM 6th Edition
2. HCM 6th Edition

For unsignalized (side-street stop-controlled and 4-way stop controlled) intersections, the LOS calculations were conducted based on Synchro's default capacity analysis methodology, which correspond with the methodology from HCM 2000. The LOS rating is based on the average delay expressed in seconds per vehicle. For controlled approaches composed of a single lane, the control delay is computed as the average of all movements in that lane.

It should be noted that although Synchro reports overall intersection LOS at side-street stop-controlled unsignalized intersections, the overall LOS is not a good indicator of the side street performance, as it is calculated from the average delay for all vehicles. As a result, the overall LOS is typically heavily skewed toward the LOS for the free flow major movement, particularly where the proportion of free flow volume on the major street is very high.

5.3. Level of Service Results

Existing Conditions (2022)

Analysis was conducted for the Existing (2022) conditions. A summary of the Existing (2022) LOS results can be found in *Table 4*. The detailed results can be found in *Attachment C*. For the purposes of the analysis for the Existing (2022) as well as all future scenarios, Arden Road is assumed to be a north-south road. All other roads have been considered east-west.

For existing conditions, all intersection movements are expected to operate at LOS C or better.

Table 4: Existing (2022) – Intersection Level of Service Results

2022 (Existing Conditions)															
Int.	**Time**	**Attribute**	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**	**Overall**
Cumberland Rd and Arden Rd	AM	Volume	7	242	7	17	155	18	12	7	30	43	2	11	
		v/c Ratio	0.01			0.02			0.12			0.19			
		Delay (s)	0			1			13			17			3
		LOS	A			A			B			C			A
		95% Q (m)	0			1			3			6			
	PM	Volume	11	256	17	37	299	65	4	3	22	42	1	17	
		v/c Ratio	A			A			B			C			
		Delay (s)	0			1			13			21			3
		LOS	A			A			B			C			A
		95% Q (m)	0			1			3			9			
Copperfield Rd and Arden Rd	AM	Volume	3		7				2	28			55	1	
		v/c Ratio	0.01						0			0.04			
		Delay (s)	9						1			0			1
		LOS	A						A			A			A
		95% Q (m)	0						0			0			
	PM	Volume	1		4				5	70			55	1	
		v/c Ratio	0.01						0			0.05			
		Delay (s)	9						1			0			1
		LOS	A						A			A			A
		95% Q (m)	0						0			0			
Lake Trail Rd and Arden Rd	AM	Volume	2	113	23	4	70	1	16	1	9	1	2	1	
		v/c Ratio	0			0			0.05			0.01			
		Delay (s)	0			0			10			10			2
		LOS	A			A			A			B			A
		95% Q (m)	0			0			1			0			
	PM	Volume	1	147	19	19	175	5	42	1	7	3	1	1	
		v/c Ratio	0			0.02			0.13			0.03			
		Delay (s)	0			1			13			12			2
		LOS	A			A			B			B			A
		95% Q (m)	0			0			4			1			

Opening Day (2025)

For Opening Day (2025) conditions, the analysis was conducted with the background traffic only, and again with the inclusion of the project development traffic. A summary of the Opening Day (2025) LOS results for the background scenario and with development scenario can be found in *Table 5* and *Table 6*. The detailed results can be found in *Attachment C*.

For the opening day **background scenario**, all intersection movements are expected to operate at LOS C or better.

For the opening day **post development scenario**, the southbound Arden Road approach at Cumberland Road is expected to deteriorate from LOS C to LOS D in the PM peak period. However, it is noted that the development traffic (an additional 8 vehicles per hour) is only expected to add 2 seconds of additional delay. All other intersection movements are expected to operate at LOS C or better.

*Table 5: Opening Day (2025) – **Background** - Intersection Level of Service Results*

2025 (Background Conditions)															
Int.	**Time**	**Attribute**	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**	**Overall**
Cumberland Rd and Arden Rd	AM	Volume	7	257	7	18	164	19	13	7	32	46	2	12	
		v/c Ratio	0.01			0.02			0.13			0.22			
		Delay (s)	0			1			13			18			3
		LOS	A			A			B			C			A
		95% Q (m)	0			1			4			7			
	PM	Volume	12	272	18	39	317	69	4	3	23	45	1	18	
		v/c Ratio	0.01			0.03			0.10			0.32			
		Delay (s)	0			1			13			24			4
		LOS	A			A			B			C			A
		95% Q (m)	0			1			3			11			
Copperfield Rd and Arden Rd	AM	Volume	3		7				2	30			58	1	
		v/c Ratio	0.01						0			0.05			
		Delay (s)	9						1			0			1
		LOS	A						A			A			A
		95% Q (m)	0						0			0			
	PM	Volume	1		4				5	74			58	1	
		v/c Ratio	0.01						0			0.05			
		Delay (s)	9						1			0			1
		LOS	A						A			A			A
		95% Q (m)	0						0			0			
Lake Trail Rd and Arden Rd	AM	Volume	2	120	24	4	74	1	17	1	10	1	2	0	
		v/c Ratio	0			0			0.05			0.01			
		Delay (s)	0			0			10			11			2
		LOS	A			A			A			B			A
		95% Q (m)	0			0			1			0			
	PM	Volume	1	156	20	20	186	5	45	1	7	3	1	1	
		v/c Ratio	0			0.02			0.14			0.03			
		Delay (s)	0			1			14			12			2
		LOS	A			A			B			B			A
		95% Q (m)	0			0			4			1			

*Table 6: Opening Day (2025) – **With Development** - Intersection Level of Service Results*

2025 (Combined Conditions)															
Int.	**Time**	**Attribute**	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**	**Overall**
Cumberland Rd and Arden Rd	AM	Volume	8	257	7	18	164	22	13	7	32	55	2	16	
		v/c Ratio	0.01			0.02			0.13			0.27			
		Delay (s)	0			1			13			18			4
		LOS	A			A			B			C			A
		95% Q (m)	0			1			4			9			
	PM	Volume	16	272	18	39	317	79	4	3	23	51	1	20	
		v/c Ratio	0.02			0.03			0.10			0.37			
		Delay (s)	0			1			13			26			4
		LOS	A			A			B			D			A
		95% Q (m)	0			1			3			13			
Copperfield Rd and Arden Rd	AM	Volume	8		20				6	30			58	2	
		v/c Ratio	0.04						0.01			0.05			
		Delay (s)	9						1			0			2
		LOS	A						A			A			A
		95% Q (m)	1						0			0			
	PM	Volume	5		12				19	74			58	6	
		v/c Ratio	0.03						0.02			0.06			
		Delay (s)	9						2			0			2
		LOS	A						A			A			A
		95% Q (m)	1						0			0			
Lake Trail Rd and Arden Rd	AM	Volume	2	120	25	5	74	1	19	1	14	1	2	1	
		v/c Ratio	0			0			0.06			0.01			
		Delay (s)	0			1			10			10			2
		LOS	A			A			A			B			A
		95% Q (m)	0			0			2			0			
	PM	Volume	1	156	22	24	186	5	45	1	8	3	1	1	
		v/c Ratio	0			0.02			0.15			0.03			
		Delay (s)	0			1			14			12			3
		LOS	A			A			B			B			A
		95% Q (m)	0			1			4			1			

Future Conditions (2035)

For the Future Year (2035) conditions, the analysis was conducted with the background traffic only, and again with the inclusion of the project development traffic. A summary of the Future Year (2035) LOS results is attached in *Table 7* and *Table 8*. The detailed results can be found in *Attachment C*.

For the Future Year (2035) **background** scenario:

- At Cumberland Road and Arden Road, the southbound Arden Road approach is expected to deteriorate to LOS C in the AM peak and LOS E in the PM peak. As noted previously, the *Transportation Master Plan* contemplates a signal or roundabout at this location in the future which should address this LOS E.

- All other movements are expected to operate at LOS C or better.

With the addition of **development traffic** for the 2035 scenario:

- At Cumberland Road and Arden Road, the southbound approach is expected to deteriorate from LOS C to LOS D in the AM peak and remain at LOS E in the PM peak. Queues are expected to remain manageable, with 95th percentile queues of 28m, or approximately 4 passenger vehicles, in the worst-case PM peak.

- All other movements are expected to operate at LOS C or better.

*Table 7: Future Year (2035) – **Background** - Intersection Level of Service Results*

2035 (Background Conditions)															
Int.	**Time**	**Attribute**	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**	**Overall**
Cumberland Rd and Arden Rd	AM	Volume	9	313	9	22	200	23	16	9	39	56	2	15	
		v/c Ratio	0.01			0.03			0.19			0.35			
		Delay (s)	0			1			15			24			4
		LOS	A			A			C			C			A
		95% Q (m)	0			1			6			12			
	PM	Volume	15	332	22	48	386	84	5	4	28	55	1	22	
		v/c Ratio	0.02			0.04			0.15			0.53			
		Delay (s)	1			1			15			41			5
		LOS	A			A			C			**E**			A
		95% Q (m)	0			1			4			22			
Copperfield Rd and Arden Rd	AM	Volume	4		9				2	37			71	1	
		v/c Ratio	0.02						0			0.06			
		Delay (s)	9						0			0			1
		LOS	A						A			A			A
		95% Q (m)	0						0			0			
	PM	Volume	1		5				6	90			71	1	
		v/c Ratio	0.01						0			0.07			
		Delay (s)	9						1			0			1
		LOS	A						A			A			A
		95% Q (m)	0						0			0			
Lake Trail Rd and Arden Rd	AM	Volume	2	146	29	5	90	1	21	1	12	1	2	1	
		v/c Ratio	0			0			0.07			0.01			
		Delay (s)	0			0			10			11			2
		LOS	A			A			B			B			A
		95% Q (m)	0			0			2			0			
	PM	Volume	1	190	24	24	227	6	55	1	9	4	1	1	
		v/c Ratio	0			0.02			0.2			0.04			
		Delay (s)	0			1			16			14			3
		LOS	A			A			C			B			A
		95% Q (m)	0			1			6			1			

*Table 8: Future Year (2035) – **With Development** - Intersection Level of Service Results*

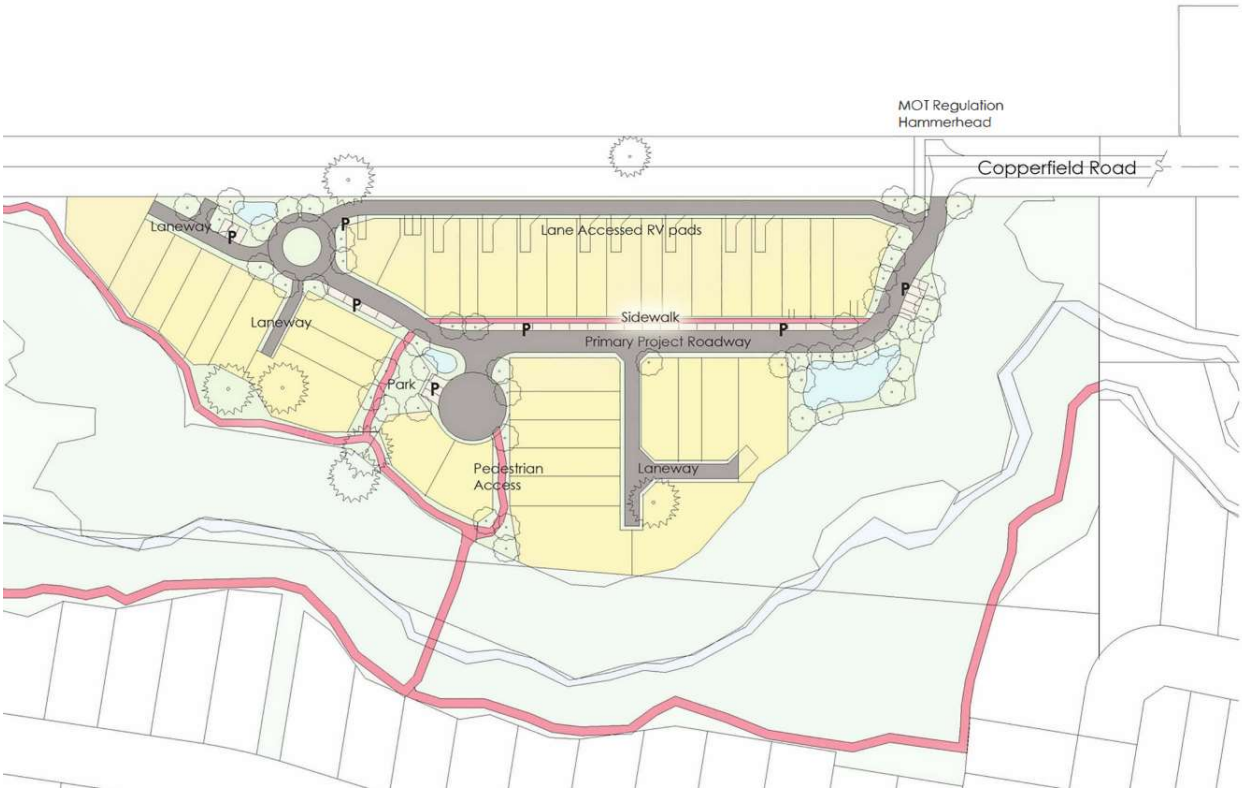
2035 (Combined Conditions)															
Int.	**Time**	**Attribute**	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**	**Overall**
Cumberland Rd and Arden Rd	AM	Volume	10	313	9	22	200	26	16	9	39	65	2	19	
		v/c Ratio	0.01			0.03			0.2			0.41			
		Delay (s)	0			1			15			26			5
		LOS	A			A			C			D			A
		95% Q (m)	0			1			6			15			
	PM	Volume	19	332	22	48	386	94	5	4	28	61	1	24	
		v/c Ratio	0.02			0.04			0.15			0.61			
		Delay (s)	1			1			16			48			6
		LOS	A			A			C			**E**			A
		95% Q (m)	0			1			4			28			
Copperfield Rd and Arden Rd	AM	Volume	9		22				6	37			71	2	
		v/c Ratio	0.04						0.01			0.06			
		Delay (s)	9						1			0			2
		LOS	A						A			A			A
		95% Q (m)	1						0			0			
	PM	Volume	5		13				20	90			71	6	
		v/c Ratio	0.03						0.02			0.07			
		Delay (s)	9						2			0			2
		LOS	A						A			A			A
		95% Q (m)	1						0			0			
Lake Trail Rd and Arden Rd	AM	Volume	2	146	30	6	90	1	23	1	16	1	2	1	
		v/c Ratio	0			0.01			0.08			0.01			
		Delay (s)	0			1			10			11			2
		LOS	A			A			B			B			A
		95% Q (m)	0			0			2			0			
	PM	Volume	1	190	26	28	227	6	56	1	11	4	1	1	
		v/c Ratio	0			0.03			0.22			0.04			
		Delay (s)	0			1			16			14			3
		LOS	A			A			C			B			A
		95% Q (m)	0			1			7			1			

6. Site Access

6.1. Description

The development site has proposed main entrance at the west end of Copperfield Road. Copperfield Road currently at the site. It has been proposed that Copperfield Road will be terminated at a “hammerhead" turnaround near the site access as shown in *Figure 15*.

Figure 15: Proposed Development Site Access



7. Safety Analysis

ICBC collision data from ICBC's Tableau Public crash map from 2016 – 2020 was reviewed at the study intersections as shown in *Table 9*. The ICBC map classifies collisions into two categories:

- *Casualty* crashes are crashes resulting in injury or fatality.
- *Property damage only* (PDO) crashes are crashes resulting in material damage and no injury or fatality.

The publicly accessible ICBC data does not provide any additional information on the crashes beyond the number and classification.

Based on the ICBC collision data, Cumberland Road and Arden Road was found to have the highest number of collisions (21) of the three study intersections. It is noted that:

- For the Cumberland Road / Arden Road intersection, bike lane and pavement marking upgrades were installed some time after August 2019 based on Google Earth historical imagery. Looking only at the collisions from 2019 – 2020, a total of 6 collisions occurred, with 4 PDO collisions and 2 casualties.
- As indicated in the City of Courtenay's Draft OCP (January 2022) and the *Arden Corridor Local Area Plan* (2013), further intersection improvements may be installed at Arden Road and Cumberland Road. Options considered in the plans include the potential for a roundabout at the intersection, which may mitigate any existing safety issues.

Table 9: ICBC Collision Data - 2016 - 2020

Intersection	Casualty	Property Damage Only	Total
Cumberland Rd and Arden Rd	6	15	21
Copperfield Rd and Arden Rd	0	1	1
Lake Trail Rd and Arden Rd	1	2	3

8. Conclusion and Recommendation

8.1. Conclusion

The purpose of this letter report was to review the traffic operations for the proposed residential developments at 2650 Copperfield Road in Courtenay, BC.

Trip Generation

The proposed developments are expected to generate 24 and 32 new vehicle trips per hour in the weekday AM and PM peak periods respectively. A total of 336 trips are expected to be generated per weekday.

Traffic Analysis

Traffic analysis was conducted for the study intersections during the weekday AM and PM peak hour periods. Analysis was also conducted for three horizon years, the Existing (2022), Opening Day (2025) and Future Year (2035).

Existing (2022)

For Existing (2022) conditions, all intersection movements operate at LOS C or better.

Opening Day (2025)

During the Opening Day (2025) scenario all intersection movements are expected to operate at LOS D or better with and without development traffic.

Future Year (2035)

During the Future Year (2035) scenario, the southbound Arden Road approach of Cumberland Road / Arden Road is expected to deteriorate to LOS E in the background case PM peak. With the addition of development traffic, the southbound Arden Road approach is expected to remain within LOS E. Despite the LOS E performance, queues are expected to be manageable, with 95th percentile queues of 28m (~4 passenger cars) for the “with development” case. All other intersection movements are expected to perform at LOS D or better with and without development traffic in 2035. The Transportation Master Plan contemplates a signal our roundabout at the Cumberland Road/Arden Road intersection, which would improve the Level of Service.

Site Access

No operational or safety concerns were identified at the site access along Copperfield Road.

Safety Analysis

Collision data collected over a 5-year period, from 2016 to 2020, was reviewed at the study intersections. A total of 21 collisions were recorded at Cumberland Road / Arden Road, 1 collision at Copperfield Road / Arden Road, and 3 collisions at Lake Trail Road / Arden Road.

8.2. Recommendation

Given the acceptable performance of the study intersections throughout each time horizon with the addition of development traffic, improvements to the intersections are not expected to be required.

9. Closing

If you have any questions or concerns regarding this analysis, please contact the undersigned.

Yours truly,

McElhanney Ltd.

Prepared by:

Davis Su, EIT.
Traffic Engineer
Traffic & Road Safety Division
dsu@mcelhanney.com
604-424-4803

Reviewed by:

2022-05-10

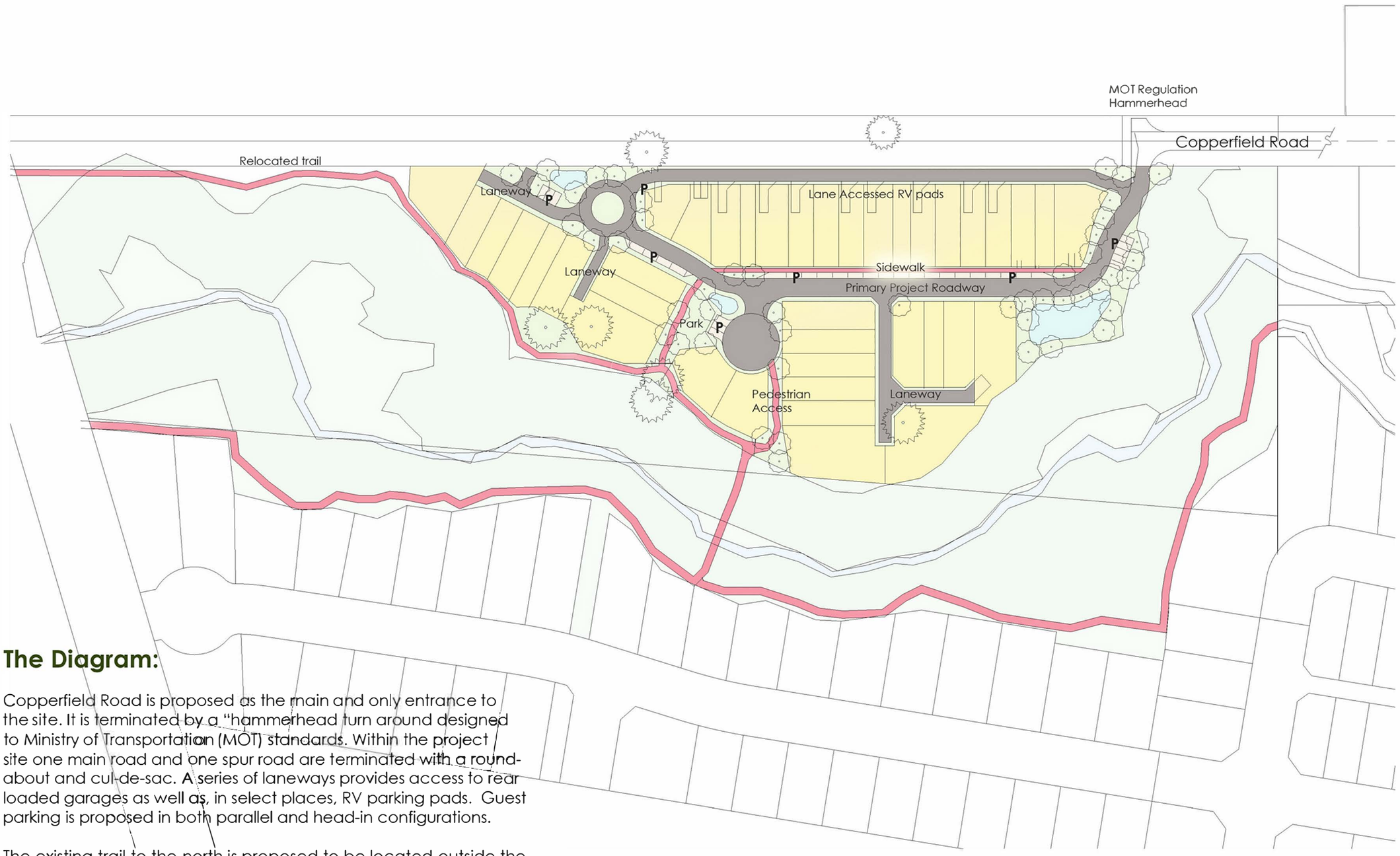
Mark Merlo, P.Eng., PTOE
Senior Transportation Engineer
Traffic & Road Safety Division
mmerlo@mcelhanney.com
236-317-5830

Attachments:
A – Development Site Plan
B – Traffic Count Data
C – Synchro Reports
D – Statement of Limitations

CC:
Neil Penner, McElhanney Ltd.
Andy Gaylor, McElhanney Ltd.
Bob Bigelow, McElhanney Ltd.

ATTACHMENT A

Site Plan



The Diagram:

Copperfield Road is proposed as the main and only entrance to the site. It is terminated by a "hammerhead turn around designed to Ministry of Transportation (MOT) standards. Within the project site one main road and one spur road are terminated with a round-about and cul-de-sac. A series of laneways provides access to rear loaded garages as well as, in select places, RV parking pads. Guest parking is proposed in both parallel and head-in configurations.

The existing trail to the north is proposed to be located outside the riparian buffer areas. This new neighbourhood is connected to the existing trail network to the south requiring one stream crossing. This trail network connects to an internal sidewalk giving residents access to the trail network beyond.

Vehicular and Pedestrian Movement Plan

May 5 2020

ATTACHMENT B

Traffic Counts

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

All Vehicles

Passenger Cars + Light Trucks + Heavy Trucks

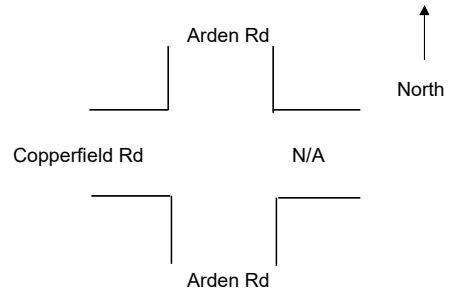
Location:

N/S Street Arden Rd
E/W Street Copperfield
City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Tuesday
Date 3/29/2022

Weather:
AM: Clear
Mid:
PM: Cloudy



Time	Northbound			Southbound			Westbound			Eastbound			15min	1 hour
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Totals	Totals
AM														
6:00 - 6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 6:30	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 - 7:15	0	3	0	0	5	0	0	0	0	1	0	1	10	10
- 7:30	0	2	0	0	7	0	0	0	0	1	0	0	10	20
- 7:45	0	2	0	0	14	0	0	0	0	0	0	2	18	38
- 8:00	0	7	0	0	7	0	0	0	0	0	0	0	14	52
8:00 - 8:15	0	6	0	0	10	0	0	0	0	2	0	1	19	61
- 8:30	1	5	0	0	14	0	0	0	0	0	0	3	23	74
- 8:45	1	6	0	0	18	0	0	0	0	1	0	1	27	83
- 9:00	0	11	0	0	13	0	0	0	0	0	0	2	26	95
Midday														
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- 1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM														
3:00 - 3:15	2	12	0	0	21	0	0	0	0	0	0	1	36	
- 3:30	2	15	0	0	11	0	0	0	0	0	0	2	30	
- 3:45	0	21	0	0	10	0	0	0	0	1	0	1	33	
- 4:00	1	22	0	0	13	0	0	0	0	0	0	0	36	135
4:00 - 4:15	2	17	0	0	8	0	0	0	0	0	0	0	27	126
- 4:30	0	19	0	0	10	0	0	0	0	0	0	1	30	126
- 4:45	0	25	0	0	14	0	0	0	0	0	0	1	40	133
- 5:00	1	19	0	0	10	0	0	0	0	0	0	0	30	127
5:00 - 5:15	2	15	0	0	11	0	0	0	0	0	0	2	30	130
- 5:30	2	19	0	0	11	0	0	0	0	0	0	1	33	133
- 5:45	3	20	0	0	15	0	0	0	0	1	0	1	40	133
- 6:00	0	13	0	0	10	0	0	0	0	1	0	0	24	127

PEAK HOUR SUMMARY													Hourly Traffic	%PC	%LT	%HV	Total
AM peak hour	2	28	0	0	55	0	0	0	0	3	0	7	95	98.9%	1.1%	0.0%	100%
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
PM peak hour	5	70	0	0	55	0	0	0	0	1	0	4	135	97.0%	2.2%	0.7%	100%

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

Passenger Cars

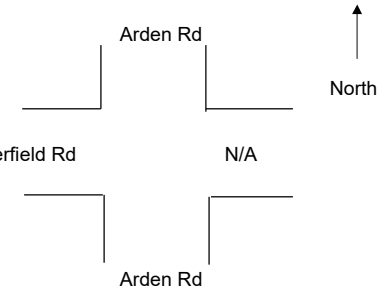
Location:

N/S Street Arden Rd
E/W Street Copperfield
City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Tuesday
Date 3/29/2022

Weather:
AM: Clear
Mid:
PM: Cloudy



Time	Northbound			Southbound			Westbound			Eastbound			15min Totals	1 hour Totals
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
AM														
6:00 - 6:15													0	
- 6:30													0	
- 6:45													0	
- 7:00													0	0
7:00 - 7:15		3			5					1		1	10	10
- 7:30		2			7					1			10	20
- 7:45		2			14							2	18	38
- 8:00		7			6								13	51
8:00 - 8:15		6			10					2		1	19	60
- 8:30	1	5			14							3	23	73
- 8:45	1	6			17					1		1	26	81
- 9:00		11			13							2	26	94
Midday														
11:00 - 11:15													0	
- 11:30													0	
- 11:45													0	
- 12:00													0	0
12:00 - 12:15													0	0
- 12:30													0	0
- 12:45													0	0
- 1:00													0	0
PM														
3:00 - 3:15	2	11			21							1	35	
- 3:30	2	14			11							2	29	
- 3:45		20			9					1		1	31	
- 4:00	1	22			13								36	131
4:00 - 4:15	2	17			8								27	123
- 4:30		19			9							1	29	123
- 4:45		24			14							1	39	131
- 5:00	1	19			10								30	125
5:00 - 5:15	2	15			11							2	30	128
- 5:30	2	19			11							1	33	132
- 5:45	3	20			15					1		1	40	133
- 6:00		13			10					1			24	127
PEAK HOUR SUMMARY [1.]													Hourly Traffic	
AM peak hour	2	28	0	0	54	0	0	0	0	3	0	7	94	
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM peak hour	5	67	0	0	54	0	0	0	0	1	0	4	131	

[1.] Peak hour volume based on peak hour of All Vehicles

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

Light Trucks

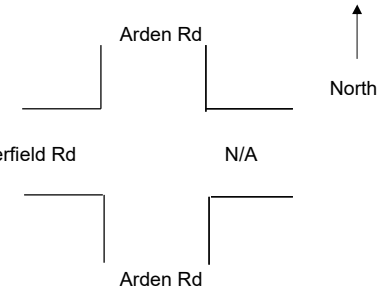
Location:

N/S Street Arden Rd
E/W Street Copperfield
City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Tuesday
Date 3/29/2022

Weather:
AM: Clear
Mid:
PM: Cloudy



Time	Northbound			Southbound			Westbound			Eastbound			15min	1 hour
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Totals	Totals
AM														
6:00 - 6:15													0	
- 6:30													0	
- 6:45													0	
- 7:00													0	0
7:00 - 7:15													0	0
- 7:30													0	0
- 7:45													0	0
- 8:00					1								1	1
8:00 - 8:15													0	1
- 8:30													0	1
- 8:45					1								1	2
- 9:00													0	1
Midday														
11:00 - 11:15													0	
- 11:30													0	
- 11:45													0	
- 12:00													0	0
12:00 - 12:15													0	0
- 12:30													0	0
- 12:45													0	0
- 1:00													0	0
PM														
3:00 - 3:15		1											1	
- 3:30													0	
- 3:45		1			1								2	
- 4:00													0	3
4:00 - 4:15													0	2
- 4:30					1								1	3
- 4:45													0	1
- 5:00													0	1
5:00 - 5:15													0	1
- 5:30													0	0
- 5:45													0	0
- 6:00													0	0
PEAK HOUR SUMMARY [1.]														
													Hourly Traffic	
AM peak hour	0	0	0	0	1	0	0	0	0	0	0	0	1	
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM peak hour	0	2	0	0	1	0	0	0	0	0	0	0	3	

[1.] Peak hour volume based on peak hour of All Vehicles

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

Heavy Trucks

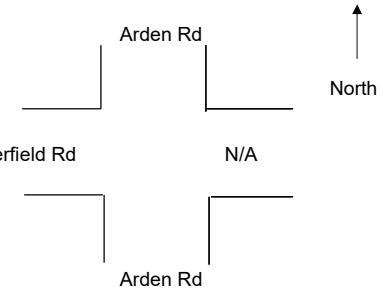
Location:

N/S Street Arden Rd
E/W Street Copperfield
City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Tuesday
Date 3/29/2022

Weather:
AM: Clear
Mid:
PM: Cloudy



Time	Northbound			Southbound			Westbound			Eastbound			15min Totals	1 hour Totals
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
AM														
6:00 - 6:15													0	
- 6:30													0	
- 6:45													0	
- 7:00													0	0
7:00 - 7:15													0	0
- 7:30													0	0
- 7:45													0	0
- 8:00													0	0
8:00 - 8:15													0	0
- 8:30													0	0
- 8:45													0	0
- 9:00													0	0
Midday														
11:00 - 11:15													0	
- 11:30													0	
- 11:45													0	
- 12:00													0	0
12:00 - 12:15													0	0
- 12:30													0	0
- 12:45													0	0
- 1:00													0	0
PM														
3:00 - 3:15													0	
- 3:30		1											1	
- 3:45													0	
- 4:00													0	1
4:00 - 4:15													0	1
- 4:30													0	0
- 4:45		1											1	1
- 5:00													0	1
5:00 - 5:15													0	1
- 5:30													0	1
- 5:45													0	0
- 6:00													0	0
PEAK HOUR SUMMARY [1.]													Hourly Traffic	
AM peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM peak hour	0	1	0	0	0	0	0	0	0	0	0	0	1	

[1.] Peak hour volume based on peak hour of All Vehicles

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

Pedestrian

Location:

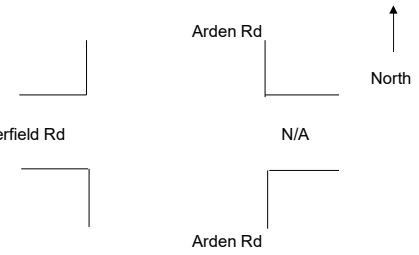
N/S Street Arden Rd
E/W Street Copperfield

City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Tuesday
Date 3/29/2022

Weather:
AM: Clear
Mid:
PM: Cloudy



Time	South Leg				North Leg				East Leg				West Leg				15min	1 hour
	Child	AO	Senior	Disabled	Child	AO	Senior	Disabled	Child	AO	Senior	Disabled	Child	AO	Senior	Disabled	Totals	Totals
AM																		
6:00 - 6:15																	0	
- 6:30																	0	
- 6:45																	0	
- 7:00																	0	0
7:00 - 7:15																	0	0
- 7:30																	0	0
- 7:45																	0	0
- 8:00																	0	0
8:00 - 8:15							1										1	1
- 8:30																	0	1
- 8:45		2															2	3
- 9:00																	0	3
Midday																		
11:00 - 11:15																	0	
- 11:30																	0	
- 11:45																	0	
- 12:00																	0	0
12:00 - 12:15																	0	0
- 12:30																	0	0
- 12:45																	0	0
- 1:00																	0	0
PM																		
3:00 - 3:15		1				1											2	
- 3:30						1								2			3	
- 3:45																	0	
- 4:00																	0	5
4:00 - 4:15		1															1	4
- 4:30																	0	1
- 4:45																	0	1
- 5:00						2											2	3
5:00 - 5:15																	0	2
- 5:30																	0	2
- 5:45																	0	2
- 6:00																	0	0
PEAK HOUR SUMMARY [1.]																	Hourly Traffic	
AM peak hour	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM peak hour	0	1	0	0	0	2	0	0	0	0	0	0	0	2	0	0	5	

[1.] Peak hour volume based on peak hour of All Vehicles

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

Bicyclist

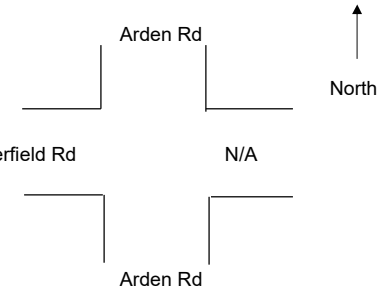
Location:

N/S Street Arden Rd
E/W Street Copperfield
City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Tuesday
Date 3/29/2022

Weather:
AM: Clear
Mid:
PM: Cloudy



Time	Northbound			Southbound			Westbound			Eastbound			15min Totals	1 hour Totals
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
AM														
6:00 - 6:15													0	
- 6:30													0	
- 6:45													0	
- 7:00													0	0
7:00 - 7:15													0	0
- 7:30					1								1	1
- 7:45													0	1
- 8:00													0	1
8:00 - 8:15													0	1
- 8:30													0	0
- 8:45					1				1				2	2
- 9:00		1											1	3
Midday														
11:00 - 11:15													0	
- 11:30													0	
- 11:45													0	
- 12:00													0	0
12:00 - 12:15													0	0
- 12:30													0	0
- 12:45													0	0
- 1:00													0	0
PM														
3:00 - 3:15													0	
- 3:30		1											1	
- 3:45		2											2	
- 4:00		1			1								2	5
4:00 - 4:15													0	5
- 4:30		1			1								2	6
- 4:45		1											1	5
- 5:00													0	3
5:00 - 5:15		1			2				1				4	7
- 5:30													0	5
- 5:45					2								2	6
- 6:00	1	1											2	8
PEAK HOUR SUMMARY [1]													Hourly Traffic	
AM peak hour	0	1	0	0	1	0	0	0	1	0	0	0	3	
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM peak hour	0	4	0	0	1	0	0	0	0	0	0	0	5	

[1] Peak hour volume based on peak hour of All Vehicles

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

All Vehicles

Passenger Cars + Light Trucks + Heavy Trucks

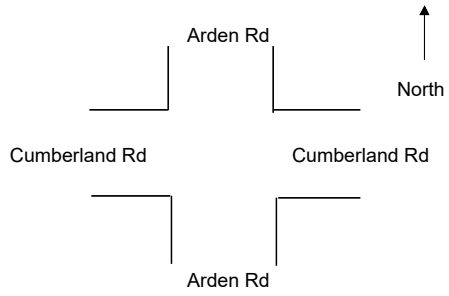
Location:

N/S Street Arden Rd
E/W Street Cumberland
City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Thursday
Date 3/31/2022

Weather:
AM: Clear
Mid:
PM: Sun / Clouds



Time	Northbound			Southbound			Westbound			Eastbound			15min Totals	1 hour Totals
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
AM														
6:00 - 6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 6:30	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 - 7:15	1	0	3	4	0	2	1	25	0	0	30	1	67	67
- 7:30	2	1	5	8	0	4	2	27	0	0	21	1	71	138
- 7:45	1	0	6	7	0	3	3	36	2	1	34	3	96	234
- 8:00	1	1	9	8	2	3	2	46	4	0	35	1	112	346
8:00 - 8:15	3	4	5	14	2	3	3	35	1	2	49	0	121	400
- 8:30	4	2	10	12	0	2	5	45	5	3	56	1	145	474
- 8:45	1	0	9	7	0	3	4	24	4	0	59	2	113	491
- 9:00	4	1	6	10	0	3	5	51	8	2	78	4	172	551
Midday														
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- 1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM														
3:00 - 3:15	1	1	9	15	3	1	7	76	15	3	53	1	185	
- 3:30	1	2	10	16	1	1	8	65	15	1	52	3	175	
- 3:45	2	0	9	10	1	5	7	61	9	2	64	3	173	
- 4:00	1	0	9	9	1	2	6	69	20	4	67	5	193	726
4:00 - 4:15	3	4	5	13	3	5	11	59	12	3	62	2	182	723
- 4:30	2	2	8	11	1	3	8	72	16	0	62	4	189	737
- 4:45	0	1	3	13	0	8	16	74	16	3	64	6	204	768
- 5:00	0	0	6	13	0	4	5	83	10	3	48	4	176	751
5:00 - 5:15	2	0	5	5	0	2	8	70	23	5	82	3	205	774
- 5:30	6	1	3	10	1	5	10	60	14	7	58	0	175	760
- 5:45	2	0	7	10	1	1	1	52	9	3	46	4	136	692
- 6:00	0	1	4	9	1	1	5	49	8	2	34	3	117	633

PEAK HOUR SUMMARY													Hourly Traffic	%PC	%LT	%HV	Total
AM peak hour	12	7	30	43	2	11	17	155	18	7	242	7	551	98.9%	0.0%	1.1%	100%
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
PM peak hour	4	3	22	42	1	17	37	299	65	11	256	17	774	99.1%	0.1%	0.8%	100%

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

Passenger Cars

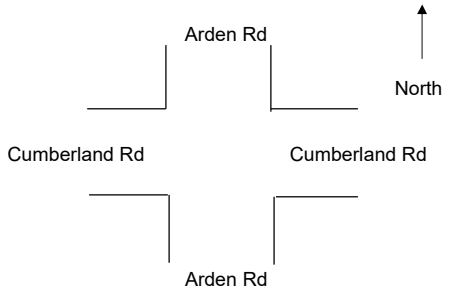
Location:

N/S Street Arden Rd
E/W Street Cumberland
City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Thursday
Date 3/31/2022

Weather:
AM: Clear
Mid:
PM: Sun / Clouds



Time	Northbound			Southbound			Westbound			Eastbound			15min Totals	1 hour Totals
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
AM														
6:00 - 6:15													0	
- 6:30													0	
- 6:45													0	
- 7:00													0	0
7:00 - 7:15	1		3	4		2	1	25			23	1	60	60
- 7:30	2	1	5	8		4	2	25			19	1	67	127
- 7:45	1		6	7		3	3	34	2	1	33	2	92	219
- 8:00	1	1	9	7	2	3	2	45	4		33	1	108	327
8:00 - 8:15	2	4	5	14	2	3	3	32	1	2	49		117	384
- 8:30	4	2	10	11		2	5	45	5	3	56	1	144	461
- 8:45	1		9	7		3	4	24	4		59	2	113	482
- 9:00	4	1	6	10		3	5	51	8	2	77	4	171	545
Midday														
11:00 - 11:15													0	
- 11:30													0	
- 11:45													0	
- 12:00													0	0
12:00 - 12:15													0	0
- 12:30													0	0
- 12:45													0	0
- 1:00													0	0
PM														
3:00 - 3:15	1	1	9	15	3	1	7	75	15	3	52	1	183	
- 3:30	1	2	10	16	1	1	8	64	15	1	50	3	172	
- 3:45	2		9	10	1	5	7	60	9	2	59	3	167	
- 4:00	1		9	8	1	2	6	67	19	4	67	5	189	711
4:00 - 4:15	2	4	5	13	3	5	11	58	12	3	61	2	179	707
- 4:30	2	2	8	9	1	3	8	72	15		62	4	186	721
- 4:45		1	3	13		8	16	73	16	3	64	6	203	757
- 5:00			6	13		4	5	82	10	3	48	4	175	743
5:00 - 5:15	2		5	5		2	8	70	23	5	81	2	203	767
- 5:30	6	1	3	10	1	5	10	59	14	7	58		174	755
- 5:45	2		7	10	1	1	1	52	9	3	45	4	135	687
- 6:00		1	4	9	1	1	5	49	8	2	34	3	117	629
PEAK HOUR SUMMARY [1.]													Hourly Traffic	
AM peak hour	11	7	30	42	2	11	17	152	18	7	241	7	545	
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM peak hour	4	3	22	40	1	17	37	297	64	11	255	16	767	

[1.] Peak hour volume based on peak hour of All Vehicles

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

Light Trucks

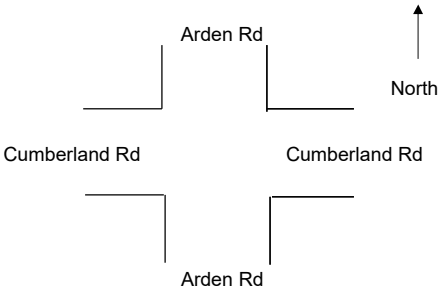
Location:

N/S Street Arden Rd
E/W Street Cumberland
City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Thursday
Date 3/31/2022

Weather:
AM: Clear
Mid:
PM: Sun / Clouds



Time	Northbound			Southbound			Westbound			Eastbound			15min Totals	1 hour Totals
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
AM														
6:00 - 6:15													0	
- 6:30													0	
- 6:45													0	
- 7:00													0	0
7:00 - 7:15													0	0
- 7:30													0	0
- 7:45													0	0
- 8:00				1									1	1
8:00 - 8:15													0	1
- 8:30													0	1
- 8:45													0	1
- 9:00													0	0
Midday														
11:00 - 11:15													0	
- 11:30													0	
- 11:45													0	
- 12:00													0	0
12:00 - 12:15													0	0
- 12:30													0	0
- 12:45													0	0
- 1:00													0	0
PM														
3:00 - 3:15													0	
- 3:30													0	
- 3:45													0	
- 4:00				1									1	1
4:00 - 4:15													0	1
- 4:30				1									1	2
- 4:45													0	2
- 5:00													0	1
5:00 - 5:15													0	1
- 5:30													0	0
- 5:45													0	0
- 6:00													0	0
PEAK HOUR SUMMARY [1.]													Hourly Traffic	
AM peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM peak hour	0	0	0	1	0	0	0	0	0	0	0	0	1	

[1.] Peak hour volume based on peak hour of All Vehicles

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

Heavy Trucks

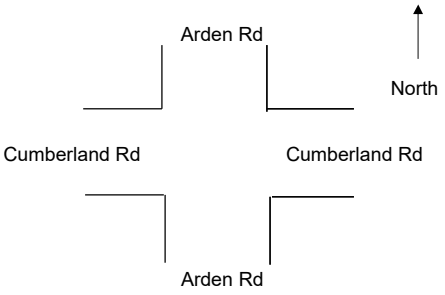
Location:

N/S Street Arden Rd
E/W Street Cumberland
City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Thursday
Date 3/31/2022

Weather:
AM: Clear
Mid:
PM: Sun / Clouds



Time	Northbound			Southbound			Westbound			Eastbound			15min Totals	1 hour Totals
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
AM														
6:00 - 6:15													0	
- 6:30													0	
- 6:45													0	
- 7:00													0	0
7:00 - 7:15											7		7	7
- 7:30								2			2		4	11
- 7:45								2			1	1	4	15
- 8:00								1			2		3	18
8:00 - 8:15	1							3					4	15
- 8:30				1									1	12
- 8:45													0	8
- 9:00											1		1	6
Midday														
11:00 - 11:15													0	
- 11:30													0	
- 11:45													0	
- 12:00													0	0
12:00 - 12:15													0	0
- 12:30													0	0
- 12:45													0	0
- 1:00													0	0
PM														
3:00 - 3:15								1			1		2	
- 3:30								1			2		3	
- 3:45								1			5		6	
- 4:00								2	1				3	14
4:00 - 4:15	1							1			1		3	15
- 4:30				1					1				2	14
- 4:45								1					1	9
- 5:00								1					1	7
5:00 - 5:15											1	1	2	6
- 5:30								1					1	5
- 5:45											1		1	5
- 6:00													0	4
PEAK HOUR SUMMARY [1.]													Hourly Traffic	
AM peak hour	1	0	0	1	0	0	0	3	0	0	1	0	6	
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM peak hour	0	0	0	1	0	0	0	2	1	0	1	1	6	

[1.] Peak hour volume based on peak hour of All Vehicles

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

Pedestrian

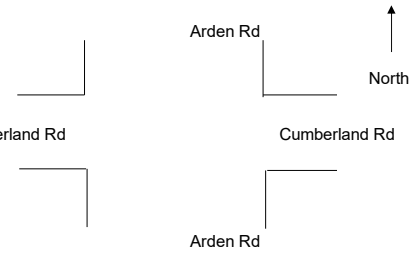
Location:

N/S Street Arden Rd
E/W Street Cumberland
City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Thursday
Date 3/31/2022

Weather:
AM: Clear
Mid:
PM: Sun / Clouds



Time	South Leg				North Leg				East Leg				West Leg				15min	1 hour
	Child	AO	Senior	Disabled	Child	AO	Senior	Disabled	Child	AO	Senior	Disabled	Child	AO	Senior	Disabled	Totals	Totals
AM																		
6:00 - 6:15																	0	
- 6:30																	0	
- 6:45																	0	
- 7:00																	0	0
7:00 - 7:15		1				2											3	3
- 7:30																	0	3
- 7:45																	0	3
- 8:00										1				1			2	5
8:00 - 8:15																	0	2
- 8:30		1															1	3
- 8:45							1										1	4
- 9:00							1										1	3
Midday																		
11:00 - 11:15																	0	
- 11:30																	0	
- 11:45																	0	
- 12:00																	0	0
12:00 - 12:15																	0	0
- 12:30																	0	0
- 12:45																	0	0
- 1:00																	0	0
PM																		
3:00 - 3:15																	0	
- 3:30																	0	
- 3:45			4			3											7	
- 4:00														1			1	8
4:00 - 4:15																	0	8
- 4:30						1				1							2	10
- 4:45		1				1											2	5
- 5:00										2	2						4	8
5:00 - 5:15							1				1						2	10
- 5:30		3															3	11
- 5:45		1								2				1			4	13
- 6:00		2								1							3	12
PEAK HOUR SUMMARY [1.]																	Hourly Traffic	
AM peak hour	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3	
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM peak hour	0	1	0	0	0	2	1	0	0	3	3	0	0	0	0	0	10	

[1.] Peak hour volume based on peak hour of All Vehicles

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

Bicyclist

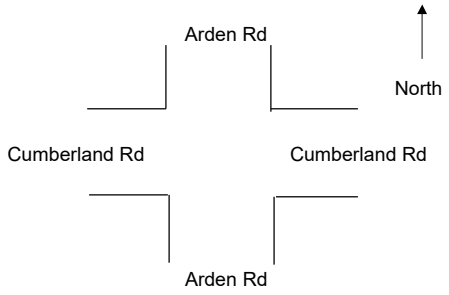
Location:

N/S Street Arden Rd
E/W Street Cumberland
City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Thursday
Date 3/31/2022

Weather:
AM: Clear
Mid:
PM: Sun / Clouds



Time	Northbound			Southbound			Westbound			Eastbound			15min Totals	1 hour Totals
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
AM														
6:00 - 6:15													0	
- 6:30													0	
- 6:45													0	
- 7:00													0	0
7:00 - 7:15											2		2	2
- 7:30											5		5	7
- 7:45													0	7
- 8:00													0	7
8:00 - 8:15													0	5
- 8:30									3		1		4	4
- 8:45											2		2	6
- 9:00				1		1		2					4	10
Midday														
11:00 - 11:15													0	
- 11:30													0	
- 11:45													0	
- 12:00													0	0
12:00 - 12:15													0	0
- 12:30													0	0
- 12:45													0	0
- 1:00													0	0
PM														
3:00 - 3:15								1					1	
- 3:30		1	1	3				1					6	
- 3:45													0	
- 4:00		1			1			2			1		5	12
4:00 - 4:15	1			1				1					3	14
- 4:30					1						1		2	10
- 4:45								2	1		2		5	15
- 5:00													0	10
5:00 - 5:15								1		1			2	9
- 5:30								1					1	8
- 5:45								2					2	5
- 6:00								3					3	8
PEAK HOUR SUMMARY [1.]													Hourly Traffic	
AM peak hour	0	0	0	1	0	1	0	2	3	0	3	0	10	
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM peak hour	0	0	0	0	1	0	0	3	1	1	3	0	9	

[1.] Peak hour volume based on peak hour of All Vehicles

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

All Vehicles

Passenger Cars + Light Trucks + Heavy Trucks

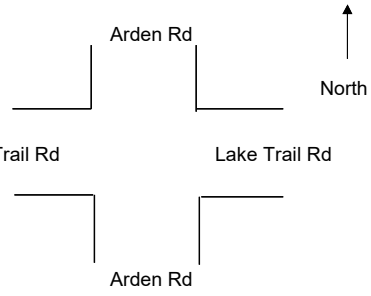
Location:

N/S Street Arden Rd
E/W Street Lake Trail R
City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Wednesday
Date 3/30/2022

Weather:
AM: Cloudy
Mid:
PM: Sun / Clouds



Time	Northbound			Southbound			Westbound			Eastbound			15min	1 hour
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Totals	Totals
AM														
6:00 - 6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 6:30	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 - 7:15	2	0	1	1	0	0	4	12	0	0	20	2	42	42
- 7:30	2	0	2	0	0	0	1	15	0	0	23	4	47	89
- 7:45	4	0	2	0	1	0	1	18	0	0	17	4	47	136
- 8:00	4	1	4	0	0	0	2	20	0	0	22	7	60	196
8:00 - 8:15	4	0	0	0	1	0	1	18	0	2	33	3	62	216
- 8:30	3	0	2	0	1	0	1	17	1	0	32	3	60	229
- 8:45	5	0	3	1	0	0	0	15	0	0	26	10	60	242
- 9:00	0	1	1	0	0	1	2	19	0	0	18	10	52	234
Midday														
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	
- 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- 1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM														
3:00 - 3:15	6	0	4	1	1	0	4	36	2	0	38	4	96	
- 3:30	4	0	3	1	0	0	3	30	0	0	44	7	92	
- 3:45	13	1	3	2	1	0	4	47	0	0	48	7	126	
- 4:00	7	0	1	0	0	0	6	39	2	0	28	5	88	402
4:00 - 4:15	8	0	2	0	0	0	4	39	1	0	45	3	102	408
- 4:30	14	0	1	1	0	0	5	50	2	0	26	4	103	419
- 4:45	17	0	1	1	1	1	2	45	0	0	30	4	102	395
- 5:00	4	0	4	1	0	0	2	50	0	0	36	4	101	408
5:00 - 5:15	7	0	3	0	0	1	2	40	1	0	25	12	91	397
- 5:30	6	0	3	0	1	0	7	47	0	0	22	5	91	385
- 5:45	8	0	1	0	0	0	1	33	0	0	26	6	75	358
- 6:00	9	1	2	1	0	0	2	23	0	0	27	5	70	327

PEAK HOUR SUMMARY													Hourly Traffic	%PC	%LT	%HV	Total
AM peak hour	16	1	9	1	2	0	4	70	1	2	113	23	242	97.1%	0.4%	2.5%	100%
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
PM peak hour	42	1	7	3	1	0	19	175	5	0	147	19	419	97.1%	0.7%	2.1%	100%

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

Passenger Cars

Location:

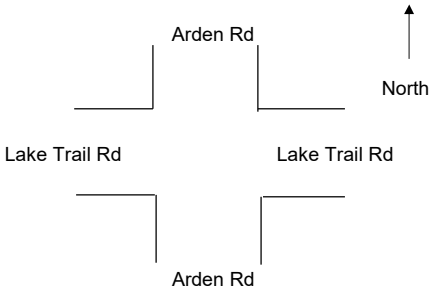
N/S Street Arden Rd
E/W Street Lake Trail R

City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Wednesday
Date 3/30/2022

Weather:
AM: Cloudy
Mid:
PM: Sun / Clouds



Time	Northbound			Southbound			Westbound			Eastbound			15min Totals	1 hour Totals
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
AM														
6:00 - 6:15													0	
- 6:30													0	
- 6:45													0	
- 7:00													0	0
7:00 - 7:15	2		1	1			4	11			19	2	40	40
- 7:30	2		2				1	14			23	4	46	86
- 7:45	4		2		1		1	16			17	4	45	131
- 8:00	4	1	4				1	20			20	7	57	188
8:00 - 8:15	4				1		1	17		2	32	3	60	208
- 8:30	3		2		1		1	16	1		31	3	58	220
- 8:45	5		3	1				15			26	10	60	235
- 9:00		1	1			1	2	19			17	10	51	229
Midday														
11:00 - 11:15													0	
- 11:30													0	
- 11:45													0	
- 12:00													0	0
12:00 - 12:15													0	0
- 12:30													0	0
- 12:45													0	0
- 1:00													0	0
PM														
3:00 - 3:15	6		4	1	1		3	33	2		36	4	90	
- 3:30	4		3	1			3	30			44	7	92	
- 3:45	13	1	3	2	1		4	45			45	7	121	
- 4:00	7		1				5	37	2		27	5	84	387
4:00 - 4:15	8		2				4	39	1		44	3	101	398
- 4:30	14		1	1			4	49	2		26	4	101	407
- 4:45	17		1	1	1	1	2	45			30	4	102	388
- 5:00	4		4	1			2	49			36	4	100	404
5:00 - 5:15	7		3			1	2	40	1		24	12	90	393
- 5:30	6		3		1		7	47			22	5	91	383
- 5:45	8		1				1	32			26	6	74	355
- 6:00	9	1	2	1			2	23			27	5	70	325
PEAK HOUR SUMMARY [1.]													Hourly Traffic	
AM peak hour	16	1	9	1	2	0	3	68	1	2	109	23	235	
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM peak hour	42	1	7	3	1	0	17	170	5	0	142	19	407	

[1.] Peak hour volume based on peak hour of All Vehicles

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

Light Trucks

Location:

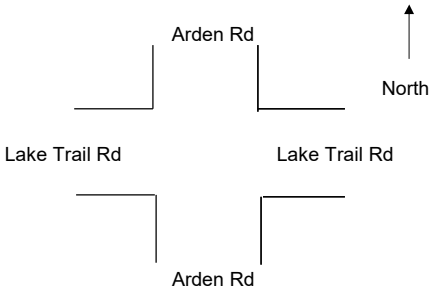
N/S Street Arden Rd
E/W Street Lake Trail R

City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Wednesday
Date 3/30/2022

Weather:
AM: Cloudy
Mid:
PM: Sun / Clouds



Time	Northbound			Southbound			Westbound			Eastbound			15min Totals	1 hour Totals
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
AM														
6:00 - 6:15													0	
- 6:30													0	
- 6:45													0	
- 7:00													0	0
7:00 - 7:15													0	0
- 7:30													0	0
- 7:45													0	0
- 8:00							1						1	1
8:00 - 8:15													0	1
- 8:30													0	1
- 8:45													0	1
- 9:00													0	0
Midday														
11:00 - 11:15													0	
- 11:30													0	
- 11:45													0	
- 12:00													0	0
12:00 - 12:15													0	0
- 12:30													0	0
- 12:45													0	0
- 1:00													0	0
PM														
3:00 - 3:15													0	
- 3:30													0	
- 3:45													0	
- 4:00							1	1					2	2
4:00 - 4:15													0	2
- 4:30							1						1	3
- 4:45													0	3
- 5:00													0	1
5:00 - 5:15													0	1
- 5:30													0	0
- 5:45													0	0
- 6:00													0	0
PEAK HOUR SUMMARY [1.]													Hourly Traffic	
AM peak hour	0	0	0	0	0	0	1	0	0	0	0	0	1	
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM peak hour	0	0	0	0	0	0	2	1	0	0	0	0	3	

[1.] Peak hour volume based on peak hour of All Vehicles

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

Heavy Trucks

Location:

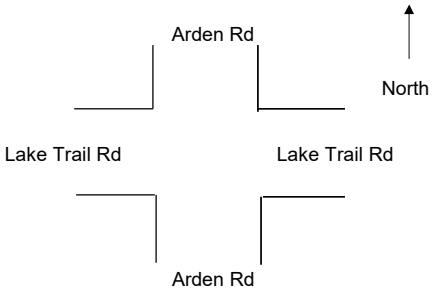
N/S Street Arden Rd
E/W Street Lake Trail R

City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Wednesday
Date 3/30/2022

Weather:
AM: Cloudy
Mid:
PM: Sun / Clouds



Time	Northbound			Southbound			Westbound			Eastbound			15min	1 hour
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Totals	Totals
AM														
6:00 - 6:15													0	
- 6:30													0	
- 6:45													0	
- 7:00													0	0
7:00 - 7:15								1			1		2	2
- 7:30								1					1	3
- 7:45								2					2	5
- 8:00											2		2	7
8:00 - 8:15								1			1		2	7
- 8:30								1			1		2	8
- 8:45													0	6
- 9:00											1		1	5
Midday														
11:00 - 11:15													0	
- 11:30													0	
- 11:45													0	
- 12:00													0	0
12:00 - 12:15													0	0
- 12:30													0	0
- 12:45													0	0
- 1:00													0	0
PM														
3:00 - 3:15							1	3			2		6	
- 3:30													0	
- 3:45								2			3		5	
- 4:00								1			1		2	13
4:00 - 4:15											1		1	8
- 4:30								1					1	9
- 4:45													0	4
- 5:00								1					1	3
5:00 - 5:15											1		1	3
- 5:30													0	2
- 5:45								1					1	3
- 6:00													0	2
PEAK HOUR SUMMARY [1.]													Hourly Traffic	
AM peak hour	0	0	0	0	0	0	0	2	0	0	4	0	6	
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM peak hour	0	0	0	0	0	0	0	4	0	0	5	0	9	

[1.] Peak hour volume based on peak hour of All Vehicles

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

Pedestrian

Location:

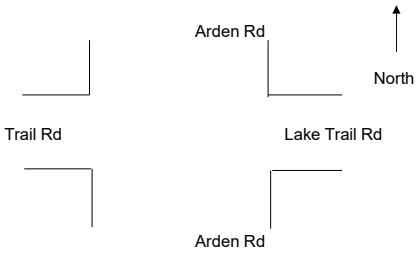
N/S Street Arden Rd
E/W Street Lake Trail R

City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Wednesday
Date 3/30/2022

Weather:
AM: Cloudy
Mid:
PM: Sun / Clouds



Time	South Leg				North Leg				East Leg				West Leg				15min	1 hour
	Child	AO	Senior	Disabled	Child	AO	Senior	Disabled	Child	AO	Senior	Disabled	Child	AO	Senior	Disabled	Totals	Totals
AM																		
6:00 - 6:15																	0	
- 6:30																	0	
- 6:45																	0	
- 7:00																	0	0
7:00 - 7:15																	0	0
- 7:30										2							2	2
- 7:45														1			1	3
- 8:00														1			1	4
8:00 - 8:15																	0	4
- 8:30																	0	2
- 8:45																	0	1
- 9:00																	0	0
Midday																		
11:00 - 11:15																	0	
- 11:30																	0	
- 11:45																	0	
- 12:00																	0	0
12:00 - 12:15																	0	0
- 12:30																	0	0
- 12:45																	0	0
- 1:00																	0	0
PM																		
3:00 - 3:15					1										1		2	
- 3:30					1												1	
- 3:45																	0	
- 4:00																	0	3
4:00 - 4:15		1															1	2
- 4:30													3				3	4
- 4:45		1			3	2											6	10
- 5:00						2											2	12
5:00 - 5:15																	0	11
- 5:30		1												1			2	10
- 5:45																	0	4
- 6:00		4															4	6
PEAK HOUR SUMMARY [1.]																	Hourly Traffic	
AM peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM peak hour	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	

[1.] Peak hour volume based on peak hour of All Vehicles

TRAFFIC COUNT SHEET

McElhanney Consulting Services Ltd.
Tel 604-596-0391, Fax 604-584-5050

Bicyclist

Location:

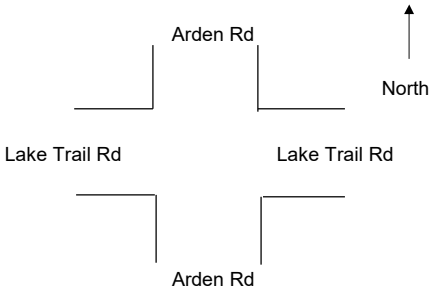
N/S Street Arden Rd
E/W Street Lake Trail R

City, Province Courtenay, BC

Job # **2211-47226-01**

Date:
Day Wednesday
Date 3/30/2022

Weather:
AM: Cloudy
Mid:
PM: Sun / Clouds

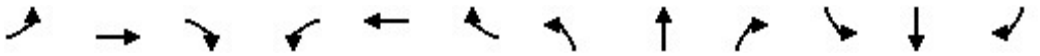


Time	Northbound			Southbound			Westbound			Eastbound			15min Totals	1 hour Totals
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
AM														
6:00 - 6:15													0	
- 6:30													0	
- 6:45													0	
- 7:00													0	0
7:00 - 7:15											2		2	2
- 7:30			1					1			1		3	5
- 7:45								2				1	3	8
- 8:00											1		1	9
8:00 - 8:15								1					1	8
- 8:30								1			2		3	8
- 8:45				1							1		2	7
- 9:00													0	6
Midday														
11:00 - 11:15													0	
- 11:30													0	
- 11:45													0	
- 12:00													0	0
12:00 - 12:15													0	0
- 12:30													0	0
- 12:45													0	0
- 1:00													0	0
PM														
3:00 - 3:15	1				2	2		2	2		1		10	
- 3:30								1					1	
- 3:45												1	1	
- 4:00				2				2			1		5	17
4:00 - 4:15			1					2	1				4	11
- 4:30								3					3	13
- 4:45								1					1	13
- 5:00		1						2					3	11
5:00 - 5:15								5	2		3		10	17
- 5:30	1							1					2	16
- 5:45								1					1	16
- 6:00							1	2			1		4	17
PEAK HOUR SUMMARY [1.]													Hourly Traffic	
AM peak hour	0	0	0	1	0	0	0	2	0	0	4	0	7	
MD peak hour	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM peak hour	0	0	1	2	0	0	0	7	1	0	1	1	13	

[1.] Peak hour volume based on peak hour of All Vehicles

ATTACHMENT C

Synchro Reports



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	256	17	37	299	65	4	3	22	42	1	17
Future Volume (Veh/h)	11	256	17	37	299	65	4	3	22	42	1	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.95	0.95	0.95	0.60	0.60	0.60	0.71	0.71	0.71
Hourly flow rate (vph)	14	324	22	39	315	68	7	5	37	59	1	24
Pedestrians					12			2			6	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	321			326			816	764	349	848	787	355
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	321			326			816	764	349	848	787	355
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			97	98	95	76	100	96
cM capacity (veh/h)	1238			1237			274	319	688	250	308	685

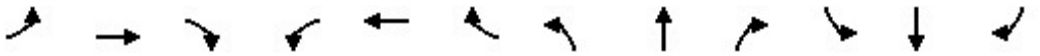
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	360	422	49	84
Volume Left	14	39	7	59
Volume Right	22	68	37	24
cSH	1238	1237	516	306
Volume to Capacity	0.01	0.03	0.09	0.27
Queue Length 95th (m)	0.3	0.8	2.5	8.7
Control Delay (s)	0.4	1.0	12.7	21.2
Lane LOS	A	A	B	C
Approach Delay (s)	0.4	1.0	12.7	21.2
Approach LOS			B	C

Intersection Summary				
Average Delay	3.3			
Intersection Capacity Utilization	51.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	4	5	70	55	1
Future Volume (Veh/h)	1	4	5	70	55	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.63	0.63	0.82	0.82	0.65	0.65
Hourly flow rate (vph)	2	6	6	85	85	2
Pedestrians	4			2	4	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	191	92	91			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	191	92	91			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	792	963	1505			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	91	87
Volume Left	2	6	0
Volume Right	6	0	2
cSH	914	1505	1700
Volume to Capacity	0.01	0.00	0.05
Queue Length 95th (m)	0.2	0.1	0.0
Control Delay (s)	9.0	0.5	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	0.5	0.0
Approach LOS	A		

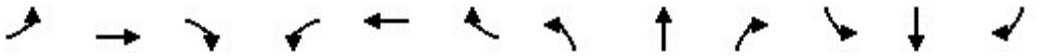
Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	18.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	147	19	19	175	5	42	1	7	3	1	1
Future Volume (Veh/h)	1	147	19	19	175	5	42	1	7	3	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.87	0.87	0.87	0.74	0.74	0.74	0.33	0.33	0.33
Hourly flow rate (vph)	1	196	25	22	201	6	57	1	9	9	3	3
Pedestrians		6						2				
Lane Width (m)		3.6						3.6				
Walking Speed (m/s)		1.2						1.2				
Percent Blockage		1						0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	207			223			471	464	210	468	473	210
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	207			223			471	464	210	468	473	210
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			88	100	99	98	99	100
cM capacity (veh/h)	1358			1344			490	488	831	494	482	829

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	222	229	67	15
Volume Left	1	22	57	9
Volume Right	25	6	9	3
cSH	1358	1344	519	534
Volume to Capacity	0.00	0.02	0.13	0.03
Queue Length 95th (m)	0.0	0.4	3.5	0.7
Control Delay (s)	0.0	0.9	13.0	11.9
Lane LOS	A	A	B	B
Approach Delay (s)	0.0	0.9	13.0	11.9
Approach LOS			B	B

Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	35.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	242	7	17	155	18	12	7	30	43	2	11
Future Volume (Veh/h)	7	242	7	17	155	18	12	7	30	43	2	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.74	0.74	0.74	0.77	0.77	0.77	0.74	0.74	0.74
Hourly flow rate (vph)	9	318	9	23	209	24	16	9	39	58	3	15
Pedestrians								2			4	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	213			320			626	602	324	655	609	225
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	213			320			626	602	324	655	609	225
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			96	98	95	83	99	98
cM capacity (veh/h)	1359			1238			378	401	715	343	398	812

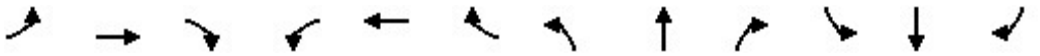
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	336	256	64	76
Volume Left	9	23	16	58
Volume Right	9	24	39	15
cSH	1359	1238	536	390
Volume to Capacity	0.01	0.02	0.12	0.19
Queue Length 95th (m)	0.2	0.5	3.2	5.7
Control Delay (s)	0.3	0.9	12.6	16.5
Lane LOS	A	A	B	C
Approach Delay (s)	0.3	0.9	12.6	16.5
Approach LOS			B	C

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	32.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	7	2	28	55	1
Future Volume (Veh/h)	3	7	2	28	55	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.83	0.68	0.68	0.76	0.76
Hourly flow rate (vph)	4	8	3	41	72	1
Pedestrians				4	2	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	122	76	73			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	122	76	73			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	873	984	1533			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	12	44	73
Volume Left	4	3	0
Volume Right	8	0	1
cSH	944	1533	1700
Volume to Capacity	0.01	0.00	0.04
Queue Length 95th (m)	0.3	0.0	0.0
Control Delay (s)	8.9	0.5	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	0.5	0.0
Approach LOS	A		

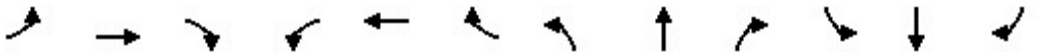
Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	14.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	113	23	4	70	1	16	1	9	1	2	1
Future Volume (Veh/h)	2	113	23	4	70	1	16	1	9	1	2	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.85	0.85	0.85	0.72	0.72	0.72	0.75	0.75	0.75
Hourly flow rate (vph)	2	124	25	5	82	1	22	1	13	1	3	1
Pedestrians		2										
Lane Width (m)		3.6										
Walking Speed (m/s)		1.2										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	83			149			238	234	136	246	246	84
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	83			149			238	234	136	246	246	84
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			97	100	99	100	100	100
cM capacity (veh/h)	1508			1426			712	665	915	696	655	976

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	151	88	36	5
Volume Left	2	5	22	1
Volume Right	25	1	13	1
cSH	1508	1426	772	710
Volume to Capacity	0.00	0.00	0.05	0.01
Queue Length 95th (m)	0.0	0.1	1.2	0.2
Control Delay (s)	0.1	0.5	9.9	10.1
Lane LOS	A	A	A	B
Approach Delay (s)	0.1	0.5	9.9	10.1
Approach LOS			A	B

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	18.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	257	7	18	164	19	13	7	32	46	2	12
Future Volume (Veh/h)	7	257	7	18	164	19	13	7	32	46	2	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.74	0.74	0.74	0.77	0.77	0.77	0.74	0.74	0.74
Hourly flow rate (vph)	9	338	9	24	222	26	17	9	42	62	3	16
Pedestrians								2			4	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	226			340			663	636	344	694	645	239
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	226			340			663	636	344	694	645	239
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			95	98	94	81	99	98
cM capacity (veh/h)	1344			1217			356	383	697	321	379	797

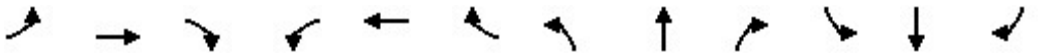
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	356	272	68	81
Volume Left	9	24	17	62
Volume Right	9	26	42	16
cSH	1344	1217	517	366
Volume to Capacity	0.01	0.02	0.13	0.22
Queue Length 95th (m)	0.2	0.5	3.6	6.7
Control Delay (s)	0.3	0.9	13.0	17.6
Lane LOS	A	A	B	C
Approach Delay (s)	0.3	0.9	13.0	17.6
Approach LOS			B	C

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	34.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	7	2	30	58	1
Future Volume (Veh/h)	3	7	2	30	58	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.83	0.68	0.68	0.76	0.76
Hourly flow rate (vph)	4	8	3	44	76	1
Pedestrians				4	2	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	128	80	77			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	128	80	77			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	865	979	1528			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	12	47	77
Volume Left	4	3	0
Volume Right	8	0	1
cSH	938	1528	1700
Volume to Capacity	0.01	0.00	0.05
Queue Length 95th (m)	0.3	0.0	0.0
Control Delay (s)	8.9	0.5	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	0.5	0.0
Approach LOS	A		

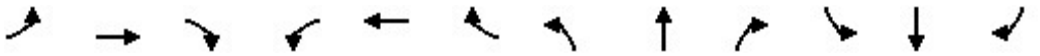
Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	14.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	120	24	4	74	1	17	1	10	1	2	0
Future Volume (Veh/h)	2	120	24	4	74	1	17	1	10	1	2	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.85	0.85	0.85	0.72	0.72	0.72	0.75	0.75	0.75
Hourly flow rate (vph)	2	132	26	5	87	1	24	1	14	1	3	0
Pedestrians		2										
Lane Width (m)		3.6										
Walking Speed (m/s)		1.2										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	88			158			250	247	145	261	260	90
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	88			158			250	247	145	261	260	90
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			97	100	98	100	100	100
cM capacity (veh/h)	1501			1416			699	654	905	680	644	970

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	160	93	39	4
Volume Left	2	5	24	1
Volume Right	26	1	14	0
cSH	1501	1416	760	652
Volume to Capacity	0.00	0.00	0.05	0.01
Queue Length 95th (m)	0.0	0.1	1.3	0.1
Control Delay (s)	0.1	0.4	10.0	10.6
Lane LOS	A	A	A	B
Approach Delay (s)	0.1	0.4	10.0	10.6
Approach LOS			A	B

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	19.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	272	18	39	317	69	4	3	23	45	1	18
Future Volume (Veh/h)	12	272	18	39	317	69	4	3	23	45	1	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.95	0.95	0.95	0.60	0.60	0.60	0.71	0.71	0.71
Hourly flow rate (vph)	15	344	23	41	334	73	7	5	38	63	1	25
Pedestrians					12			2			6	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	340			346			866	810	370	896	834	376
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	340			346			866	810	370	896	834	376
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			97	98	94	73	100	96
cM capacity (veh/h)	1219			1217			253	299	670	230	288	667

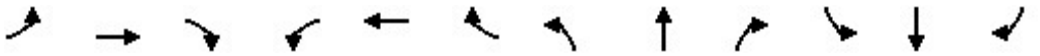
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	382	448	50	89
Volume Left	15	41	7	63
Volume Right	23	73	38	25
cSH	1219	1217	495	282
Volume to Capacity	0.01	0.03	0.10	0.32
Queue Length 95th (m)	0.3	0.8	2.7	10.5
Control Delay (s)	0.4	1.1	13.1	23.5
Lane LOS	A	A	B	C
Approach Delay (s)	0.4	1.1	13.1	23.5
Approach LOS			B	C

Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	53.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	4	5	74	58	1
Future Volume (Veh/h)	1	4	5	74	58	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.63	0.63	0.82	0.82	0.65	0.65
Hourly flow rate (vph)	2	6	6	90	89	2
Pedestrians	4			2	4	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	200	96	95			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	200	96	95			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	782	958	1500			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	96	91
Volume Left	2	6	0
Volume Right	6	0	2
cSH	907	1500	1700
Volume to Capacity	0.01	0.00	0.05
Queue Length 95th (m)	0.2	0.1	0.0
Control Delay (s)	9.0	0.5	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	0.5	0.0
Approach LOS	A		

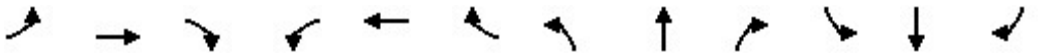
Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	18.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	156	20	20	186	5	45	1	7	3	1	1
Future Volume (Veh/h)	1	156	20	20	186	5	45	1	7	3	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.87	0.87	0.87	0.74	0.74	0.74	0.33	0.33	0.33
Hourly flow rate (vph)	1	208	27	23	214	6	61	1	9	9	3	3
Pedestrians		6						2				
Lane Width (m)		3.6						3.6				
Walking Speed (m/s)		1.2						1.2				
Percent Blockage		1						0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	220			237			499	492	224	496	502	223
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	220			237			499	492	224	496	502	223
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			87	100	99	98	99	100
cM capacity (veh/h)	1343			1328			469	470	817	472	464	815

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	236	243	71	15
Volume Left	1	23	61	9
Volume Right	27	6	9	3
cSH	1343	1328	496	514
Volume to Capacity	0.00	0.02	0.14	0.03
Queue Length 95th (m)	0.0	0.4	4.0	0.7
Control Delay (s)	0.0	0.9	13.5	12.2
Lane LOS	A	A	B	B
Approach Delay (s)	0.0	0.9	13.5	12.2
Approach LOS			B	B

Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	36.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	257	7	18	164	22	13	7	32	55	2	16
Future Volume (Veh/h)	8	257	7	18	164	22	13	7	32	55	2	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.74	0.74	0.74	0.77	0.77	0.77	0.74	0.74	0.74
Hourly flow rate (vph)	11	338	9	24	222	30	17	9	42	74	3	22
Pedestrians								2			4	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	226			340			675	640	344	700	651	241
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	226			340			675	640	344	700	651	241
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			95	98	94	77	99	97
cM capacity (veh/h)	1344			1217			346	380	697	317	375	795

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	358	276	68	99
Volume Left	11	24	17	74
Volume Right	9	30	42	22
cSH	1344	1217	511	368
Volume to Capacity	0.01	0.02	0.13	0.27
Queue Length 95th (m)	0.2	0.5	3.7	8.6
Control Delay (s)	0.3	0.9	13.1	18.3
Lane LOS	A	A	B	C
Approach Delay (s)	0.3	0.9	13.1	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	20	6	30	58	2
Future Volume (Veh/h)	8	20	6	30	58	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.83	0.68	0.68	0.76	0.76
Hourly flow rate (vph)	10	24	9	44	76	3
Pedestrians				4	2	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	142	82	79			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	142	82	79			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	99			
cM capacity (veh/h)	847	978	1526			

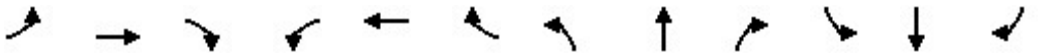
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	34	53	79
Volume Left	10	9	0
Volume Right	24	0	3
cSH	935	1526	1700
Volume to Capacity	0.04	0.01	0.05
Queue Length 95th (m)	0.9	0.1	0.0
Control Delay (s)	9.0	1.3	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	1.3	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	18.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	120	25	5	74	1	19	1	14	1	2	1
Future Volume (Veh/h)	2	120	25	5	74	1	19	1	14	1	2	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.85	0.85	0.85	0.72	0.72	0.72	0.75	0.75	0.75
Hourly flow rate (vph)	2	132	27	6	87	1	26	1	19	1	3	1
Pedestrians		2										
Lane Width (m)		3.6										
Walking Speed (m/s)		1.2										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	88			159			254	250	146	268	262	90
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	88			159			254	250	146	268	262	90
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			96	100	98	100	100	100
cM capacity (veh/h)	1501			1414			694	651	904	668	641	970

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	161	94	46	5
Volume Left	2	6	26	1
Volume Right	27	1	19	1
cSH	1501	1414	767	693
Volume to Capacity	0.00	0.00	0.06	0.01
Queue Length 95th (m)	0.0	0.1	1.5	0.2
Control Delay (s)	0.1	0.5	10.0	10.2
Lane LOS	A	A	A	B
Approach Delay (s)	0.1	0.5	10.0	10.2
Approach LOS			A	B

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	19.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	272	18	39	317	79	4	3	23	51	1	20
Future Volume (Veh/h)	16	272	18	39	317	79	4	3	23	51	1	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.95	0.95	0.95	0.60	0.60	0.60	0.71	0.71	0.71
Hourly flow rate (vph)	20	344	23	41	334	83	7	5	38	72	1	28
Pedestrians					12			2			6	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	340			346			884	820	370	912	850	382
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	340			346			884	820	370	912	850	382
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			97	98	94	68	100	96
cM capacity (veh/h)	1219			1217			244	294	670	224	281	662

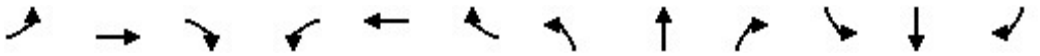
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	387	458	50	101
Volume Left	20	41	7	72
Volume Right	23	83	38	28
cSH	1219	1217	488	275
Volume to Capacity	0.02	0.03	0.10	0.37
Queue Length 95th (m)	0.4	0.8	2.7	13.0
Control Delay (s)	0.6	1.0	13.2	25.5
Lane LOS	A	A	B	D
Approach Delay (s)	0.6	1.0	13.2	25.5
Approach LOS			B	D

Intersection Summary				
Average Delay	4.0			
Intersection Capacity Utilization	52.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	12	19	74	58	6
Future Volume (Veh/h)	5	12	19	74	58	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.63	0.63	0.82	0.82	0.65	0.65
Hourly flow rate (vph)	8	19	23	90	89	9
Pedestrians	4			2	4	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	238	100	102			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	238	100	102			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	98			
cM capacity (veh/h)	736	954	1491			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	27	113	98
Volume Left	8	23	0
Volume Right	19	0	9
cSH	877	1491	1700
Volume to Capacity	0.03	0.02	0.06
Queue Length 95th (m)	0.8	0.4	0.0
Control Delay (s)	9.2	1.6	0.0
Lane LOS	A	A	
Approach Delay (s)	9.2	1.6	0.0
Approach LOS	A		

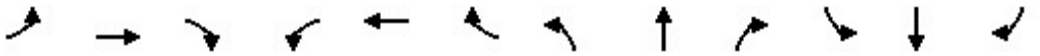
Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	22.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	156	22	24	186	5	46	1	9	3	1	1
Future Volume (Veh/h)	1	156	22	24	186	5	46	1	9	3	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.87	0.87	0.87	0.74	0.74	0.74	0.33	0.33	0.33
Hourly flow rate (vph)	1	208	29	28	214	6	62	1	12	9	3	3
Pedestrians		6						2				
Lane Width (m)		3.6						3.6				
Walking Speed (m/s)		1.2						1.2				
Percent Blockage		1						0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	220			239			510	502	224	510	514	223
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	220			239			510	502	224	510	514	223
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			87	100	99	98	99	100
cM capacity (veh/h)	1343			1326			460	461	816	459	455	815

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	238	248	75	15
Volume Left	1	28	62	9
Volume Right	29	6	12	3
cSH	1343	1326	494	502
Volume to Capacity	0.00	0.02	0.15	0.03
Queue Length 95th (m)	0.0	0.5	4.2	0.7
Control Delay (s)	0.0	1.0	13.6	12.4
Lane LOS	A	A	B	B
Approach Delay (s)	0.0	1.0	13.6	12.4
Approach LOS			B	B

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	36.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	313	9	22	200	23	16	9	39	56	2	15
Future Volume (Veh/h)	9	313	9	22	200	23	16	9	39	56	2	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.74	0.74	0.74	0.77	0.77	0.77	0.74	0.74	0.74
Hourly flow rate (vph)	12	412	12	30	270	31	21	12	51	76	3	20
Pedestrians								2			4	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	274			414			811	778	420	848	788	290
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	274			414			811	778	420	848	788	290
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			92	96	92	69	99	97
cM capacity (veh/h)	1291			1143			279	314	632	242	311	747

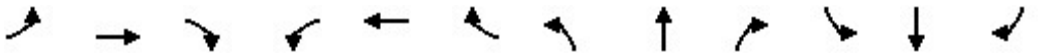
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	436	331	84	99
Volume Left	12	30	21	76
Volume Right	12	31	51	20
cSH	1291	1143	433	283
Volume to Capacity	0.01	0.03	0.19	0.35
Queue Length 95th (m)	0.2	0.6	5.7	12.1
Control Delay (s)	0.3	1.0	15.3	24.4
Lane LOS	A	A	C	C
Approach Delay (s)	0.3	1.0	15.3	24.4
Approach LOS			C	C

Intersection Summary				
Average Delay	4.4			
Intersection Capacity Utilization	39.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	9	2	37	71	1
Future Volume (Veh/h)	4	9	2	37	71	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.83	0.68	0.68	0.76	0.76
Hourly flow rate (vph)	5	11	3	54	93	1
Pedestrians				4	2	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	156	98	94			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	156	98	94			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	835	958	1506			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	16	57	94
Volume Left	5	3	0
Volume Right	11	0	1
cSH	916	1506	1700
Volume to Capacity	0.02	0.00	0.06
Queue Length 95th (m)	0.4	0.0	0.0
Control Delay (s)	9.0	0.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	0.4	0.0
Approach LOS	A		

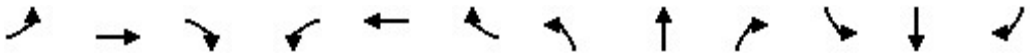
Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	15.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	146	29	5	90	1	21	1	12	1	2	1
Future Volume (Veh/h)	2	146	29	5	90	1	21	1	12	1	2	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.85	0.85	0.85	0.72	0.72	0.72	0.75	0.75	0.75
Hourly flow rate (vph)	2	160	32	6	106	1	29	1	17	1	3	1
Pedestrians		2										
Lane Width (m)		3.6										
Walking Speed (m/s)		1.2										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	107			192			303	299	176	316	314	108
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	107			192			303	299	176	316	314	108
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			95	100	98	100	99	100
cM capacity (veh/h)	1478			1375			644	611	870	623	599	946

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	194	113	47	5
Volume Left	2	6	29	1
Volume Right	32	1	17	1
cSH	1478	1375	710	652
Volume to Capacity	0.00	0.00	0.07	0.01
Queue Length 95th (m)	0.0	0.1	1.7	0.2
Control Delay (s)	0.1	0.4	10.4	10.6
Lane LOS	A	A	B	B
Approach Delay (s)	0.1	0.4	10.4	10.6
Approach LOS			B	B

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	21.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	332	22	48	386	84	5	4	28	55	1	22
Future Volume (Veh/h)	15	332	22	48	386	84	5	4	28	55	1	22
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.95	0.95	0.95	0.60	0.60	0.60	0.71	0.71	0.71
Hourly flow rate (vph)	19	420	28	51	406	88	8	7	47	77	1	31
Pedestrians					12			2			6	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	412			422			1058	988	448	1092	1018	456
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	412			422			1058	988	448	1092	1018	456
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			96			96	97	92	52	100	95
cM capacity (veh/h)	1147			1141			182	231	606	162	221	601

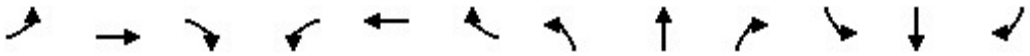
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	467	545	62	109
Volume Left	19	51	8	77
Volume Right	28	88	47	31
cSH	1147	1141	409	205
Volume to Capacity	0.02	0.04	0.15	0.53
Queue Length 95th (m)	0.4	1.1	4.2	22.2
Control Delay (s)	0.5	1.3	15.4	41.0
Lane LOS	A	A	C	E
Approach Delay (s)	0.5	1.3	15.4	41.0
Approach LOS			C	E

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	62.6%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	5	6	90	71	1
Future Volume (Veh/h)	1	5	6	90	71	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.63	0.63	0.82	0.82	0.65	0.65
Hourly flow rate (vph)	2	8	7	110	109	2
Pedestrians	4			2	4	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	242	116	115			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	242	116	115			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	740	934	1475			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	10	117	111
Volume Left	2	7	0
Volume Right	8	0	2
cSH	888	1475	1700
Volume to Capacity	0.01	0.00	0.07
Queue Length 95th (m)	0.3	0.1	0.0
Control Delay (s)	9.1	0.5	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	0.5	0.0
Approach LOS	A		

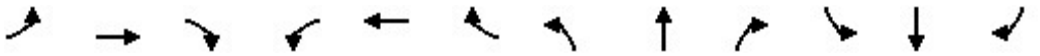
Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	20.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	190	24	24	227	6	55	1	9	4	1	1
Future Volume (Veh/h)	1	190	24	24	227	6	55	1	9	4	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.87	0.87	0.87	0.74	0.74	0.74	0.33	0.33	0.33
Hourly flow rate (vph)	1	253	32	28	261	7	74	1	12	12	3	3
Pedestrians		6						2				
Lane Width (m)		3.6						3.6				
Walking Speed (m/s)		1.2						1.2				
Percent Blockage		1						0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	268			287			604	597	271	604	610	270
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	268			287			604	597	271	604	610	270
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			81	100	98	97	99	100
cM capacity (veh/h)	1290			1273			398	407	769	397	401	767

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	286	296	87	18
Volume Left	1	28	74	12
Volume Right	32	7	12	3
cSH	1290	1273	426	432
Volume to Capacity	0.00	0.02	0.20	0.04
Queue Length 95th (m)	0.0	0.5	6.1	1.0
Control Delay (s)	0.0	0.9	15.6	13.7
Lane LOS	A	A	C	B
Approach Delay (s)	0.0	0.9	15.6	13.7
Approach LOS			C	B

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	40.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	313	9	22	200	26	16	9	39	65	2	19
Future Volume (Veh/h)	10	313	9	22	200	26	16	9	39	65	2	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.74	0.74	0.74	0.77	0.77	0.77	0.74	0.74	0.74
Hourly flow rate (vph)	13	412	12	30	270	35	21	12	51	88	3	26
Pedestrians								2			4	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	274			414			821	780	420	852	792	292
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	274			414			821	780	420	852	792	292
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			92	96	92	63	99	97
cM capacity (veh/h)	1291			1143			272	313	632	241	309	745

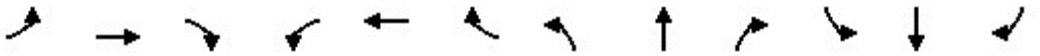
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	437	335	84	117
Volume Left	13	30	21	88
Volume Right	12	35	51	26
cSH	1291	1143	428	285
Volume to Capacity	0.01	0.03	0.20	0.41
Queue Length 95th (m)	0.2	0.6	5.8	15.3
Control Delay (s)	0.3	1.0	15.4	26.1
Lane LOS	A	A	C	D
Approach Delay (s)	0.3	1.0	15.4	26.1
Approach LOS			C	D

Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	40.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	22	6	37	71	2
Future Volume (Veh/h)	9	22	6	37	71	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.83	0.68	0.68	0.76	0.76
Hourly flow rate (vph)	11	27	9	54	93	3
Pedestrians				4	2	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	168	98	96			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	168	98	96			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	97	99			
cM capacity (veh/h)	818	957	1504			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	38	63	96
Volume Left	11	9	0
Volume Right	27	0	3
cSH	912	1504	1700
Volume to Capacity	0.04	0.01	0.06
Queue Length 95th (m)	1.0	0.1	0.0
Control Delay (s)	9.1	1.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	1.1	0.0
Approach LOS	A		

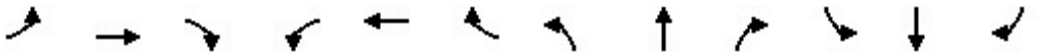
Intersection Summary			
Average Delay		2.1	
Intersection Capacity Utilization		18.3%	ICU Level of Service
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	146	30	6	90	1	23	1	16	1	2	1
Future Volume (Veh/h)	2	146	30	6	90	1	23	1	16	1	2	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.85	0.85	0.85	0.72	0.72	0.72	0.75	0.75	0.75
Hourly flow rate (vph)	2	160	33	7	106	1	32	1	22	1	3	1
Pedestrians		2										
Lane Width (m)		3.6										
Walking Speed (m/s)		1.2										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	107			193			306	302	176	324	318	108
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	107			193			306	302	176	324	318	108
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			95	100	97	100	99	100
cM capacity (veh/h)	1478			1374			641	609	869	612	597	946

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	195	114	55	5
Volume Left	2	7	32	1
Volume Right	33	1	22	1
cSH	1478	1374	716	648
Volume to Capacity	0.00	0.01	0.08	0.01
Queue Length 95th (m)	0.0	0.1	2.0	0.2
Control Delay (s)	0.1	0.5	10.4	10.6
Lane LOS	A	A	B	B
Approach Delay (s)	0.1	0.5	10.4	10.6
Approach LOS			B	B

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	21.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	332	22	48	386	94	5	4	28	61	1	24
Future Volume (Veh/h)	19	332	22	48	386	94	5	4	28	61	1	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.95	0.95	0.95	0.60	0.60	0.60	0.71	0.71	0.71
Hourly flow rate (vph)	24	420	28	51	406	99	8	7	47	86	1	34
Pedestrians					12			2			6	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	412			422			1076	998	448	1108	1034	462
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	412			422			1076	998	448	1108	1034	462
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			96			95	97	92	45	100	94
cM capacity (veh/h)	1147			1141			176	227	606	157	216	597

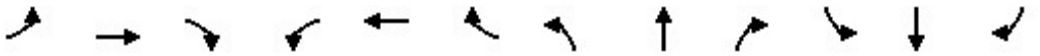
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	472	556	62	121
Volume Left	24	51	8	86
Volume Right	28	99	47	34
cSH	1147	1141	403	199
Volume to Capacity	0.02	0.04	0.15	0.61
Queue Length 95th (m)	0.5	1.1	4.3	27.6
Control Delay (s)	0.6	1.2	15.6	47.8
Lane LOS	A	A	C	E
Approach Delay (s)	0.6	1.2	15.6	47.8
Approach LOS			C	E

Intersection Summary				
Average Delay	6.4			
Intersection Capacity Utilization	61.5%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	13	20	90	71	6
Future Volume (Veh/h)	5	13	20	90	71	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.63	0.63	0.82	0.82	0.65	0.65
Hourly flow rate (vph)	8	21	24	110	109	9
Pedestrians	4			2	4	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	280	120	122			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	280	120	122			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	98			
cM capacity (veh/h)	696	930	1467			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	29	134	118
Volume Left	8	24	0
Volume Right	21	0	9
cSH	851	1467	1700
Volume to Capacity	0.03	0.02	0.07
Queue Length 95th (m)	0.8	0.4	0.0
Control Delay (s)	9.4	1.5	0.0
Lane LOS	A	A	
Approach Delay (s)	9.4	1.5	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	23.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	190	26	28	227	6	56	1	11	4	1	1
Future Volume (Veh/h)	1	190	26	28	227	6	56	1	11	4	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.87	0.87	0.87	0.74	0.74	0.74	0.33	0.33	0.33
Hourly flow rate (vph)	1	253	35	32	261	7	76	1	15	12	3	3
Pedestrians		6						2				
Lane Width (m)		3.6						3.6				
Walking Speed (m/s)		1.2						1.2				
Percent Blockage		1						0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	268			290			614	606	272	616	620	270
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	268			290			614	606	272	616	620	270
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			81	100	98	97	99	100
cM capacity (veh/h)	1290			1270			391	401	767	387	394	767

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	289	300	92	18
Volume Left	1	32	76	12
Volume Right	35	7	15	3
cSH	1290	1270	425	423
Volume to Capacity	0.00	0.03	0.22	0.04
Queue Length 95th (m)	0.0	0.6	6.5	1.1
Control Delay (s)	0.0	1.1	15.8	13.9
Lane LOS	A	A	C	B
Approach Delay (s)	0.0	1.1	15.8	13.9
Approach LOS			C	B

Intersection Summary				
Average Delay	2.9			
Intersection Capacity Utilization	40.8%	ICU Level of Service	A	
Analysis Period (min)	15			

ATTACHMENT D

Statement of Limitations

Statement of Limitations

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