



Evolution Lands

Final Report

# Evolution Lands TIA

June 2024





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## 1.0 Introduction and Scope

### 1.1 Introduction

ISL Engineering and Land Services Ltd. (ISL) was retained by Evolution Lands (the Client) to undertake a Transportation Impact Assessment (TIA) for the Evolution Lands Area Structure Plan (ASP) Development located in Claresholm, Alberta. The site area is located in south Claresholm and is bound by 39 Avenue W to the north, Highway 2 and Range Road 271 to the east, the Bridges at Claresholm Golf Course to the west, and the Town boundary to south. The site plan is attached in Appendix A and the site location is shown below in Figure 1.1.



Figure 1.1: Site Location

In this TIA, the following development and horizons are analyzed:

- 2025 Build-Out: Phases 1 and 2
- 2035 Build-Out: Phases 1 to 18 (Full development of ASP)
- 2045 Build-Out: Phases 1 to 18 (Full development of ASP)

Land uses for the forecasting horizons are summarized in Table 1.1, with a mix of single family residential, multi-family residential, and highway commercial (retail) uses. As there are no definitive plans for the commercial leasing and site-specific uses, a typical 20% Floor-to-Area Ratio (FAR) for the highway commercial land uses was assumed. Accesses and boundaries for each phase are shown in Figure 1.2 below.

Table 1.1: Evolution Lands Development Proposed Land Uses

Evolution Land Claresholm Development				
Phase		Land Use	#	Unit
Initial Build-Out Horizon Year 2025	1 / 2	Single Family	47	Units
		Commercial Retail	106,000	Sq. Ft
Full Build-Out Horizon Year 2035	3 to 18	Single Family	65	Units
		Single Family	42	Units
		Single Family	115	Units
		Commercial Retail	94,000	Sq. Ft
		Single Family	37	Units
		Single Family	54	Units
		Commercial Retail	78,000	Sq. Ft
		Townhomes	55	Units
		Mid-Rise Multi-Family	99	Units
		Mid-Rise Senior	115	Units

Note: The unit counts of the submitted plan are slightly lower (36 less units single family, 88 less multi-family units) than the above table while the size of the retail are unchanged.

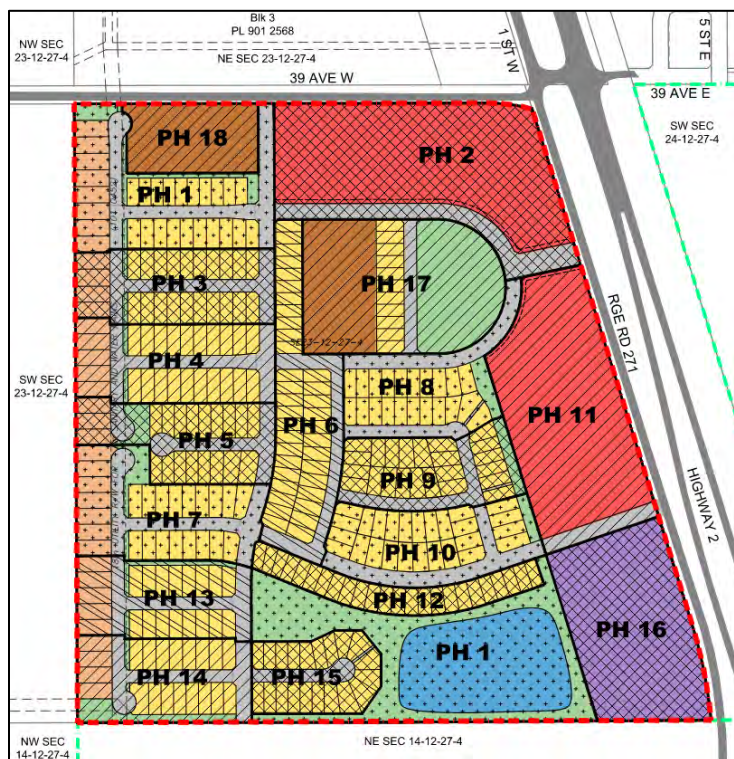


Figure 1.2: Phase Boundaries

## 1.2 Scope

The following scope of work was confirmed with the Town of Claresholm and Alberta Transportation and Economic Corridors (TEC) and was completed by ISL (Appendix B):

- 12-hour traffic count at the intersection of Highway 2 / 39 Avenue and a manual AM (7-9 AM) and PM (4-6) traffic counts at the intersection of 39 Avenue W / Range Road 271.
- Increase the Highway 2 through traffic to the 100th Highest Hour using TEC's automatic traffic recorder in Claresholm (on Highway 2, 0.8 km north of Highway 520).
- To account for summer traffic, the trip generation for The Bridges Golf Course will be added as part of the existing background traffic.
- Generate trips of the Evolution Lands development using the ITE Trip Generation Manual, 11th Edition.
- Distribute trips onto the adjacent road network based on existing traffic patterns.
- Add the generated trips of the subject development onto existing background traffic.
- Analyze the following scenarios:
  - Scenario 1: 2025 Background
  - Scenario 2: 2025 Background + Development
  - Scenario 3: 2035 Background
  - Scenario 4: 2035 Background + Development
  - Scenario 5: 2045 Background
  - Scenario 6: 2045 Background + Development
- Analyze the following intersections in the above scenarios:
  - Highway 2 / 39 Avenue W
  - 39 Avenue W / Range Road 271
  - Site Accesses on 39 Avenue W and Range Road 271
- Calculate the 2025, 2035, and 2045 Background traffic by applying a growth rate to the Highway 2 through traffic.
- Determine the growth rate from the nearest TEC count, at Highway 2 / 520. The Highway 2 2012-2022 growth at the south leg of the intersection is 0.57% / year. To be conservative, the standard TEC growth of 2% / year growth will be applied.
- Undertake traffic signal, left turn, right turn, and illumination warrant analyses.
- Complete a high-level collision / safety analysis at the intersection of Highway 2 / 39 Avenue.

Following the initial submission of this report to both TEC and the Town of Claresholm, feedback was received to provide mitigation measures to preserve the use of the existing Range Road 271 / Service Road in the long term. These mitigation measures includes aligning the long term use of the existing Range Road 271 / Service Road as part of the Evolution Lands development.

## 2.0 Background Traffic

### 2.1 Background Traffic

ISL conducted weekday traffic counts at the following intersections:

- Highway 2 / 39 Avenue (Wednesday November 8, 2023 for AM and Wednesday November 22, 2023 for PM): 12 Hours from 7:00 AM to 7:00 PM.
- 39 Avenue W / Range Road 271 (Wednesday November 8, 2023): AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak hours.

Traffic for the existing The Bridges Golf Course was estimated based on using ITE Trip Generation Manual, 11th Edition. From the ITE trip generation rates, the existing 18-hole golf course is expected to have 32 trips in the AM peak and 52 trips in the PM peak. The traffic from the golf course was added as part of the background traffic at the analyzed intersections. Raw traffic count data can be found in Appendix C.

### 2.2 100th Highest Hour Volumes

To calculate the 100th Highest Hour through traffic at Highway 2, 12-hour counts were performed on November 8, 2023 and November 22, 2023 on Highway 2 and 39 Avenue, from 7:00 AM to 7:00 PM. Referencing TEC's Highway Geometric Design Guide, Chapter A, Section 4.4 (September 2020), the collected Highway 2 and 39 Avenue count data was converted to the average annual daily traffic (AADT), AM 100th Highest Hour, and PM 100th Highest Hour estimates.

Data at Highway 2 and 39 Avenue was collected using a countCAM traffic count camera for 12-hours (7:00 AM to 7:00 PM). The AM and PM peaks were found to be from 8:00 to 9:00 AM and from 3:00 to 4:00 PM, respectively, as summarized below in Table 2.1.

Table 2.1: Highway 2 / 39 Avenue Traffic Volumes

Traffic Movement	Recorded Data from 12-Hour Count		
	12-Hour Volume	AM Peak Hour Volume	PM Peak Hour Volume
EBL	12	2	0
EBT	16	1	2
EBR	43	0	7
WBL	57	4	3
WBT	18	0	2
WBR	50	1	3
NBL	13	0	3
NBT	3188	221	328
NBR	68	9	7
SBL	34	5	2
SBT	3162	239	300
SBR	14	2	0
<b>Totals</b>	<b>6,675</b>	<b>484</b>	<b>657</b>

Following the TEC Design Guide, the following steps were undertaken to calculate the AADT:

- 2022 AADT (11,751 veh) and November 22, 2022 12-hour volumes were gathered from Automated Traffic Recorder (ATR) Number 60020890 located on Highway 2, 0.8 km north of the intersection of Highway 2 and Highway 520, within the Town of Claresholm.
- Using the ATR 12-hour count total and the 2022 AADT, an AADT factor of 1.37 was calculated.
- Multiplying the AADT factor by the 12-hour count at Highway 2 / 39 Avenue results in an AADT estimate for each movement as shown in Table 2.2.

**Table 2.2: Highway 2 / 39 Avenue AADT Estimates**

Traffic Movement	AADT Estimate
EBL	16
EBT	22
EBR	59
WBL	78
WBT	25
WBR	69
NBL	18
NBT	4377
NBR	93
SBL	47
SBT	4341
SBR	19
<b>Total</b>	<b>9,164</b>

Next, the 100th Highest Hour Traffic volumes were calculated:

- 2022 AADT (11,751 veh) and 2022 100th Highest Hour (1,254 veh) volumes were gathered from ATR Number 60020890
- A K factor of 0.107 was calculated by dividing the 100th Highest Hour with the AADT of the ATR.
- The 100th highest hour total volume at the Highway 2 / 39 Avenue intersection was calculated by multiplying the K factor with the total AADT Estimate (9,164 veh) in the above Table 2.2. The 100th highest hour total traffic at Highway 2 / 39 Avenue intersection is 978.
- The AM and PM 100th Highest Hour Count Factors were calculated by dividing the AM (484 veh) and PM (657 veh) peak totals from Table 2.1 by the 978 from the previous step. The AM and PM 100th Highest Hour Count Factors were calculated as 2.021 and 1.489, respectively.
- The AM and PM 100th Highest Hour volumes for the Highway 2 Through Volumes (see Table 2.3 below) were calculated by multiplying the above 100th Highest Hour Count Factors to the AM and PM peak hour volumes from the count.

Table 2.3: 100th Highest Hour Volumes

Traffic Movement	100th Highest Hour	
	AM Peak	PM Peak
EBL	N/A	N/A
EBT	N/A	N/A
EBR	N/A	N/A
WBL	N/A	N/A
WBT	N/A	N/A
WBR	N/A	N/A
NBL	N/A	N/A
<b>NBT</b>	<b>447</b>	<b>488</b>
NBR	N/A	N/A
SBL	N/A	N/A
<b>SBT</b>	<b>483</b>	<b>447</b>
SBR	N/A	N/A

## 2.3 Growth Rate

To estimate the Background Traffic for each horizon, 10-year growth data was taken from the TEC counts at Highway 2 / Highway 520 between 2012 and 2022. The growth rate was calculated to be 0.57% at the south leg of the intersection. To be conservative, a linear growth rate of 2.0% was applied to Highway 2 through traffic.

## 2.4 2025 Background Traffic

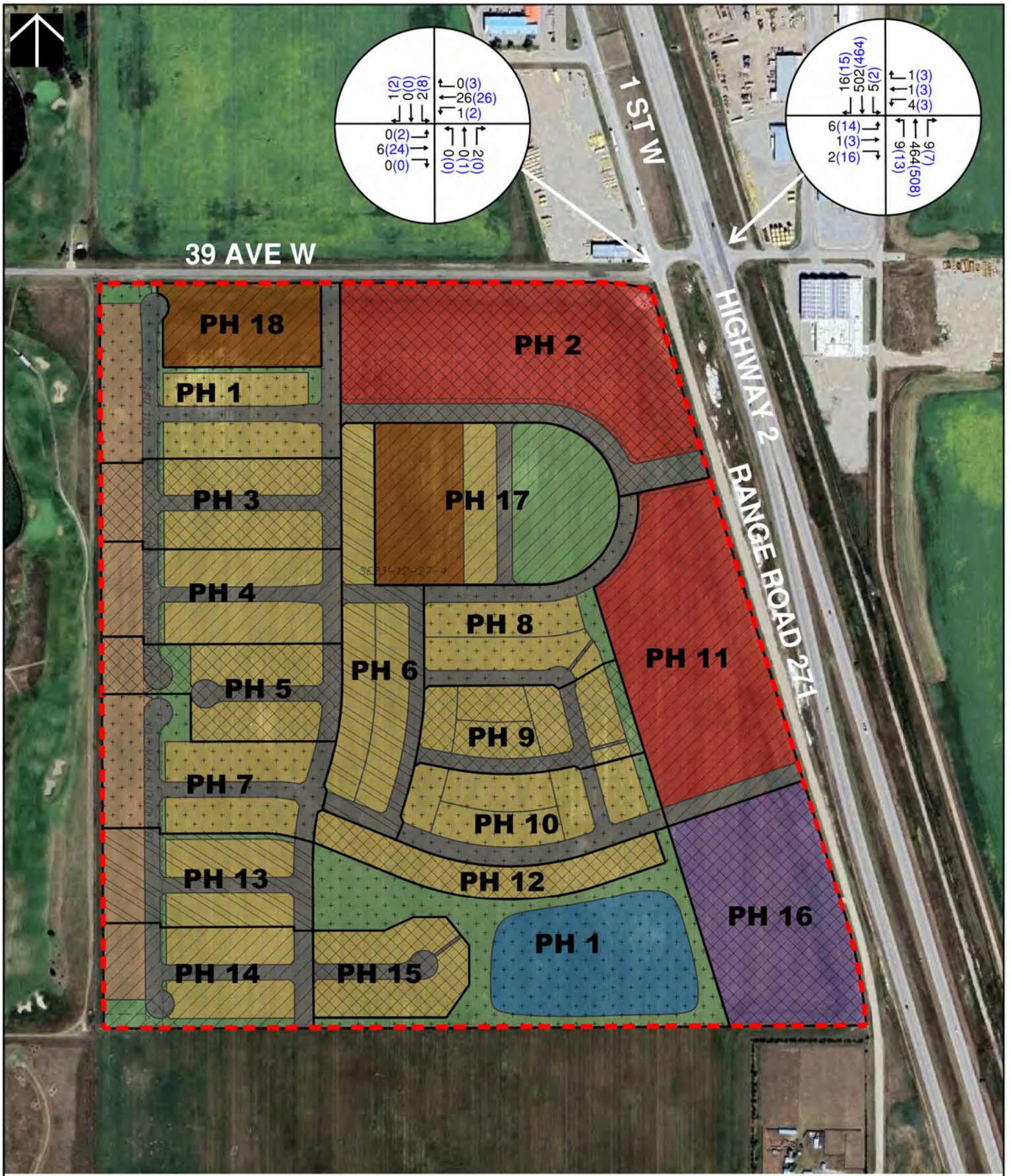
To estimate the 2025 horizon background volumes, the 2.0% growth rate was applied to the 100th Highest Hour northbound and southbound through volumes on Highway 2. The traffic from the Bridges Golf Course was added to the background traffic as well. The resulting 2025 Background volumes are shown in Exhibit 2.1.

## 2.5 2035 Background Traffic

Similarly for the 2025 horizon background volumes, the 2.0% growth rate was applied to the 100th Highest Hour northbound and southbound through volumes on Highway 2. The traffic from the Bridges Golf Course was added to the background traffic as well. The 2035 Background volumes are shown in Exhibit 2.2.

## 2.6 2045 Background Traffic

Similarly for the 2045 horizon background volumes, the 2.0% growth rate was applied to the 100th Highest Hour northbound and southbound through volumes on Highway 2. The traffic from the Bridges Golf Course was added to the background traffic as well. The 2045 Background volumes are shown in Exhibit 2.3.

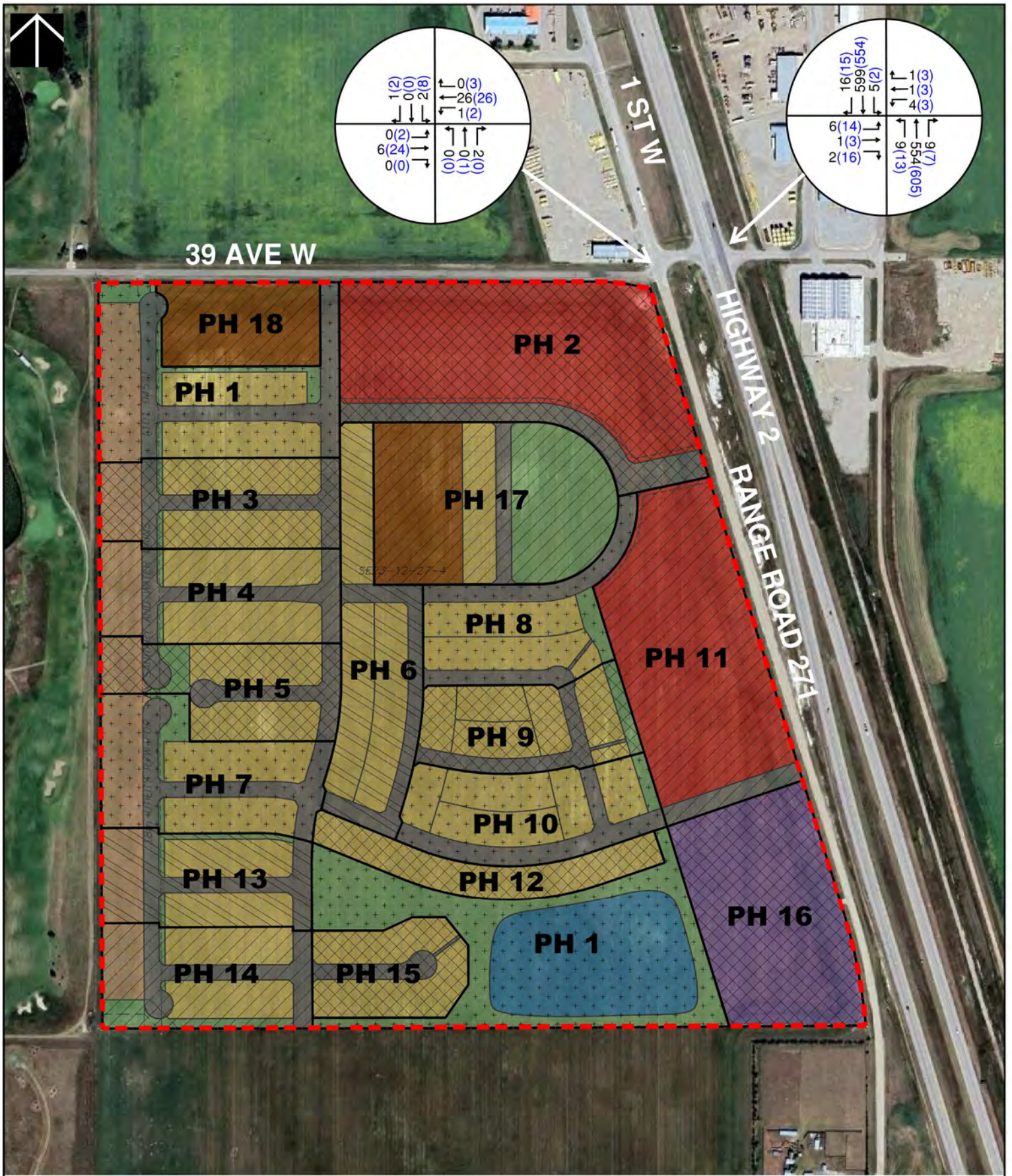


--- Development Boundary  
AM Volumes (PM Volumes)

EVOLUTION LANDS ASP TIA

2025 BACKGROUND

EXHIBIT 2.1  
MAY 2024

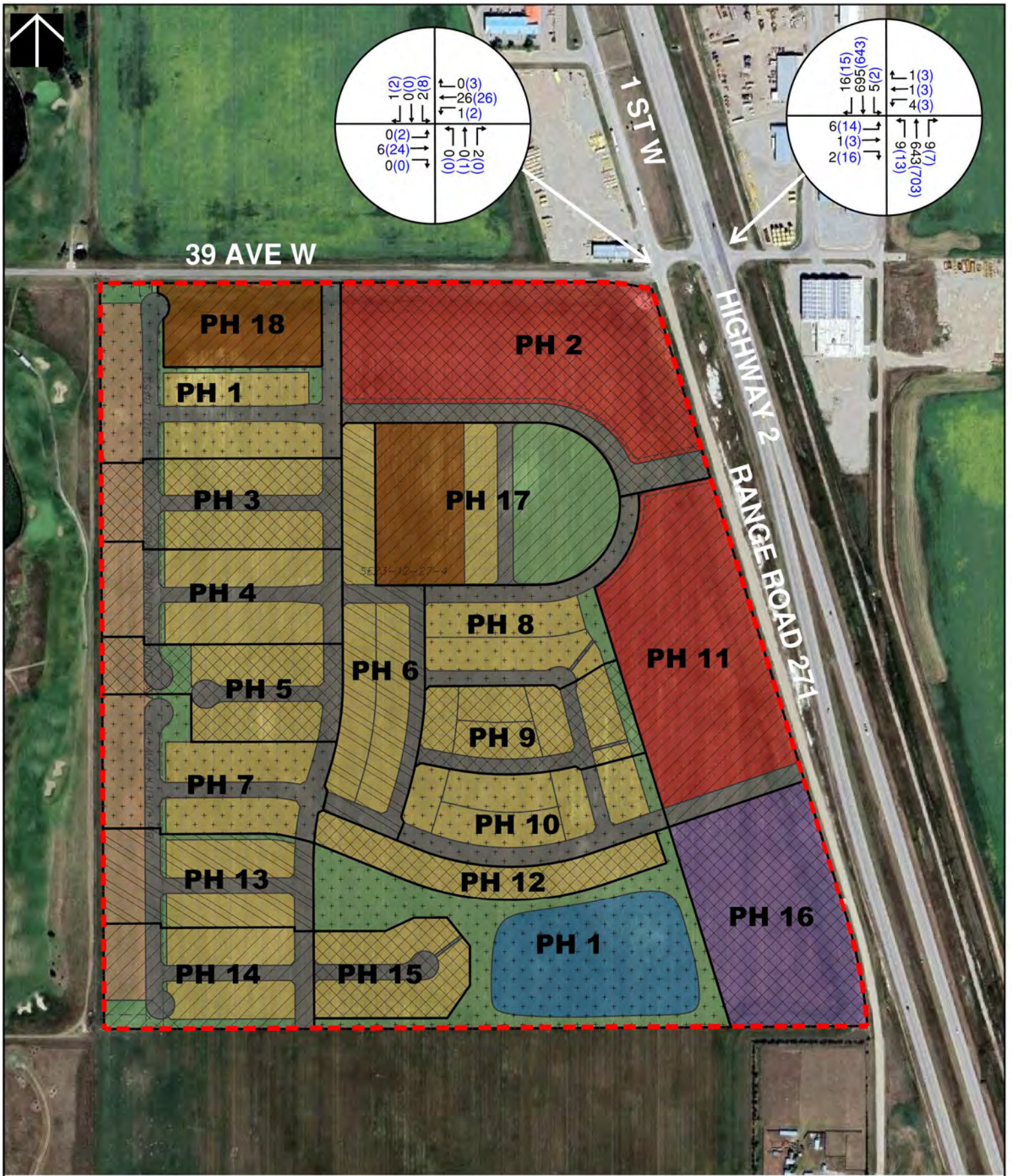


--- Development Boundary  
 AM Volumes (PM Volumes)

EVOLUTION LANDS ASP TIA

2035 BACKGROUND

EXHIBIT 2.2  
 MAY 2024



--- Development Boundary  
 AM Volumes (PM Volumes)

EVOLUTION LANDS ASP TIA

2045 BACKGROUND

EXHIBIT 2.3  
 MAY 2024

## 3.0 Trip Generation and Distribution

### 3.1 Trip Generation

The generated trips of the Evolution Lands development were based on the trip generation rates from the ITE Trip Generation Manual, 11th Edition, published by the Institute of Transportation Engineers (ITE). Table 3.1 summarizes the trip generation rates for each land use.

Table 3.1: Trip Generation Rates for Evolution Lands Development

Use	Source	Unit	AM Peak			PM Peak		
			Rate	In%	Out%	Rate	In%	Out%
Single Family Housing	ITE 210	Units	0.70	25%	75%	0.94	63%	37%
Townhomes	ITE 220	Units	0.40	24%	76%	0.51	63%	37%
Mid-Rise Multi-Family	ITE 221	Units	0.37	23%	77%	0.39	61%	39%
Mid-Rise Senior	ITE 252	Units	0.20	34%	66%	0.25	56%	44%
Commercial Retail	ITE 820	1,000 sq ft	0.84	62%	38%	3.40	48%	52%

The above trip generation rates were applied to all stages of land uses from Table 1.1. The generated trips for each horizon are summarized in Section 3.2 and 3.3.

There are two main types of trips generated from the commercial land uses: primary (non-pass-by) trips and pass-by trips. Primary trips are new trips generated because of the existence of the development. Pass-by trips are existing trips on the background network that access the development enroute to other locations (such as a commercial stop while traveling along Highway 2). The pass-by trip rates for the following land uses as summarized in Table 3.2 were based on the ITE Trip Generation Handbook, 3<sup>rd</sup> Edition. These pass-by trip rates were applied to the noted land uses in the development, which are adjacent to the Highway 2 / 39 Avenue intersection.

Table 3.2: Trip Generation Pass-By Rates – AM and PM Peak

Use	Source	AM Peak	PM Peak
		Rate	Rate
Commercial Retail	ITE 820	0%	34%

### 3.2 2025 Development Trips (Phases 1 and 2)

The generated trips from the west parcel in the 2025 horizon are shown in Table 3.3 below.

Table 3.3: 2025 Development Trips

2025 Development Trips		AM			PM		
Phase	Land Use	Total Trips	In	Out	Total Trips	In	Out
1 to 2	Single Family	29	7	22	40	25	15
	Commercial Retail	80	50	30	325	156	169
Total		109	57	53	365	181	184

### 3.3 Full Build-Out (2035 and 2045) Development Trips (Phases 1 to 18)

The generated trips from Phases 1 to 18 in the 2035 and 2045 horizon are shown in Table 3.4 below.

Table 3.4: Full Build-Out Development Trips

Full Build-Out Development Trips		AM			PM		
Phase	Land Use	Total Trips	In	Out	Total Trips	In	Out
3 to 18	Single Family	29	7	22	40	25	15
	Commercial Retail	80	50	30	325	156	169
	Single Family	41	10	31	55	35	20
	Single Family	26	7	20	36	22	13
	Single Family	72	18	54	97	61	36
	Commercial Retail	71	44	27	288	138	150
	Single Family	23	6	17	31	20	12
	Single Family	34	9	26	46	29	17
	Commercial Retail	59	37	22	239	115	124
	Townhomes	20	5	15	25	16	9
	Mid-Rise Multi-Family	33	8	25	35	21	14
	Mid-Rise Senior	21	7	14	26	14	11
Total		510	206	304	1,242	652	590

### 3.4 Trip Distribution / Final Traffic

The generated development trips were distributed onto the adjacent roadway network using existing traffic patterns, summarized in Table 3.5 below.

Table 3.5: Traffic Distribution

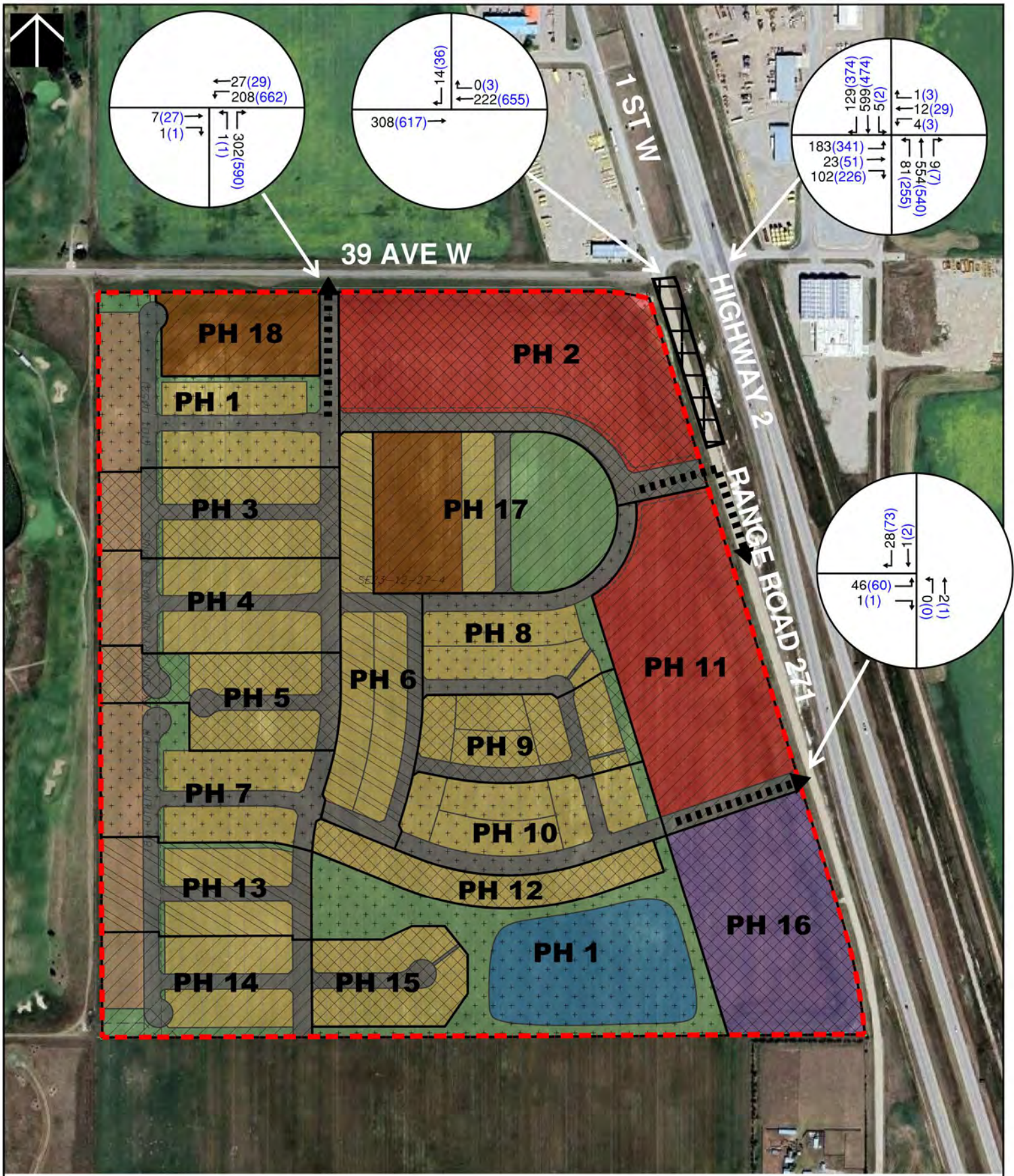
To/From	Inbound / Outbound	
	AM Peak	PM Peak
Highway 2 North	55%	55%
Highway 2 South	35%	35%
39 Ave East	5%	5%
Range Rd 271 North	5%	5%
Total	100%	100%

The generated trips of the development were added to each horizon's respective background traffic volumes to obtain the final design volumes for traffic operations analysis. The Background + Development traffic volumes for the 2025, 2035, and 2045 horizons are shown in Exhibits 3.1, 3.2, and 3.3, respectively.



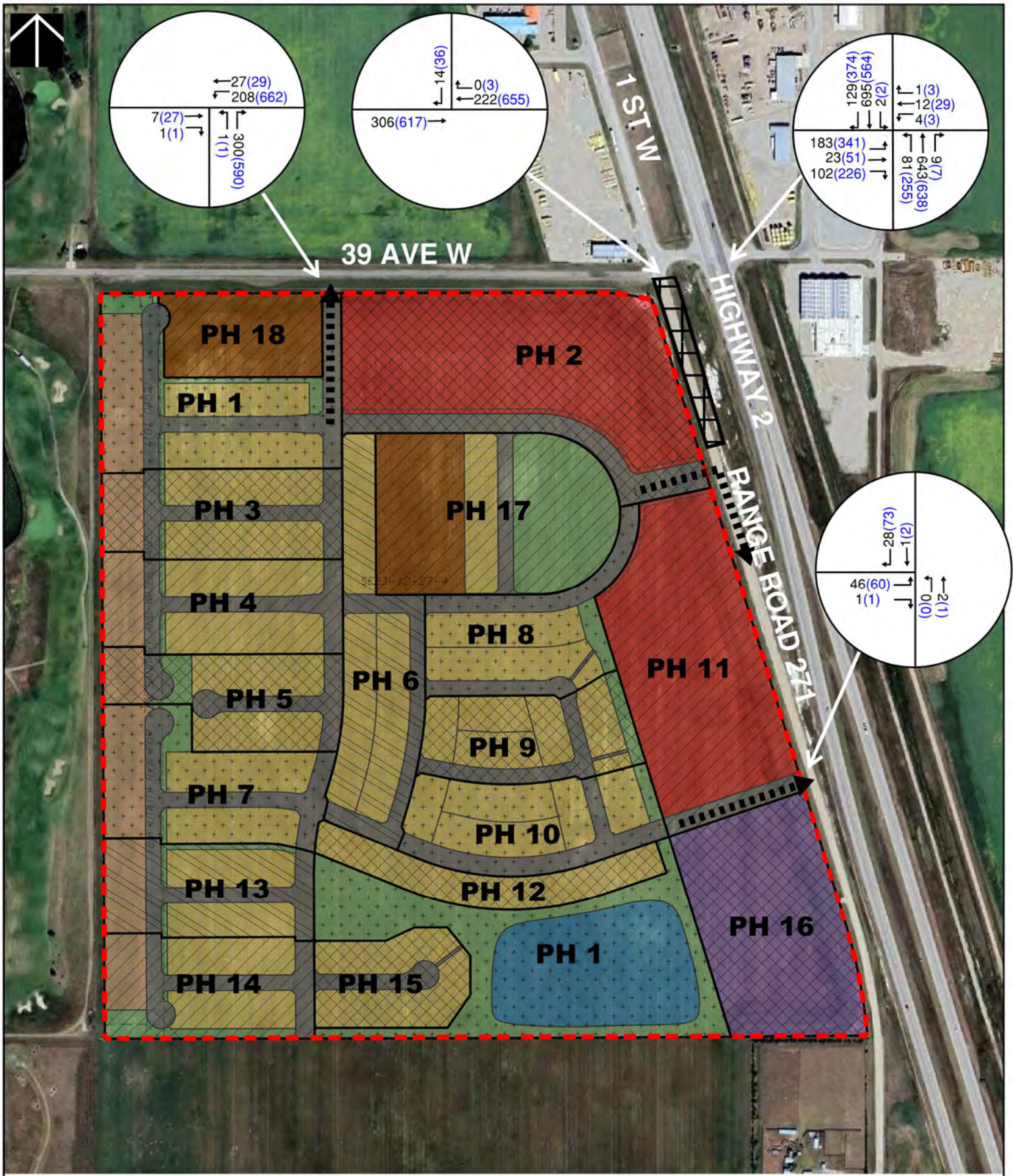
**EVOLUTION LANDS ASP TIA**  
**2025 BACKGROUND + DEVELOPMENT**  
**TRAFFIC VOLUMES**

**EXHIBIT 3.1**  
**MAY 2024**



- - - Development Boundary  
 ■■■ Access  
 AM Volumes (PM Volumes)

EVOLUTION LANDS ASP TIA  
 2035 BACKGROUND + DEVELOPMENT  
 TRAFFIC VOLUMES



- - - Development Boundary  
 - - - Access  
 AM Volumes (PM Volumes)

EVOLUTION LANDS ASP TIA  
 2045 BACKGROUND + DEVELOPMENT  
 TRAFFIC VOLUMES

EXHIBIT 3.3  
 MAY 2024

## 4.0 Traffic Analysis

Traffic analyses were undertaken in Synchro (signalized and unsignalized intersections) for the following scenarios:

- 2025 Background
- 2025 Background + Development
- 2035 Background
- 2035 Background + Development
- 2045 Background
- 2045 Background + Development

### 4.1 Synchro

The Synchro 11 software traffic analysis package was used to analyze the operational characteristics of the intersections. A Level of Operating Service (LOS) A represents the highest level of service or generally “free flowing conditions” while a LOS F generally represents the lowest level of service with “breakdown” or “gridlock” condition in vehicular flow. There are varying degrees of delay and congestion introduced at the intersection LOS B, C, D, and E. LOS D is representative of “normal” peak hour congestion, while LOS E is representative of an intersection nearing its capacity. Typically, LOS D or better is considered the accepted standard for peak hour operations. LOS criteria for intersections are based on average delay per vehicle and are summarized in Table 4.1 below.

Table 4.1: Level of Service Criteria

LOS		A	B	C	D	E	F
Delay, sec/vehicle	Signalized	< 10	10 – 20	20 – 35	35 – 55	55 – 80	> 80
	Unsignalized	< 10	10 – 15	15 – 25	25 – 35	35 – 50	> 50

Synchro also calculates each movement’s volume to capacity (v/c) ratio. A v/c ratio of 1.0 represents an intersection or movement at full capacity with no ability to facilitate extra vehicles. Typically, v/c ratio of 0.90 or less for all intersection movements is the accepted standard for peak hour operations, with v/c of 1.0 accepted where limited to certain movements.

Synchro analysis also calculates the 95th percentile vehicle queue length for each intersection movement, which provides the criteria for left and right turn storage requirements. This queue length is exceeded 5% of the time, which is accepted practice for normal peak hour operation.

### 4.2 Background Intersection Configurations

For the 2025, 2035, and 2045 Background horizon, the Highway 2 / 39 Avenue and 39 Avenue W / Range Road 271 intersections were analyzed with existing lane configurations. The existing lane configurations are shown in Exhibit 4.1.

### 4.3 2025 Background

The 2025 Background scenario was analyzed in Synchro using the existing lane configurations shown in Exhibit 4.1. The results are attached in Appendix D and summarized in Table 4.2. From the analysis, all intersections operate within the acceptable performance criteria.

Table 4.2: 2025 Background Results

Intersection		AM Peak			PM Peak		
Name	Movement	v/c Ratio	LOS	Queue Length 95 <sup>th</sup> (m)	v/c Ratio	LOS	Queue Length 95 <sup>th</sup> (m)
Highway 2 / 39 Avenue (E-W Stop)	EBL/T/R	0.03	C	1	0.09	C	2
	WBL/T/R	0.02	C	1	0.03	C	1
	NBL	0.01	A	0	0.01	A	0
	NBT/T	0.19	A	0	0.21	A	0
	NBR	0.10	A	0	0.11	A	0
	SBL	0.01	A	0	0	A	0
	SBT/T	0.21	A	0	0.19	A	0
39 Avenue W / Range Road 271 (E-W Stop)	SBR	0.11	A	0	0.11	A	0
	EBL/T/R	0.01	A	0	0.03	A	1
	WBL/T/R	0.03	A	1	0.04	A	1
	NBL/T/R	0	A	0	0	A	0
	SBL/T/R	0	A	0	0	A	0

### 4.4 2025 Background + Development

In the 2025 Background + Development scenario, the generated trips from Phases 1 and 2 of Evolution Lands were added to the 2025 Background traffic and analyzed in Synchro with accesses off 39 Avenue W and Range Road 271.

In this scenario, signalization is not required at Highway 2 / 39 Avenue; this is also confirmed from the signal warrant in Section 5.1. From the right turn warrant in Section 5.3, a southbound right turn lane is warranted at Highway 2 / 39 Avenue. Additionally, an eastbound left turn at Highway 2 / 39 Avenue is required to prevent the eastbound queue length from extending past Range Road 271.

The lane configurations of the 2025 Background + Development scenario are shown in Exhibit 4.2. The results are attached in Appendix D and summarized in Table 4.3. From the analysis, the improved intersection operates well within acceptable performance criteria.

Table 4.3: 2025 Background + Development Results

Intersection		AM Peak			PM Peak		
Name	Movement	v/c Ratio	LOS	Queue Length 95 <sup>th</sup> (m)	v/c Ratio	LOS	Queue Length 95 <sup>th</sup> (m)
Highway 2 / 39 Avenue (E-W Stop)	EBL	0.15	C	4	0.57	E	24
	EBT/R	0.05	B	1	0.19	B	5
	WBL/T/R	0.04	C	1	0.11	D	3
	NBL	0.03	A	1	0.09	A	2
	NBT/T	0.19	A	0	0.20	A	0
	NBR	0.10	A	0	0.10	A	0
	SBL	0.01	A	0	0	A	0
	SBT/T	0.16	A	0	0.13	A	0
	SBR	0.03	A	0	0.07	A	0
39 Avenue W / Range Road 271 (E-W Stop)	EBL/T/R	0.06	A	1	0.17	B	5
	WBL/T/R	0.10	A	3	0.28	B	9
	NBL/T/R	0	A	0	0	A	0
	SBL/T/R	0	A	0	0.01	A	0
39 Avenue W / North Access (NB Stop)	EBT/R	0	A	0	0.02	A	0
	WBL/T	0.02	A	1	0.07	A	2
	NBL/R	0.04	A	1	0.10	A	3
Range Road 271 / Northeast Access (EB Stop)	EBL/R	0.02	A	0	0.09	A	2
	NBL/T	0	A	0	0	A	0
	SBT/R	0.02	A	0	0.05	A	0

## 4.5 2035 Background

The 2035 Background scenario was analyzed in Synchro using the existing lane configurations shown in Exhibit 4.1. The results are attached in Appendix C and summarized in Table 4.4. From the analysis, all intersections operate within the acceptable performance criteria.

Table 4.4: 2035 Background Results

Intersection		AM Peak			PM Peak		
Name	Movement	v/c Ratio	LOS	Queue Length 95 <sup>th</sup> (m)	v/c Ratio	LOS	Queue Length 95 <sup>th</sup> (m)
Highway 2 / 39 Avenue (E-W Stop)	EBL/T/R	0.04	C	1	0.12	C	3
	WBL/T/R	0.03	C	1	0.04	C	1
	NBL	0.01	A	0	0.01	A	0
	NBT/T	0.23	A	0	0.25	A	0
	NBR	0.12	A	0	0.12	A	0
	SBL	0.01	A	0	0	A	0
	SBT/T	0.25	A	0	0.23	A	0
	SBR	0.13	A	0	0.12	A	0

Intersection		AM Peak			PM Peak		
Name	Movement	v/c Ratio	LOS	Queue Length 95 <sup>th</sup> (m)	v/c Ratio	LOS	Queue Length 95 <sup>th</sup> (m)
39 Avenue W / Range Road 271 (E-W Stop)	EBL/T/R	0.01	A	0	0.03	A	1
	WBL/T/R	0.03	A	1	0.04	A	1
	NBL/T/R	0	A	0	0	A	0
	SBL/T/R	0	A	0	0	A	0

## 4.6 2035 Background + Development

In the 2035 Background + Development scenario, the generated trips from full build-out (Phases 1 to 18) of Evolution Lands were added to the 2035 Background traffic and analyzed in Synchro.

With the full build out development traffic, the following upgrades are recommended:

- Signalization is required at Highway 2 / 39 Avenue, based on the Synchro analysis and signal warrant (see Section 5.1).
- Eastbound queue lengths (100 m) at 39 Avenue W and Highway 2 will extend past Range Road 271 (1 St W) and will interfere with the traffic operations at 39 Avenue W / Range Road 271. To remedy the preceding, the following are recommended:
  - A 100 m eastbound left turn bay along with a median at Highway 2 / 39 Avenue W.
  - With the median, the south leg of 39 Avenue W / Range Road 271 (1 St W) will be closed and the north leg will be converted to right-in right-out only. Note: A right-in right-out cannot be implemented on the south leg as design standards from Transportation Association of Canada (TAC) do not permit a side road to be connected at the turn bay of the main road. A concept of the recommended intersection is shown in Figure 4.1.
  - With the closure of the south leg of 39 Avenue W / Range Road 271 (1 St W), all development traffic and existing traffic would be routed to the 39 Avenue W access.
  - With the right-in right-out at the north leg of 39 Avenue W / Range Road 271 (1 St W), the southbound left, eastbound left and northbound through movements cannot be made. Instead, drivers could use Highway 2 / 41 Avenue to reach their intended destination. Also, the existing traffic volumes of these movements are low (8 vehicles per hour or less). Note: the southbound through and westbound through movements can still be made via the access through the subject development.
- Note: As discussed with the Town of Claresholm and TEC following the initial submission of this TIA, additional analyses have been undertaken in Section 8.0 to develop mitigation measures to maintain access to Range Road 271 in the long term.



Figure 4.1: 39 Avenue W / 1 St W Recommendation

The 2035 Background + Development scenario recommended laning configurations are shown in Figure 4.1 and Exhibit 4.3. The results are attached in Appendix D and summarized in Table 4.5. From the analysis, all study intersections operate well within acceptable performance criteria with the improvements in place.

Table 4.5: 2035 Background + Development Results

Intersection		AM Peak			PM Peak		
Name	Movement	v/c Ratio	LOS	Queue Length 95 <sup>th</sup> (m)	v/c Ratio	LOS	Queue Length 95 <sup>th</sup> (m)
Highway 2 / 39 Avenue (Signalized)	EBL	0.54	B	27	0.83	D	83
	EBT/R	0.26	A	10	0.43	A	22
	WBL/T/R	0.04	B	4	0.07	B	9
	NBL	0.25	B	13	0.50	B	41
	NBT/T	0.46	A	31	0.39	B	45
	NBR	0.46	A	31	0.39	B	45
	SBL	0.02	A	2	0.01	C	2
	SBT/T	0.45	A	33	0.57	C	55
39 Avenue W / 1 St W (RIRO)	SBR	0.17	A	7	0.54	A	21
	WBT/R	0.14	A	0	0.41	A	0
39 Avenue W / North Access (NB Stop)	SBR	0.02	A	1	0.10	C	2
	EBT/R	0.00	A	0	0.02	A	0
	WBL/T	0.14	A	4	0.45	A	18
Range Road 271 / Southeast Access (EB Stop)	NBL/R	0.30	A	10	0.61	B	33
	EBL/R	0.05	A	1	0.07	A	2
	NBL/T	0	A	0	0	A	0
	SBT/R	0.02	A	0	0.05	A	0

## 4.7 2045 Background

The 2045 Background scenario was analyzed in Synchro using the existing lane configurations shown in Exhibit 4.1. The results are attached in Appendix D and summarized in Table 4.6. From the analysis, all intersections operate within the acceptable performance criteria.

Table 4.6: 2045 Background Results

Intersection		AM Peak			PM Peak		
Name	Movement	v/c Ratio	LOS	Queue Length 95 <sup>th</sup> (m)	v/c Ratio	LOS	Queue Length 95 <sup>th</sup> (m)
Highway 2 / 39 Avenue (E-W Stop)	EBL/T/R	0.05	D	1	0.15	C	4
	WBL/T/R	0.04	D	1	0.05	D	1
	NBL	0.01	A	0	0.02	A	0
	NBT/T	0.27	A	0	0.29	A	0
	NBR	0.12	A	0	0.15	A	0
	SBL	0.01	A	0	0	A	0
	SBT/T	0.29	A	0	0.27	A	0
	SBR	0.15	A	0	0.14	A	0
39 Avenue W / Range Road 271 (E-W Stop)	EBL/T/R	0.01	A	0	0.03	A	1
	WBL/T/R	0.03	A	1	0.04	A	1
	NBL/T/R	0	A	0	0	A	0
	SBL/T/R	0	A	0	0	A	0

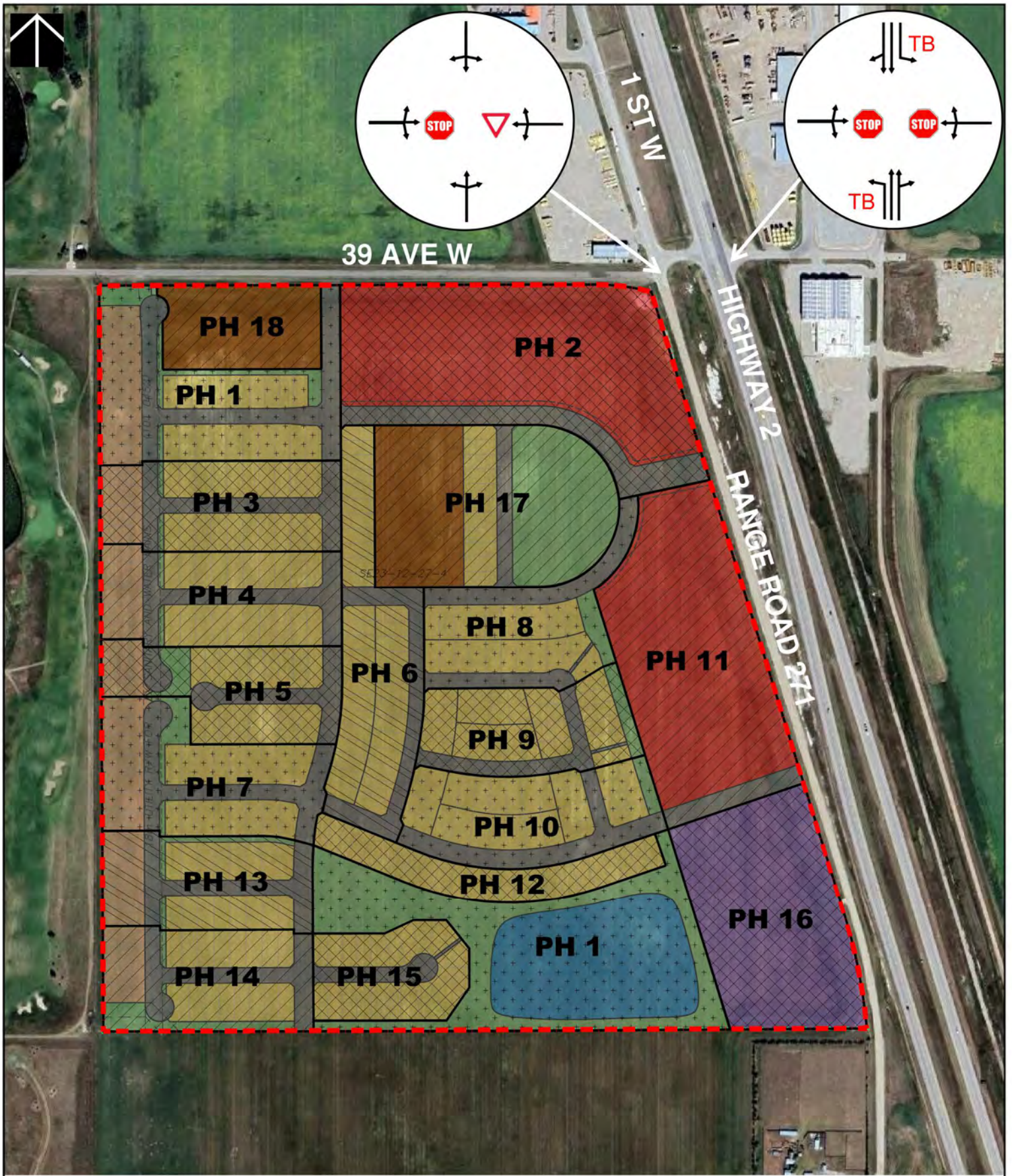
## 4.8 2045 Background + Development

Similarly to the 2035 Background + Development, the generated trips from full build-out (Phases 1 to 18) of Evolution Lands were added to the 2045 Background traffic and analyzed in Synchro.

The recommended lane configurations of the 2045 Background + Development scenario remain the same as the 2035 Background + Development horizon and are shown in Figure 4.1 and Exhibit 4.3. The results are attached in Appendix D and summarized in Table 4.7. From the analysis, the intersection operates well within acceptable performance criteria.

Table 4.7: 2045 Background + Development Results

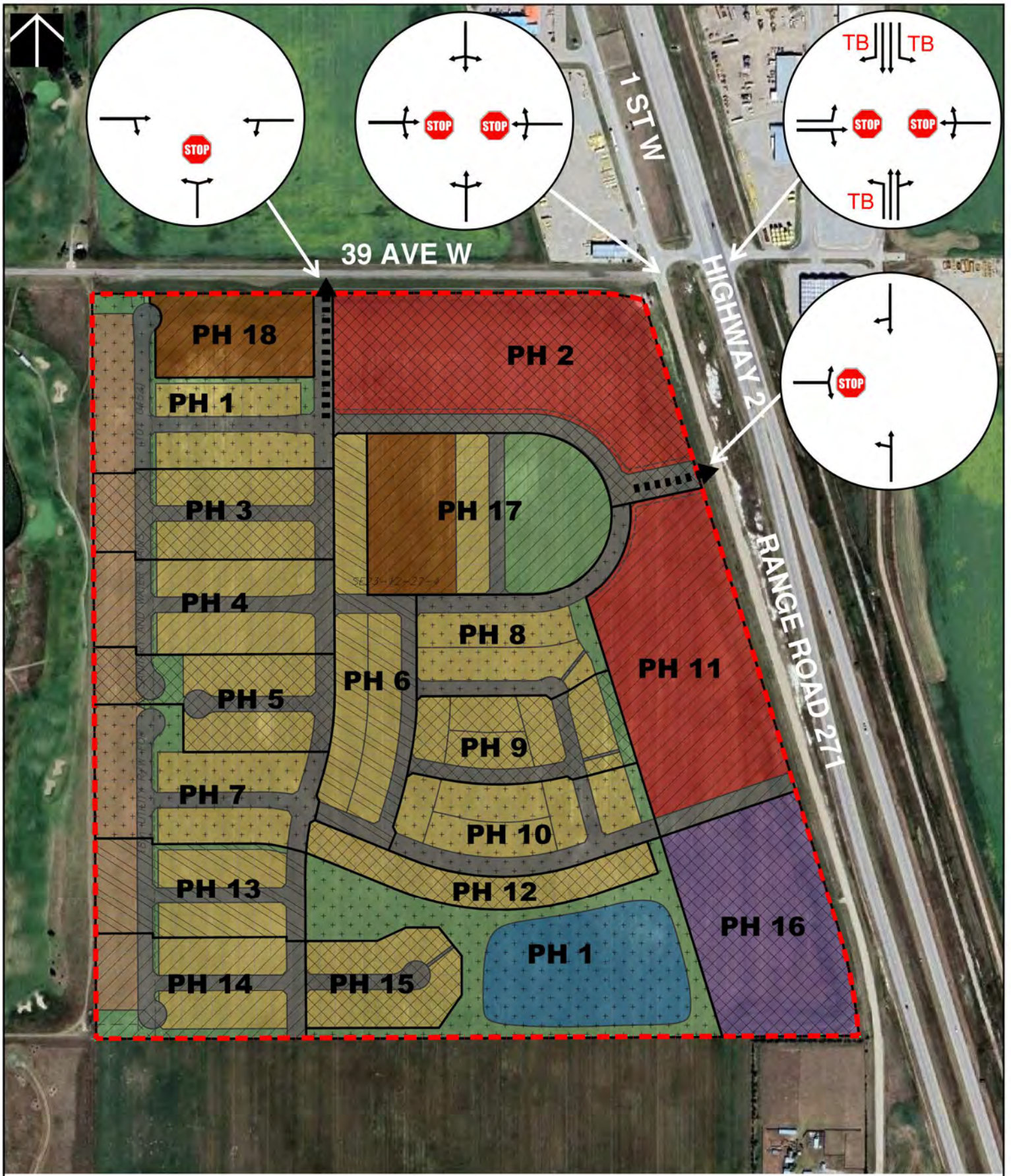
Intersection		AM Peak			PM Peak		
Name	Movement	v/c Ratio	LOS	Queue Length 95 <sup>th</sup> (m)	v/c Ratio	LOS	Queue Length 95 <sup>th</sup> (m)
Highway 2 / 39 Avenue (Signalized)	EBL	0.54	C	29	0.83	D	83
	EBT/R	0.27	A	11	0.43	A	22
	WBL/T/R	0.04	B	5	0.07	B	9
	NBL	0.28	B	13	0.55	B	41
	NBT/T	0.52	B	37	0.46	B	55
	NBR	0.52	B	37	0.46	B	55
	SBL	0.02	A	2	0.01	C	2
	SBT/T	0.52	B	39	0.67	C	67
	SBR	0.17	A	7	0.54	A	21
39 Avenue W / 1 St W (RIRO)	WBT/R	0.14	A	0	0.41	A	0
	SBR	0.02	A	1	0.10	C	2
39 Avenue W / North Access (NB Stop)	EBT/R	0.00	A	0	0.02	A	0
	WBL/T	0.14	A	4	0.45	A	18
	NBL/R	0.30	A	10	0.61	B	33
Range Road 271 / Southeast Access (EB Stop)	EBL/R	0.05	A	1	0.07	A	2
	NBL/T	0	A	0	0	A	0
	SBT/R	0.02	A	0	0.05	A	0



--- Development Boundary  
TB - Turn Bay

EVOLUTION LANDS ASP TIA  
EXISTING LANE CONFIGURATIONS

EXHIBIT 4.1  
MAY 2024

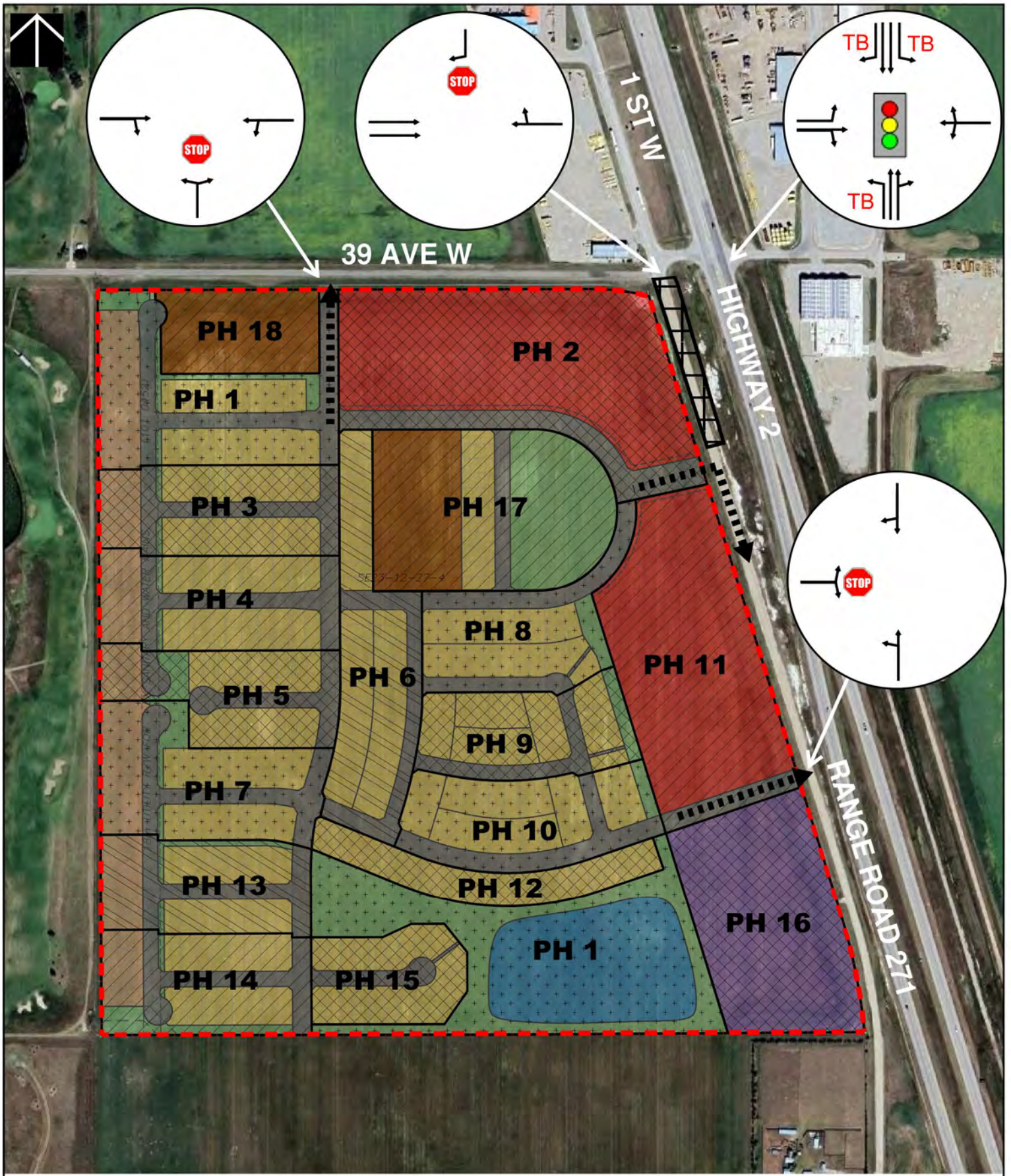


- Development Boundary
- Access
- TB - Turn Bay

EVOLUTION LANDS ASP TIA

2025 POST DEVELOPMENT  
LANE CONFIGURATIONS

EXHIBIT 4.2  
MAY 2024



- Development Boundary
- Access
- TB - Turn Bay

EVOLUTION LANDS ASP TIA  
2035 / 2045 POST DEVELOPMENT  
LANE CONFIGURATIONS

EXHIBIT 4.3  
MAY 2024

## 5.0 Warrants

### 5.1 Signal Warrants

The Transportation Association of Canada's (TAC) "Traffic Signal and Pedestrian Signal Head Warrant Analysis" was completed for Highway 2 / 39 Avenue in all scenarios. In the warrant, the 6-hour peak traffic is required. A conversion factor of 2.61 is used to calculate the 6-hour peak traffic from the sum of AM and PM peak traffic volumes (6-hour peak = (AM Peak + PM Peak) x 2.61). The factor is a commonly used factor in urban areas to convert the AM and PM peak hour traffic to the 6-hour traffic. A score of 100 points is required to warrant a signal.

The signal warrant analysis results are shown in Appendix E and summarized in Table 5.1. From the results, signalization is warranted in both the 2035 and 2045 Background + Development scenarios and matches the results from the Synchro analysis.

Table 5.1: TAC Signal Warrant Results

Intersection	Scenario	Warrant Score	Warranted (Yes/No)
Highway 2 / 39 Avenue	2025 Background	15	No
	2025 Background + Development	72	No
	2035 Background	17	No
	2035 Background + Development	311	Yes
	2045 Background	20	No
	2045 Background + Development	356	Yes

### 5.2 Illumination Warrants

Currently, Highway 2 / 39 Avenue is illuminated and therefore illumination warrants were not undertaken at the intersection.

### 5.3 Left and Right Turn Warrants

Highway 2 / 39 Avenue already has northbound and southbound left turn lanes, therefore only right turn warrant analysis was undertaken.

The Alberta Transportation Highway Geometric Design Guide Chapter D "At-Grade Intersections" was used for the right turn warrant analysis at the Highway 2 / 39 Avenue intersection in the 2025 scenarios. It is noted the right turn warrants were not analyzed in the 2035 and 2045 scenarios as the warrant does not apply to signalized intersections.

To warrant an exclusive right turn lane at a four-lane divided highway intersection, the right turn daily traffic volumes must be greater 360.

The results of the right turn warrants are summarized in Table 5.4.

Table 5.4: Right Turn Warrant Results

Intersection	Scenario	Direction	RT Daily Volume	Warrant
Highway 2 / 39 Avenue	2025 Background	Northbound	70	No
	2025 Background	Southbound	150	No
	2025 Background + Development	Northbound	70	No
	2025 Background + Development	Southbound	1100	Yes

From the warrant, a southbound right turn is warranted in the 2025 Background + Development scenario.

## 6.0 Street Classifications

The estimated daily traffic volumes within the site were derived to confirm recommended street classifications in accordance with the Town of Claresholm's Servicing Standards as summarized in Table 6.1 below.

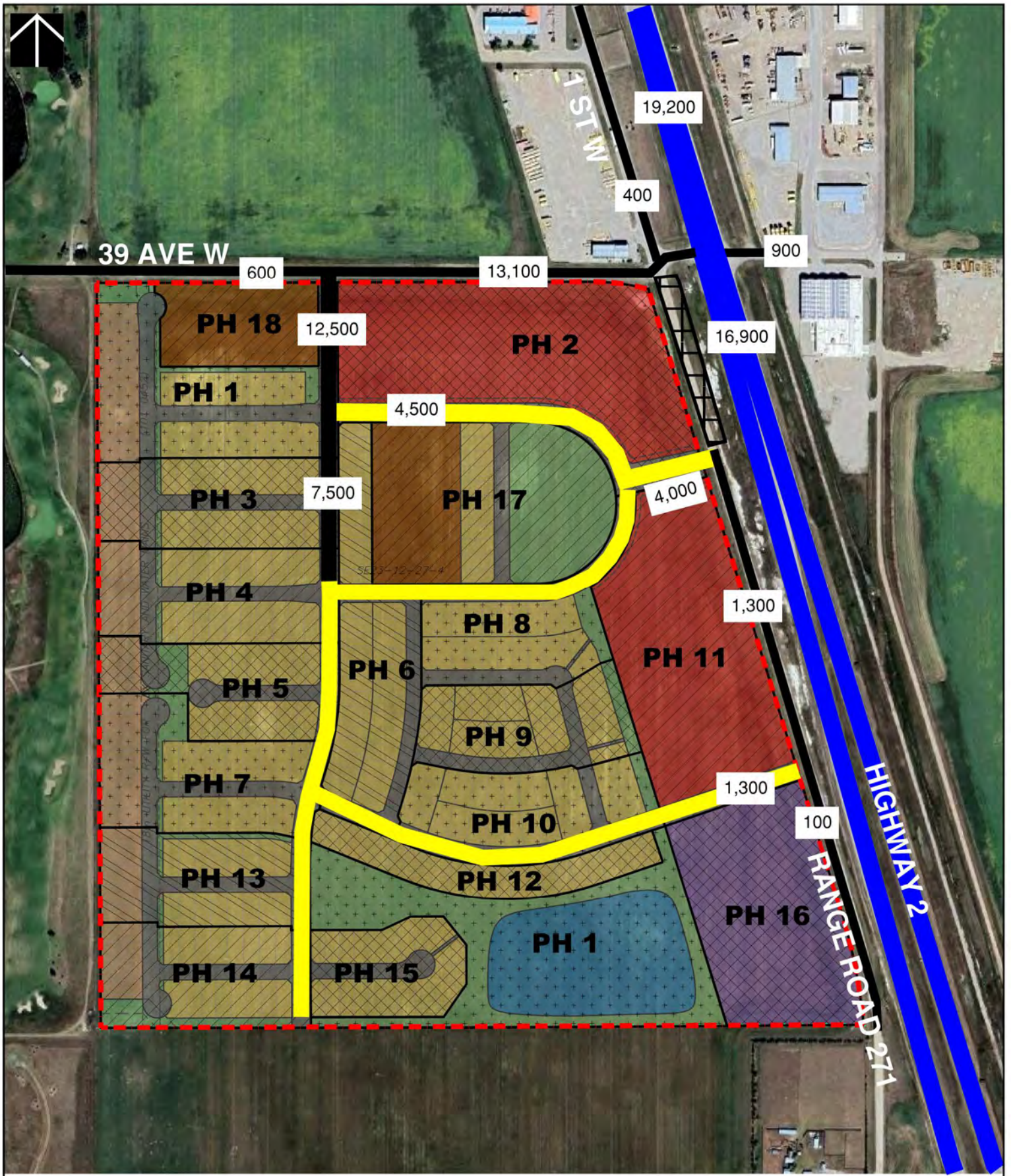
Table 6.1: Street Capacity Guidelines

Street Classification	Capacity Guidelines (vpd)	Lanes
Residential Collector	5,000	2
Commercial & Industrial	12,000*	2

\* The Town does not have any daily capacity for Commercial / Industrial Street. The 12,000 vpd references The City of Calgary's Industrial Street road classification.

The 2045 post-development daily traffic volume was estimated by multiplying the PM peak hour traffic volumes by ten and are summarized in Exhibit 6.1.

From Exhibit 6.1, the ultimate traffic volumes of the Evolution Lands development are within the respective street classification capacities, with the exception of the first segment of the 39 Avenue W access. The daily traffic is 12,500 vehicles per day and exceeds the 12,000 vehicles per day threshold of a Commercial & Industrial. It is recommended to maintain this segment as a Commercial & Industrial as the segment is just a 4% variance; also the Synchro analysis concludes to the access operating well as a 2-lane road. In addition, the latest submitted plans have fewer units (36 less units single family, 88 less multi-family units), which would reduce the daily traffic to less than 12,000 vehicles.



- Development Boundary
- Highway
- Undivided Arterial - 2 or 4 Lanes
- Residential Collector - 2 Lanes
- Industrial / Commercial - 2 Lanes

**EVOLUTION LANDS ASP TIA**  
**2045 POST DEVELOPMENT DAILY**  
**TRAFFIC STREET CLASSIFICATIONS**

## 7.0 Collisions / Safety Review

The latest available collision data from the last 5 years (2015 to 2019) were collected from TEC's TIMS (Transportation Infrastructure Management System) website for Highway 2 / 39 Avenue.

The collision type (animal, single vehicle, multi vehicle) and collision severity (property damage, minor, major, fatal) are identified and are shown in Figure 7.1. From the attached graph, the following trends are observed:

- Only one (1) minor injury collision occurred (February 2018) at the intersection.
- The collision was a single vehicle accident with the vehicle losing control and overturned into the ditch.

The current intersection has sufficient sightlines on all approaches, and it is expected collisions will continue to be minimal based on the collision history. It is anticipated that post development, signalization will also improve the safety performance of the intersection as drivers turning left on to Highway 2 will not need to judge for gap acceptance.

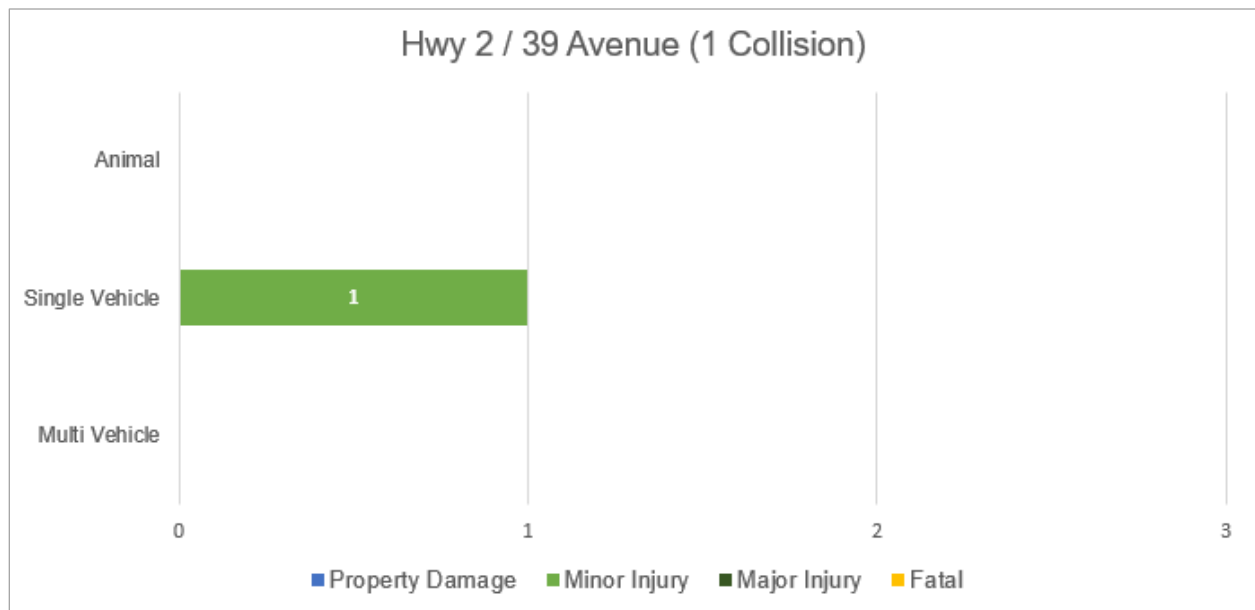


Figure 7.1: Highway 2 / 39 Avenue 5 Year Collision History

## 8.0 Highway 2 / 39 Avenue Mitigation Options

The proposed Evolution Lands ASP development will generate additional traffic on the surrounding roadway network, especially on the Highway 2 and 39 Avenue intersection. In Section 4.6, the south leg of 39 Avenue / Range Road 271 was recommended to be closed in 2035 due to the long eastbound queue with the signalization of Highway 2 / 39 Avenue. From discussions with the Town and Evolution Lands following the initial submission of this TIA, there is a strong desire to keep Range Road 271 open for Town and the Evolution Lands development residents.

The following mitigation measure options could be implemented to maintain acceptable operations of the intersection whilst maintaining Range Road 271 open for access to the site and the adjacent properties. Deploying different mitigation measures allows the Town flexibility in the changes to the traffic network over the long term and refine the conceptual development timelines as required.

- Option 1: No Improvements
- Option 2: Add Signalization at Highway 2 / 39 Avenue
- Option 3: Add Signalization at Highway 2 / 39 Avenue and North-South Connector (Option 3A) or 8 Street Connector (Option 3B)
- Option 4: Add Signalization and Dual Eastbound Left Turn at Highway 2 / 39 Avenue
- Option 5: Add Signalization and Dual Eastbound Left Turn at Highway 2 / 39 Avenue, and Add North-South Connector or 8 Street Connector

The details for each mitigation option and the accommodated phasing and timelines are described below. As Evolution Lands is developed, additional traffic counts and analysis updates will be required to be completed to quantify the actual demands generated by the development, future traffic, and timelines.

### 8.1 Option 1: Utilize Existing Network Capacity

No upgrades are warranted from the development of **Phases 1 and 2**, as per the 2025 Background + Development scenario in Section 4.1.

### 8.2 Option 2: Signalize Highway 2 / 39 Avenue

Signalization of Highway 2 / 39 Avenue will improve traffic flow at Highway 2 / 39 Avenue and maintain acceptable operations for the service road. Preliminary analysis in the 2025 horizon indicates that signalization would be able to accommodate **Phases 1 to 3** before other mitigation measures are required. Also, the eastbound queue at Highway 2 / 39 Avenue will not spill into the 39 Avenue W / Range Road 271 intersection. No geometric improvements of Highway 2 / 39 Avenue or 39 Avenue W / Range Road 271 is required at this stage.

### 8.3 Option 3A: North-South Connection Along Existing Town ROW

In addition to signalization at Highway 2 / 39 Avenue, a north-south connection between Fairway Drive and 39 Avenue along the existing public land bordering the Triple T Services Lands could be introduced. This right-of-way (ROW) is 12m wide and owned by The Town of Claresholm. This option would provide an alternative route for development traffic to travel to/from the north and will reduce the demand at

Highway 2 / 39 Avenue. This new road would also improve connectivity and accessibility of the site and adjacent properties. It is estimated a 15% reduction in traffic demand at Highway 2 / 39 Avenue would occur, allowing for **Phases 1 to 4** to be built in the 2025 horizon.



Figure 8.1: North-South Connection

## 8.4 Option 3B: West Connection To 8th Street

Option 3B introduces a west connection to 8 Street through The Bridges at Claresholm golf course. Similarly to Option 3A, this connection will provide an alternative route for development traffic and will reduce the demand at Highway 2 / 39 Avenue. The connection is estimated to provide a similar reduction to traffic as Option 3A (north-south connection) and will accommodate **Phases 1 to 4** with signalization of Highway 2 / 39 Avenue. This new road would also improve connectivity and accessibility of the site and adjacent properties. Realignment of 39 Avenue W and coordination would be required with the golf course for this option.

## 8.5 Options 4 and 5: Dual Left Turn Lanes at Highway 2 / 39 Avenue

Option 4 introduces a signalized non-standard dual left turn intersection improvement at Highway 2 / 39 Avenue (concept shown in Figure 8.2 below). This non-standard intersection design will likely require a design exception from TEC for approval.

This option involves modifying the Highway 2 and 39 Avenue intersection to provide a 35 m dual eastbound left-turn lane between Highway 2 and Range Road 271. The dual left-turn lanes will increase the capacity and efficiency of the intersection and will accommodate **Phases 1 to 15 / 16** between the 2040-2045 horizon. The dual left-turn lanes will also facilitate the re-alignment of the intersection to remove the existing skew.



Figure 8.2: Dual Left Turn Concept

In Option 5, the north-south connection (Option 3A) or west connection (Option 3) is added to Option 4. With an additional connection that provides a 15% reduction in traffic demand at Highway 2 / 39 Avenue, the entire Evolution Lands development (**Phases 1 to 18**) could be accommodated between the 2040-2045 horizon.

## 8.6 Revised Build Out Intersection Upgrade Timelines

By constructing these mitigation measures in various combinations, the following build out timeline can be implemented without the closure of Range Road 271. The timelines are also dependent on the order in which mitigation measures are implemented. It is noted that additional assessment updates will be required to be undertaken at each phase to confirm the future traffic and actual traffic demands.

- 2025 – Phase 1 and 2
  - No upgrades are warranted in the Background scenarios.
- 2025 Background + Development (Phase 3)
  - Intersection Signalization
- 2025 Background + Development (Phase 4)
  - Intersection Signalization
  - North/South Connector or 8th Street Connector
- 2040 / 2045 Background + Development (Phase 15 or 16)
  - Intersection Signalization
  - Dual Eastbound Turning Lanes without any of the connectors
- 2040 / 2045 Background + Development (Phase 18 – build-out)
  - Intersection Signalization
  - Dual Eastbound Turning Lanes with either one of the connectors

## 9.0 Conclusions

The Evolution Lands Development Transportation Impact Assessment has been prepared for Evolution Lands to understand the traffic impacts of the proposed residential / commercial development located in Claresholm, Alberta. The following is a summary of the TIA completed for the proposed development:

- The proposed commercial development is expected to generate following trips:
  - 2025 Horizon (Phases 1 and 2): 109 trips during the AM Peak and 365 trips during the PM Peak
  - 2035 and 2045 Horizon (Full Build-out – Phases 1 to 18): 510 trips during the AM Peak and 1,242 trips during the PM Peak
  - Note: The unit counts of the submitted plan are slightly lower (36 less units single family, 88 less multi-family units) than the above table while the sizes of the retail parcels are unchanged.
- The generated trips from the development were added to the 2025, 2035, and 2045 Background traffic at the study intersections and were analyzed using Synchro software. At Highway 2 / 39 Avenue signal and right turn warrants were also undertaken. From the analyses, the results are as follows:
  - 2025, 2035, and 2045 Background:
    - No upgrades are warranted in the Background scenarios.
  - 2025 Background + Development:
    - A southbound right turn is warranted at Highway 2 / 39 Avenue and an eastbound left turn lane is required to be added to the existing unsignalized intersection.
  - 2035 / 2045 Background + Development:
    - Signalization is required at Highway 2 / 39 Avenue based on the signal warrant.
    - An eastbound left turn bay of 100 m is required at Highway 2 / 39 Avenue.
    - To accommodate the turn bay, the south leg of 39 Avenue W / Range Road 271 (1 St W) will be closed and the north leg (1 St W) will be converted to a right-in right-out only.
    - It is noted a right-in right-out cannot be implemented on the south leg as design standards do not permit a side road to be connected at the turn bay of the main road.
    - With the closure of the south leg at 39 Avenue W / Range Road 271, all development traffic will be routed to the 39 Avenue W access.
- Following the initial TIA submission, discussions were held with the Town and TEC and additional analyses were undertaken to maintain the access to Range Road 271 in the long term. Highway 2 / 39 Avenue mitigation options were evaluated to determine acceptable operations of the intersection whilst maintaining Range Road 271 open for access to the site and the adjacent properties. The following options could be implemented with the phasing each option can accommodate:
  - Option 1: No Improvements – Phases 1 and 2 (2025 Horizon)
  - Option 2: Add Signalization at Highway 2 / 39 Avenue – Phases 1 to 3 (2025 Horizon)
  - Option 3: Add Signalization at Highway 2 / 39 Avenue and North-South Connector (Option 3A) or 8 Street Connector (Option 3B) – Phases 1 to 4 (2025 Horizon)
  - Option 4: Add Signalization and Dual Eastbound Left Turn at Highway 2 / 39 Avenue – Phases 1 to 15/16 (2045 Horizon)
  - Option 5: Add Signalization and Dual Eastbound Left Turn at Highway 2 / 39 Avenue, and Add North-South Connector or 8 Street Connector - Phases 1 to 18 (2045 Horizon)

- From the daily traffic in the 2045 horizon, the ultimate traffic volumes of the Evolution Lands Development are within the respective street classification capacities, with the exception of the first segment of the 39 Avenue W access. The segment is recommended to remain as a Commercial & Industrial as the daily threshold is only exceeded by 4% and the Synchro analysis concluded to the segment operating well as a 2-lane road. Also the latest submitted plans has fewer units (36 less units single family, 88 less multi-family units) and would reduce the daily traffic to less than 12,000 vehicles.
- A collision / safety review was undertaken, and it was found that the collision history at Highway 2 / 39 Avenue is minimal. It is anticipated that post development, signalization would improve the safety performance of the intersection.



## ■ 10.0 Closure

ISL Engineering and Land Services Ltd. has prepared this report entitled "Evolution Lands TIA" for Evolution Lands to support the proposed development in the town of Claresholm, Alberta. The material contained herein reflects ISL's best judgment in light of the information available at the time of the study and the level of detail normally expected at the preliminary planning stage.

Any use which a third party makes of this report or reliance on this report or decision made based on this report are the sole responsibility of such third parties. ISL accepts no responsibility for damages, if any suffered by a third party as a result of decisions made, or actions taken, based on this report.



**APPENDIX**  
Site Plan

A



Integrated Expertise, Locally Delivered



- Town of Claresholm Boundary
- Proposed ASP Boundary
- Residential Estate Lots (Min 20m x 44m)
- Residential Large Lot (Min 20m x 40m)
- Residential Single Family (Min 15.2m x 35m)
- Multiple Residential / Seniors
- Highway Commercial
- Service Industrial
- Open Space
- Storm Water Management

## Development Concept

Town of Claresholm  
Evolution Area Structure Plan

February 2024



**APPENDIX**  
Scope of Work

**B**

## Alex Ho

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**From:** Leah Olsen <leah.olsen@gov.ab.ca>  
**Sent:** October 19, 2023 10:48 AM  
**To:** Alex Ho  
**Cc:** Leah Olsen  
**Subject:** FW: Claresholm ASP TIA - Scope of Work

Good Morning Alex,

Please see additional comments.  
Thank you,

### Leah Olsen

Development/Planning Technologist  
Construction and Maintenance Division, Southern Region  
Transportation and Economic Corridors | Government of Alberta

Tel 403-388-3105  
Cell 403-308-2601  
[leah.olsen@gov.ab.ca](mailto:leah.olsen@gov.ab.ca)



Transportation and Economic Corridors Online Permitting and Referral System Roadside Planning Application Tracking Hub (RPATH) is NOW LIVE! <https://roadsideplanning.alberta.ca/rpath>

***Effective April 17, 2023, the transdevelopmentlethbridge inbox will no longer be actively monitored, and all circulations, referrals, and inquiries to Transportation and Economic Corridors must be submitted through the RPATH Portal.***

Classification: Protected A

---

**From:** Muhammad Imran <Muhammad.Imran@gov.ab.ca>  
**Sent:** Thursday, October 19, 2023 10:26 AM  
**To:** Leah Olsen <leah.olsen@gov.ab.ca>  
**Cc:** Darren S Davis <Darren.S.Davis@gov.ab.ca>; Evan Neilsen <Evan.Neilsen@gov.ab.ca>; Jerry Lau <Jerry.Lau@gov.ab.ca>; Rick Lemire <Rick.Lemire@gov.ab.ca>  
**Subject:** RE: Claresholm ASP TIA - Scope of Work

Hi Leah,

Sorry for the late response. I noticed that the 10 years scenario (year 2035) is not included in the analysis scenarios. This should be included or otherwise a justification for not including be provided. Thanks

Regards

(Muhammad Imran)

Classification: Protected A

---

**From:** Jerry Lau <[Jerry.Lau@gov.ab.ca](mailto:Jerry.Lau@gov.ab.ca)>  
**Sent:** October 19, 2023 8:25 AM  
**To:** Leah Olsen <[leah.olsen@gov.ab.ca](mailto:leah.olsen@gov.ab.ca)>; Muhammad Imran <[Muhammad.Imran@gov.ab.ca](mailto:Muhammad.Imran@gov.ab.ca)>; Rick Lemire <[Rick.Lemire@gov.ab.ca](mailto:Rick.Lemire@gov.ab.ca)>  
**Cc:** Darren S Davis <[Darren.S.Davis@gov.ab.ca](mailto:Darren.S.Davis@gov.ab.ca)>; Evan Neilsen <[Evan.Neilsen@gov.ab.ca](mailto:Evan.Neilsen@gov.ab.ca)>  
**Subject:** RE: Claresholm ASP TIA - Scope of Work

Not from me.

Thanks.

**Jerry Lau, P. Eng.**  
Infrastructure Manager  
Southern Region  
Transportation and Economic Corridors  
Government of Alberta

Tel 403-297-8633  
[Jerry.Lau@gov.ab.ca](mailto:Jerry.Lau@gov.ab.ca)



Classification: Protected A

---

**From:** Leah Olsen <[leah.olsen@gov.ab.ca](mailto:leah.olsen@gov.ab.ca)>  
**Sent:** Thursday, October 19, 2023 8:17 AM  
**To:** Jerry Lau <[Jerry.Lau@gov.ab.ca](mailto:Jerry.Lau@gov.ab.ca)>; Muhammad Imran <[Muhammad.Imran@gov.ab.ca](mailto:Muhammad.Imran@gov.ab.ca)>; Rick Lemire <[Rick.Lemire@gov.ab.ca](mailto:Rick.Lemire@gov.ab.ca)>  
**Cc:** Darren S Davis <[Darren.S.Davis@gov.ab.ca](mailto:Darren.S.Davis@gov.ab.ca)>; Leah Olsen <[leah.olsen@gov.ab.ca](mailto:leah.olsen@gov.ab.ca)>; Evan Neilsen <[Evan.Neilsen@gov.ab.ca](mailto:Evan.Neilsen@gov.ab.ca)>  
**Subject:** FW: Claresholm ASP TIA - Scope of Work

Good Morning,

Any further questions regarding the scope?  
Thank you, Leah

Classification: Protected A

---

**From:** Alex Ho <[aho@islengineering.com](mailto:aho@islengineering.com)>  
**Sent:** Friday, October 13, 2023 7:09 AM  
**To:** Leah Olsen <[leah.olsen@gov.ab.ca](mailto:leah.olsen@gov.ab.ca)>; [jace@claresholm.ca](mailto:jace@claresholm.ca)  
**Cc:** Andrew Ko <[AKO@islengineering.com](mailto:AKO@islengineering.com)>; Peter Villanueva <[PVillanueva@islengineering.com](mailto:PVillanueva@islengineering.com)>; Jerry Lau <[Jerry.Lau@gov.ab.ca](mailto:Jerry.Lau@gov.ab.ca)>; Muhammad Imran <[Muhammad.Imran@gov.ab.ca](mailto:Muhammad.Imran@gov.ab.ca)>; Rick Lemire <[Rick.Lemire@gov.ab.ca](mailto:Rick.Lemire@gov.ab.ca)>; Darren S Davis <[Darren.S.Davis@gov.ab.ca](mailto:Darren.S.Davis@gov.ab.ca)>; Evan Neilsen <[Evan.Neilsen@gov.ab.ca](mailto:Evan.Neilsen@gov.ab.ca)>  
**Subject:** RE: Claresholm ASP TIA - Scope of Work

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Hi Leah,

Yes, you are correct, Opening Day should be 2025.  
We've changed the horizons in red below.  
Please let us know if the remaining scope is ok.

Thanks,

**Alex Ho, P.Eng., PTOE** | *Manager, Traffic Engineering*  
**ISL Engineering and Land Services Ltd.**  
T: 403.254.0544 F: 403.254.9186 C: 403.605.5531

Classification: Protected A

**From:** Leah Olsen <[leah.olsen@gov.ab.ca](mailto:leah.olsen@gov.ab.ca)>  
**Sent:** Wednesday, October 11, 2023 10:05 AM  
**To:** Alex Ho <[aho@islengineering.com](mailto:aho@islengineering.com)>; [jace@claresholm.ca](mailto:jace@claresholm.ca)  
**Cc:** Andrew Ko <[AKo@islengineering.com](mailto:AKo@islengineering.com)>; Peter Villanueva <[PVillanueva@islengineering.com](mailto:PVillanueva@islengineering.com)>; Jerry Lau <[Jerry.Lau@gov.ab.ca](mailto:Jerry.Lau@gov.ab.ca)>; Muhammad Imran <[muhammad.imran@gov.ab.ca](mailto:muhammad.imran@gov.ab.ca)>; Rick Lemire <[Rick.Lemire@gov.ab.ca](mailto:Rick.Lemire@gov.ab.ca)>; Darren S Davis <[Darren.S.Davis@gov.ab.ca](mailto:Darren.S.Davis@gov.ab.ca)>; Leah Olsen <[leah.olsen@gov.ab.ca](mailto:leah.olsen@gov.ab.ca)>; Evan Neilsen <[Evan.Neilsen@gov.ab.ca](mailto:Evan.Neilsen@gov.ab.ca)>  
**Subject:** RE: Claresholm ASP TIA - Scope of Work

Good Morning Alex,

Transportation and Economic Corridors provides the following comment:

- What is the likely year the development will be substantially completed as this is just the ASP stage? It certainly isn't going to be 2023. 20 year horizon should be from that post development year.

Thank you,

**Leah Olsen**  
Development/Planning Technologist  
Construction and Maintenance Division, Southern Region  
Transportation and Economic Corridors | Government of Alberta

Tel 403-388-3105  
Cell 403-308-2601  
[leah.olsen@gov.ab.ca](mailto:leah.olsen@gov.ab.ca)



Transportation and Economic Corridors Online Permitting and Referral System Roadside Planning Application Tracking Hub (RPATH) is NOW LIVE! <https://roadsideplanning.alberta.ca/rpath>

***Effective April 17, 2023, the transdevelopmentlethbridge inbox will no longer be actively monitored, and all circulations, referrals, and inquiries to Transportation and Economic Corridors must be submitted through the RPATH Portal.***

Classification: Protected A

---

**From:** Alex Ho <[aho@islengineering.com](mailto:aho@islengineering.com)>  
**Sent:** Tuesday, October 10, 2023 12:59 PM  
**To:** [jace@claresholm.ca](mailto:jace@claresholm.ca); Leah Olsen <[leah.olsen@gov.ab.ca](mailto:leah.olsen@gov.ab.ca)>  
**Cc:** Andrew Ko <[AKo@islengineering.com](mailto:AKo@islengineering.com)>; Peter Villanueva <[PVillanueva@islengineering.com](mailto:PVillanueva@islengineering.com)>  
**Subject:** Claresholm ASP TIA - Scope of Work

**CAUTION:** This email has been sent from an external source. Treat hyperlinks and attachments in this email with care.

Hi Leah and Jace,

ISL has been retained by Evolution Land Development to undertake a TIA in support of a residential ASP application in Claresholm. The land is 54 ha and is located at SE ¼ Section 23-12-27-W4M. The site is bounded by 39th Avenue West to the north, Range Road 271 to the east, existing farmland to the south, and an existing golf club to the west. An early sketch of the plan is attached. About 400 residential lots and 3 commercial lots are proposed. The following is the scope of work for your approval.

- 12-hour traffic count at the intersection of Highway 2 / 39 Avenue and a manual AM (7-9 AM) and PM (4-6) traffic count at the intersection of 39 Avenue W / Range Road 271.
- Increase the Hwy 2 through traffic to the 100th Highest Hour using ATEC's automatic traffic recorder in Claresholm (on Hwy 2, 0.8 km north of Hwy 520).
- Generate trips of the development using ITE Trip Generation Manual, 11th Edition.
- Distribute trips onto the adjacent road network based on existing traffic patterns.
- Add the generated trips of the subject development onto existing traffic.
- Analyze the following scenarios:
  - Scenario 1: 2025 Background
  - Scenario 2: 2025 Background + Development
  - Scenario 3: 2045 Background
  - Scenario 4: 2045 Background + Development
- Analyze the following intersections in the above scenarios:
  - Highway 2 / 39 Avenue
  - 39 Avenue W / Range Road 271
  - Accesses on 39 Avenue W and Range Road 271
- The 2025 and 2045 Background traffic is calculated by applying a growth rate to the Highway 2 through traffic.
  - The growth will be determined from the nearest ATEC count, at Hwy 2 / 520. The Hwy 2 2012-2022 growth at the south leg of the intersection is 0.57% / year. To be conservative, the ATEC growth of 2% / year growth will be applied.
- Undertake signal, left turn, right turn, and illumination warrant analyses.
- Collisions / safety analysis at the intersection of Highway 2 / 39 Avenue.

Thanks,



**Alex Ho, P.Eng., PTOE** | Manager, Traffic Engineering  
 ISL Engineering and Land Services Ltd.  
 4015 - 7 Street SE  
 Calgary, AB T2G 2Y9  
 T: 403.254.0544 F: 403.254.9186 C: 403.605.5531  
[aho@islengineering.com](mailto:aho@islengineering.com) [islengineering.com](http://islengineering.com)

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**APPENDIX**  
Raw Traffic Data

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TOTAL: Hwy 2 / 39 Ave, Claresholm, AB

AM: Nov 8, 2023, PM: Nov 22, 2023

Time	Southbound						Westbound						Northbound						Eastbound					
	U Turns	Left Turns	Straight Through	Right Turns	EB Crosswalk Crossings	WB Crosswalk Crossings	U Turns	Left Turns	Straight Through	Right Turns	NB Crosswalk Crossings	SB Crosswalk Crossings	U Turns	Left Turns	Straight Through	Right Turns	EB Crosswalk Crossings	WB Crosswalk Crossings	U Turns	Left Turns	Straight Through	Right Turns	NB Crosswalk Crossings	SB Crosswalk Crossings
7:00	1	1	49	0	0	0	0	2	0	0	0	0	0	0	38	2	0	0	0	0	0	0	0	0
7:15	0	1	56	0	0	0	0	1	1	1	0	0	0	0	43	2	0	0	0	0	0	0	0	0
7:30	0	1	61	0	0	0	0	0	0	1	0	0	0	0	39	1	0	0	0	0	1	0	0	0
7:45	0	0	57	1	0	0	0	1	0	0	0	0	0	0	47	2	0	0	0	0	1	0	0	0
8:00	0	0	59	0	0	0	0	1	0	0	0	0	0	0	50	6	0	0	0	0	0	0	0	0
8:15	0	1	60	0	0	0	0	0	0	1	0	0	0	0	63	0	0	0	0	0	0	0	0	0
8:30	0	4	63	0	0	0	0	2	0	0	0	0	0	0	61	1	0	0	0	0	0	0	0	0
8:45	0	0	58	1	0	0	0	0	0	2	0	0	0	0	44	1	0	0	0	0	0	0	0	0
9:00	0	0	78	0	0	0	0	4	2	0	0	0	0	0	53	1	0	0	0	0	1	1	0	0
9:15	0	0	65	1	0	0	0	2	1	0	0	0	0	0	67	2	0	0	0	0	0	0	0	0
9:30	0	0	62	0	1	0	0	2	2	0	0	0	0	0	66	1	0	0	0	0	0	0	0	0
9:45	0	1	72	0	0	0	0	1	0	2	0	0	0	0	70	1	0	0	0	0	0	0	0	0
10:00	0	1	55	0	0	0	0	1	0	1	0	0	0	0	57	0	0	0	0	0	3	0	0	0
10:15	0	0	73	0	0	0	0	0	0	0	0	0	0	0	49	0	0	0	0	1	0	1	0	0
10:30	0	2	57	1	0	0	0	0	1	2	0	0	0	0	66	0	0	0	0	0	0	0	0	0
10:45	0	1	75	1	0	0	0	0	0	1	0	0	0	0	48	2	0	0	0	1	1	0	0	0
11:00	0	0	68	0	0	0	0	0	1	1	0	0	0	0	56	0	0	0	0	0	0	0	0	0
11:15	0	1	61	0	0	0	0	0	0	2	0	0	0	0	60	3	0	0	0	0	1	0	0	0
11:30	0	2	58	1	0	0	0	1	1	2	0	0	0	0	59	0	0	0	0	0	0	0	0	0
11:45	0	0	61	1	0	0	0	0	0	2	0	0	0	0	61	1	0	0	0	0	0	0	0	0
12:00	0	0	74	0	0	0	0	1	1	3	0	0	0	0	74	0	0	0	0	0	0	0	0	0
12:15	0	0	65	0	0	0	0	1	0	2	0	0	0	0	64	2	0	0	0	0	0	4	0	0
12:30	0	1	74	0	0	0	0	2	2	0	0	0	0	0	65	0	0	0	0	2	1	5	0	0
12:45	0	1	64	1	0	0	0	1	0	0	0	0	0	0	83	2	0	0	0	0	2	2	0	0
13:00	0	0	69	0	0	0	0	1	0	0	0	0	0	0	68	1	0	0	0	1	0	0	0	0
13:15	1	0	75	1	0	0	0	5	0	2	0	0	0	0	75	2	0	0	0	0	0	3	0	0
13:30	0	0	56	0	0	0	0	0	0	2	0	0	0	0	60	2	0	0	0	1	0	1	0	0
13:45	1	1	80	0	0	0	0	2	0	2	0	0	0	0	69	3	0	0	0	0	0	0	0	0
14:00	0	2	64	1	0	0	0	3	0	2	0	0	0	0	93	0	0	0	0	0	0	1	0	0
14:15	0	0	69	1	0	0	0	1	0	1	0	0	0	0	85	2	0	0	0	0	0	1	0	0
14:30	0	5	81	0	0	0	0	1	0	2	0	0	0	0	83	2	0	0	0	1	1	1	0	0
14:45	0	0	68	1	0	0	0	4	0	0	0	0	0	0	95	3	0	0	0	2	0	2	0	0
15:00	1	0	82	0	0	0	0	1	1	2	0	0	0	0	68	1	0	0	0	1	0	0	0	0
15:15	1	1	82	1	0	0	0	1	0	2	0	0	0	0	97	3	0	0	0	1	1	2	0	0
15:30	0	2	69	0	0	0	0	1	0	3	0	0	0	0	86	0	0	0	0	0	0	1	0	0
15:45	0	0	91	0	0	0	0	4	0	0	0	0	0	0	87	3	0	0	0	0	1	0	0	0
16:00	0	0	96	0	0	0	0	0	2	0	0	0	0	0	90	1	0	0	0	0	0	2	0	0
16:15	0	1	76	0	0	0	0	3	0	3	0	0	0	0	74	1	0	0	0	0	2	3	0	0
16:30	0	0	57	0	0	0	0	0	0	0	0	0	0	0	75	2	0	0	0	0	0	1	0	0
16:45	0	1	71	0	0	0	0	0	0	0	0	0	0	0	89	3	0	0	0	0	0	1	0	0
17:00	0	1	74	1	0	0	0	2	2	2	0	0	0	0	80	1	0	0	0	0	0	3	0	0
17:15	0	1	53	0	0	0	0	2	0	3	0	0	0	0	99	1	0	0	0	0	0	2	0	0
17:30	0	0	60	0	0	0	0	0	0	0	0	0	0	0	60	2	0	0	0	0	0	0	0	0
17:45	0	0	65	0	0	0	0	0	0	0	0	0	0	0	67	2	0	0	0	0	0	1	0	0
18:00	0	1	58	0	0	0	0	0	0	0	0	0	0	0	59	0	0	0	0	1	0	0	0	0
18:15	0	0	53	0	0	0	0	0	1	1	0	0	0	0	46	1	0	0	0	0	0	1	0	0
18:30	0	0	41	0	0	0	0	1	0	0	0	0	0	0	57	1	0	0	0	0	0	3	0	0
18:45	0	0	47	0	0	0	0	2	0	0	0	0	0	0	43	1	0	0	0	0	0	1	0	0

E-W Road

N-S Road

Date

08-Nov-23

39 Ave W

/

Rge Rd 271

All Vehicles

	Time	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
	7:00 - 7:15										1		
	7:15 - 7:30												
	7:30 - 7:45								1				
	7:45 - 8:00					1				1			
	8:00 - 8:15									1	2		
	8:15 - 8:30												
	8:30 - 8:45				1	1							
	8:45 - 9:00												
AM Peak Hour Volume		0	0	0	1	2	0	0	0	2	2	0	0
	16:00 - 16:15					1	2				2		
	16:15 - 16:30	1					1				4		
	16:30 - 16:45										2		
	16:45 - 17:00												
	17:00 - 17:15		1		2		2		1		2		1
	17:15 - 17:30								2		2	1	
	17:30 - 17:45												
	17:45 - 18:00												
PM Peak Hour Volume		1	1	0	2	0	3	0	1	0	8	0	1





















**APPENDIX**  
Synchro Results

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# HCM Unsignalized Intersection Capacity Analysis 1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2025 Background AM

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	6	1	2	4	1	1	9	464	9	5	502	16	
Future Volume (Veh/h)	6	1	2	4	1	1	9	464	9	5	502	16	
Sign Control	Stop			Stop			Free			Free			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Hourly flow rate (vph)	6	1	2	4	1	1	10	494	10	5	534	17	
Pedestrians													
Lane Width (m)													
Walking Speed (m/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	None								None				
Median storage (veh)													
Upstream signal (m)													
pX, platoon unblocked													
vC, conflicting volume	821	1076	276	798	1080	252	551				504		
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	821	1076	276	798	1080	252	551				504		
tC, single (s)	7.6	6.6	7.0	7.7	6.7	7.1	4.2				4.5		
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2				2.4		
p0 queue free %	98	100	100	98	99	100	99				99		
cM capacity (veh/h)	257	210	713	255	198	718	994				929		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3					
Volume Total	9	6	10	329	175	5	356	195					
Volume Left	6	4	10	0	0	5	0	0					
Volume Right	2	1	0	0	10	0	0	17					
cSH	291	271	994	1700	1700	929	1700	1700					
Volume to Capacity	0.03	0.02	0.01	0.19	0.10	0.01	0.21	0.11					
Queue Length 95th (m)	0.7	0.5	0.2	0.0	0.0	0.1	0.0	0.0					
Control Delay (s)	17.8	18.6	8.7	0.0	0.0	8.9	0.0	0.0					
Lane LOS	C	C	A				A						
Approach Delay (s)	17.8	18.6	0.2				0.1						
Approach LOS	C	C											
Intersection Summary													
Average Delay	0.4												
Intersection Capacity Utilization	24.8%			ICU Level of Service					A				
Analysis Period (min)	15												



















# HCM Unsignalized Intersection Capacity Analysis 2: Rge Rd 271/1 St W & 39 Avenue

Evolution Lands ASP TIA  
2025 Background AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	6	0	1	26	0	0	0	2	2	0	1
Future Volume (Veh/h)	0	6	0	1	26	0	0	0	2	2	0	1
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	6	0	1	28	0	0	0	2	2	0	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	20	6	0	8	6	1	1				2	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	20	6	0	8	6	1	1				2	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	99	100	100	97	100	100				100	
cM capacity (veh/h)	962	882	1076	997	882	1075	1602				1601	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	6	29	2	3								
Volume Left	0	1	0	2								
Volume Right	0	0	2	1								
cSH	882	886	1602	1601								
Volume to Capacity	0.01	0.03	0.00	0.00								
Queue Length 95th (m)	0.2	0.8	0.0	0.0								
Control Delay (s)	9.1	9.2	0.0	4.8								
Lane LOS	A	A		A								
Approach Delay (s)	9.1	9.2	0.0	4.8								
Approach LOS	A	A										
Intersection Summary												
Average Delay	8.4											
Intersection Capacity Utilization	13.3%			ICU Level of Service			A					
Analysis Period (min)	15											

















# HCM Unsignalized Intersection Capacity Analysis 1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2025 Background PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	3	16	3	3	3	13	508	7	2	464	15
Future Volume (Veh/h)	14	3	16	3	3	3	13	508	7	2	464	15
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	15	3	17	3	3	3	14	535	7	2	488	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	800	1070	252	833	1074	271	504				542	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	800	1070	252	833	1074	271	504				542	
tC, single (s)	7.6	6.6	7.0	7.8	6.8	7.2	4.2				4.5	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.2	3.4	2.2				2.4	
p0 queue free %	94	99	98	99	98	100	99				100	
cM capacity (veh/h)	263	212	739	229	196	689	1036				908	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	35	9	14	357	185	2	325	179				
Volume Left	15	3	14	0	0	2	0	0				
Volume Right	17	3	0	0	7	0	0	16				
cSH	372	275	1036	1700	1700	908	1700	1700				
Volume to Capacity	0.09	0.03	0.01	0.21	0.11	0.00	0.19	0.11				
Queue Length 95th (m)	2.4	0.8	0.3	0.0	0.0	0.1	0.0	0.0				
Control Delay (s)	15.7	18.5	8.5	0.0	0.0	9.0	0.0	0.0				
Lane LOS	C	C	A				A					
Approach Delay (s)	15.7	18.5	0.2				0.0					
Approach LOS	C	C										
Intersection Summary												
Average Delay	0.8											
Intersection Capacity Utilization	24.7%			ICU Level of Service			A					
Analysis Period (min)	15											





















# HCM Unsignalized Intersection Capacity Analysis 2: Rge Rd 271/1 St W & 39 Avenue

Evolution Lands ASP TIA  
2025 Background PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	24	0	2	26	3	0	1	0	8	0	2
Future Volume (Veh/h)	2	24	0	2	26	3	0	1	0	8	0	2
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	25	0	2	27	3	0	1	0	8	0	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None								None			
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	34	18	1	30	19	1	2				1	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	34	18	1	30	19	1	2				1	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	97	100	100	97	100	100				100	
cM capacity (veh/h)	935	866	1075	945	865	1075	1601				1602	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	27	32	1	10								
Volume Left	2	2	0	8								
Volume Right	0	3	0	2								
cSH	871	886	1601	1602								
Volume to Capacity	0.03	0.04	0.00	0.00								
Queue Length 95th (m)	0.7	0.9	0.0	0.1								
Control Delay (s)	9.3	9.2	0.0	5.8								
Lane LOS	A	A		A								
Approach Delay (s)	9.3	9.2	0.0	5.8								
Approach LOS	A	A										
Intersection Summary												
Average Delay	8.6											
Intersection Capacity Utilization	17.2%			ICU Level of Service			A					
Analysis Period (min)	15											

















# HCM Unsignalized Intersection Capacity Analysis 1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2025 Background + Development AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	4	21	4	4	1	29	464	9	5	502	46
Future Volume (Veh/h)	33	4	21	4	4	1	29	464	9	5	502	46
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	35	4	22	4	4	1	31	494	10	5	534	49
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None								None			
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	856	1110	267	862	1154	252	583	504				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	856	1110	267	862	1154	252	583	504				
tC, single (s)	7.6	6.6	7.0	7.7	6.7	7.1	4.2	4.5				
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2	2.4				
p0 queue free %	85	98	97	98	98	100	97	99				
cM capacity (veh/h)	235	196	722	216	175	718	967	929				
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4		
Volume Total	35	26	9	31	329	175	5	267	267	49		
Volume Left	35	0	4	31	0	0	5	0	0	0		
Volume Right	0	22	1	0	0	10	0	0	0	49		
cSH	235	511	210	967	1700	1700	929	1700	1700	1700		
Volume to Capacity	0.15	0.05	0.04	0.03	0.19	0.10	0.01	0.16	0.16	0.03		
Queue Length 95th (m)	3.9	1.2	1.0	0.8	0.0	0.0	0.1	0.0	0.0	0.0		
Control Delay (s)	23.0	12.4	22.9	8.8	0.0	0.0	8.9	0.0	0.0	0.0		
Lane LOS	C	B	C	A	A							
Approach Delay (s)	18.5			22.9	0.5	0.1						
Approach LOS	C			C								
Intersection Summary												
Average Delay				1.4								
Intersection Capacity Utilization	31.6%			ICU Level of Service					A			
Analysis Period (min)	15											

# HCM Unsignalized Intersection Capacity Analysis 2: Rge Rd 271/1 St W & 39 Avenue

Evolution Lands ASP TIA  
2025 Background + Development AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	42	1	25	56	0	1	1	16	2	1	3
Future Volume (Veh/h)	2	42	1	25	56	0	1	1	16	2	1	3
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	2	45	1	27	60	0	1	1	17	2	1	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	48	26	2	42	20	10	4	18				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	48	26	2	42	20	10	4	18				
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1	4.1				
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2	2.2				
p0 queue free %	100	95	100	97	93	100	100	100				
cM capacity (veh/h)	894	859	1073	914	867	1063	1598	1579				
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	48	87	19	6								
Volume Left	2	27	1	2								
Volume Right	1	0	17	3								
cSH	864	881	1598	1579								
Volume to Capacity	0.06	0.10	0.00	0.00								
Queue Length 95th (m)	1.3	2.5	0.0	0.0								
Control Delay (s)	9.4	9.5	0.4	2.4								
Lane LOS	A	A	A	A								
Approach Delay (s)	9.4	9.5	0.4	2.4								
Approach LOS	A	A										
Intersection Summary												
Average Delay	8.1											
Intersection Capacity Utilization	21.1%			ICU Level of Service					A			
Analysis Period (min)	15											




HCM Unsignalized Intersection Capacity Analysis  
3: N Access & 39 Ave W/39 Avenue

Evolution Lands ASP TIA  
2025 Background + Development AM

	→	↗	↖	←	↙	↘
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↙	
Traffic Volume (veh/h)	7	1	32	27	1	37
Future Volume (Veh/h)	7	1	32	27	1	37
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	7	1	34	29	1	39
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			8		104	8
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			8		104	8
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	96
cM capacity (veh/h)			1593		867	1066
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	8	63	40			
Volume Left	0	34	1			
Volume Right	1	0	39			
cSH	1700	1593	1060			
Volume to Capacity	0.00	0.02	0.04			
Queue Length 95th (m)	0.0	0.5	0.9			
Control Delay (s)	0.0	4.0	8.5			
Lane LOS	A		A			
Approach Delay (s)	0.0	4.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay			5.4			
Intersection Capacity Utilization			19.9%	ICU Level of Service		A
Analysis Period (min)	15					





















HCM Unsignalized Intersection Capacity Analysis  
4: Rge Rd 271 & NE Access

Evolution Lands ASP TIA  
2025 Background + Development AM

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	0	0	2	1	24
Future Volume (Veh/h)	14	0	0	2	1	24
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	15	0	0	2	1	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	16	14	27			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	16	14	27			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	100	100			
cM capacity (veh/h)	995	1057	1568			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	15	2	27			
Volume Left	15	0	0			
Volume Right	0	0	26			
cSH	995	1568	1700			
Volume to Capacity	0.02	0.00	0.02			
Queue Length 95th (m)	0.3	0.0	0.0			
Control Delay (s)	8.7	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.7	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay	3.0					
Intersection Capacity Utilization	13.3%			ICU Level of Service	A	
Analysis Period (min)	15					

















# HCM Unsignalized Intersection Capacity Analysis 1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2025 Background + Development PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	10	91	3	10	3	81	483	7	2	434	115
Future Volume (Veh/h)	109	10	91	3	10	3	81	483	7	2	434	115
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	115	11	96	3	11	3	85	508	7	2	457	121
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked	894	1146	228	1016	1264	258	578			515		
vC, conflicting volume												
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	894	1146	228	1016	1264	258	578			515		
tC, single (s)	7.6	6.6	7.0	7.8	6.8	7.2	4.2			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.2	3.4	2.2			2.4		
p0 queue free %	43	94	87	98	92	100	91			100		
cM capacity (veh/h)	202	176	765	136	138	704	971			931		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4		
Volume Total	115	107	17	85	339	176	2	228	228	121		
Volume Left	115	0	3	85	0	0	2	0	0	0		
Volume Right	0	96	3	0	0	7	0	0	0	121		
cSH	202	569	160	971	1700	1700	931	1700	1700	1700		
Volume to Capacity	0.57	0.19	0.11	0.09	0.20	0.10	0.00	0.13	0.13	0.07		
Queue Length 95th (m)	23.5	5.2	2.7	2.2	0.0	0.0	0.0	0.0	0.0	0.0		
Control Delay (s)	44.2	12.8	30.1	9.1	0.0	0.0	8.9	0.0	0.0	0.0		
Lane LOS	E	B	D	A			A					
Approach Delay (s)	29.0		30.1	1.3			0.0					
Approach LOS	D		D									
Intersection Summary												
Average Delay	5.5											
Intersection Capacity Utilization	40.1%											
ICU Level of Service	A											
Analysis Period (min)	15											

# HCM Unsignalized Intersection Capacity Analysis 2: Rge Rd 271/1 St W & 39 Avenue

Evolution Lands ASP TIA  
2025 Background + Development PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	120	1	77	126	3	1	4	81	8	3	6
Future Volume (Veh/h)	6	120	1	77	126	3	1	4	81	8	3	6
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	6	126	1	81	133	3	1	4	85	8	3	6
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked		140	113	6	134	74	46	9		89		
vC, conflicting volume												
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol		140	113	6	134	74	46	9		89		
tC, single (s)		7.1	6.5	6.2	7.1	6.5	6.2	4.1		4.1		
tC, 2 stage (s)												
tF (s)		3.5	4.0	3.3	3.5	4.0	3.3	2.2		2.2		
p0 queue free %		99	84	100	89	84	100	100		99		
cM capacity (veh/h)		714	767	1068	721	806	1014	1591		1488		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	133	217	90	17								
Volume Left	6	81	1	8								
Volume Right	1	3	85	6								
cSH	766	774	1591	1488								
Volume to Capacity	0.17	0.28	0.00	0.01								
Queue Length 95th (m)	4.8	8.7	0.0	0.1								
Control Delay (s)	10.7	11.4	0.1	3.5								
Lane LOS	B	B	A	A								
Approach Delay (s)	10.7	11.4	0.1	3.5								
Approach LOS	B	B										
Intersection Summary												
Average Delay	8.7											
Intersection Capacity Utilization	35.0%											
ICU Level of Service	A											
Analysis Period (min)	15											




HCM Unsignalized Intersection Capacity Analysis  
3: N Access & 39 Ave W/39 Avenue

Evolution Lands ASP TIA  
2025 Background + Development PM

	→	↘	↖	←	↙	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↘			↙	↗	
Traffic Volume (veh/h)	27	1	103	29	1	99
Future Volume (Veh/h)	27	1	103	29	1	99
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	28	1	108	31	1	104
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			29		276	28
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			29		276	28
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		100	90
cM capacity (veh/h)			1565		659	1038
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	29	139	105			
Volume Left	0	108	1			
Volume Right	1	0	104			
cSH	1700	1565	1032			
Volume to Capacity	0.02	0.07	0.10			
Queue Length 95th (m)	0.0	1.7	2.6			
Control Delay (s)	0.0	5.9	8.9			
Lane LOS		A	A			
Approach Delay (s)	0.0	5.9	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			6.4			
Intersection Capacity Utilization			27.1%	ICU Level of Service	A	
Analysis Period (min)			15			



















HCM Unsignalized Intersection Capacity Analysis  
4: Rge Rd 271 & NE Access

Evolution Lands ASP TIA  
2025 Background + Development PM

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	84	0	0	1	2	78
Future Volume (Veh/h)	84	0	0	1	2	78
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	88	0	0	1	2	82
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	44	43	84			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	44	43	84			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	100	100			
cM capacity (veh/h)	959	1019	1494			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	88	1	84			
Volume Left	88	0	0			
Volume Right	0	0	82			
cSH	959	1494	1700			
Volume to Capacity	0.09	0.00	0.05			
Queue Length 95th (m)	2.3	0.0	0.0			
Control Delay (s)	9.1	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.1	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay				4.6		
Intersection Capacity Utilization	16.5%			ICU Level of Service	A	
Analysis Period (min)	15					
















# HCM Unsignalized Intersection Capacity Analysis 1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2035 Background AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	1	2	4	1	1	9	554	9	5	599	16
Future Volume (Veh/h)	6	1	2	4	1	1	9	554	9	5	599	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	6	1	2	4	1	1	10	589	10	5	637	17
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	972	1274	327	945	1278	300	654			599		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	972	1274	327	945	1278	300	654			599		
tC, single (s)	7.6	6.6	7.0	7.7	6.7	7.1	4.2			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.4		
p0 queue free %	97	99	100	98	99	100	99			99		
cM capacity (veh/h)	199	159	660	198	149	668	909			849		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	9	6	10	393	206	5	425	229				
Volume Left	6	4	10	0	0	5	0	0				
Volume Right	2	1	0	0	10	0	0	17				
cSH	228	211	909	1700	1700	849	1700	1700				
Volume to Capacity	0.04	0.03	0.01	0.23	0.12	0.01	0.25	0.13				
Queue Length 95th (m)	0.9	0.7	0.3	0.0	0.0	0.1	0.0	0.0				
Control Delay (s)	21.4	22.5	9.0	0.0	0.0	9.3	0.0	0.0				
Lane LOS	C	C	A			A						
Approach Delay (s)	21.4	22.5	0.1			0.1						
Approach LOS	C	C										
Intersection Summary												
Average Delay			0.4									
Intersection Capacity Utilization			27.5%		ICU Level of Service					A		
Analysis Period (min)			15									



















# HCM Unsignalized Intersection Capacity Analysis 2: Rge Rd 271/1 St W & 39 Avenue

Evolution Lands ASP TIA  
2035 Background AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	6	0	1	26	0	0	0	2	2	0	1
Future Volume (Veh/h)	0	6	0	1	26	0	0	0	2	2	0	1
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	6	0	1	28	0	0	0	2	2	0	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	20	6	0	8	6	1	1				2	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	20	6	0	8	6	1	1				2	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	99	100	100	97	100	100				100	
cM capacity (veh/h)	962	882	1076	997	882	1075	1602				1601	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	6	29	2	3								
Volume Left	0	1	0	2								
Volume Right	0	0	2	1								
cSH	882	886	1602	1601								
Volume to Capacity	0.01	0.03	0.00	0.00								
Queue Length 95th (m)	0.2	0.8	0.0	0.0								
Control Delay (s)	9.1	9.2	0.0	4.8								
Lane LOS	A	A		A								
Approach Delay (s)	9.1	9.2	0.0	4.8								
Approach LOS	A	A										
Intersection Summary												
Average Delay	8.4											
Intersection Capacity Utilization	13.3%			ICU Level of Service			A					
Analysis Period (min)	15											
















# HCM Unsignalized Intersection Capacity Analysis 1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2035 Background PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	3	16	3	3	3	13	605	7	2	554	15
Future Volume (Veh/h)	14	3	16	3	3	3	13	605	7	2	554	15
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	15	3	17	3	3	3	14	637	7	2	583	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	946	1267	300	982	1272	322	599				644	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	946	1267	300	982	1272	322	599				644	
tC, single (s)	7.6	6.6	7.0	7.8	6.8	7.2	4.2				4.5	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.2	3.4	2.2				2.4	
p0 queue free %	93	98	98	98	98	100	99				100	
cM capacity (veh/h)	205	161	688	176	147	637	954				825	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	35	9	14	425	219	2	389	210				
Volume Left	15	3	14	0	0	2	0	0				
Volume Right	17	3	0	0	7	0	0	16				
cSH	300	214	954	1700	1700	825	1700	1700				
Volume to Capacity	0.12	0.04	0.01	0.25	0.13	0.00	0.23	0.12				
Queue Length 95th (m)	3.0	1.0	0.3	0.0	0.0	0.1	0.0	0.0				
Control Delay (s)	18.6	22.6	8.8	0.0	0.0	9.4	0.0	0.0				
Lane LOS	C	C	A				A					
Approach Delay (s)	18.6	22.6	0.2				0.0					
Approach LOS	C	C										
Intersection Summary												
Average Delay	0.8											
Intersection Capacity Utilization	27.4%			ICU Level of Service			A					
Analysis Period (min)	15											

# HCM Unsignalized Intersection Capacity Analysis 2: Rge Rd 271/1 St W & 39 Avenue

Evolution Lands ASP TIA  
2035 Background PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	24	0	2	26	3	0	1	0	8	0	2
Future Volume (Veh/h)	2	24	0	2	26	3	0	1	0	8	0	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	25	0	2	27	3	0	1	0	8	0	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None								None			
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	34	18	1	30	19	1	2	1				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	34	18	1	30	19	1	2	1				
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1	4.1				
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2	2.2				
p0 queue free %	100	97	100	100	97	100	100	100				
cM capacity (veh/h)	935	866	1075	945	865	1075	1601	1602				
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	27	32	1	10								
Volume Left	2	2	0	8								
Volume Right	0	3	0	2								
cSH	871	886	1601	1602								
Volume to Capacity	0.03	0.04	0.00	0.00								
Queue Length 95th (m)	0.7	0.9	0.0	0.1								
Control Delay (s)	9.3	9.2	0.0	5.8								
Lane LOS	A	A		A								
Approach Delay (s)	9.3	9.2	0.0	5.8								
Approach LOS	A	A										
Intersection Summary												
Average Delay	8.6											
Intersection Capacity Utilization	17.2%			ICU Level of Service					A			
Analysis Period (min)	15											

Lanes, Volumes, Timings  
1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2025 Background + Development AM

	↖	→	↘	↙	←	↖	↙	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖			↖		↖	↖		↖	↖	↖
Traffic Volume (vph)	183	23	102	4	12	1	81	554	9	5	599	129
Future Volume (vph)	183	23	102	4	12	1	81	554	9	5	599	129
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	0.0		0.0	0.0		0.0	90.0		0.0	90.0		90.0
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.877			0.992			0.997				0.850
Flt Protected	0.950				0.989		0.950			0.950		
Satd. Flow (prot)	1692	1562	0	0	1639	0	1692	2726	0	1457	2913	1514
Flt Permitted	0.746				0.935		0.410			0.426		
Satd. Flow (perm)	1329	1562	0	0	1549	0	730	2726	0	653	2913	1514
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		109			1			3				137
Link Speed (k/h)	50				50			70				70
Link Distance (m)	59.4				137.7			272.0				229.6
Travel Time (s)	4.3				9.9			14.0				11.8
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	12%	12%	12%	5%	30%	30%	22%	22%	5%
Adj. Flow (vph)	195	24	109	4	13	1	86	589	10	5	637	137
Shared Lane Traffic (%)												
Lane Group Flow (vph)	195	133	0	0	18	0	86	599	0	5	637	137
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	3.7				3.7			3.7				3.7
Link Offset(m)	0.0				0.0			0.0				0.0
Crosswalk Width(m)	4.8				4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	20.0
Minimum Split (s)	25.5	25.5		25.5	25.5		25.5	25.5		25.5	25.5	25.5
Total Split (s)	29.0	29.0		29.0	29.0		31.0	31.0		31.0	31.0	31.0
Total Split (%)	48.3%	48.3%		48.3%	48.3%		51.7%	51.7%		51.7%	51.7%	51.7%
Maximum Green (s)	23.5	23.5		23.5	23.5		25.5	25.5		25.5	25.5	25.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min

Lanes, Volumes, Timings  
1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2025 Background + Development AM

	↖	→	↘	↙	←	↖	↙	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	12.4	12.4			12.4		21.9	21.9		21.9	21.9	21.9
Actuated g/C Ratio	0.27	0.27			0.27		0.48	0.48		0.48	0.48	0.48
v/c Ratio	0.54	0.26			0.04		0.25	0.46		0.02	0.45	0.17
Control Delay	19.3	5.7			11.0		10.5	9.9		7.8	9.8	2.7
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	19.3	5.7			11.0		10.5	9.9		7.8	9.8	2.7
LOS	B	A			B		B	A		A	A	A
Approach Delay		13.8			11.0			9.9			8.5	
Approach LOS		B			B			A			A	
Queue Length 50th (m)	12.1	1.3			0.9		3.3	13.7		0.2	14.6	0.0
Queue Length 95th (m)	26.8	9.7			4.0		12.8	31.1		1.7	32.6	7.0
Internal Link Dist (m)		35.4			113.7			248.0			205.6	
Turn Bay Length (m)							90.0			90.0		90.0
Base Capacity (vph)	692	866			807		419	1568		375	1674	928
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.28	0.15			0.02		0.21	0.38		0.01	0.38	0.15

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 45.4

Natural Cycle: 55

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 10.0

Intersection LOS: B

Intersection Capacity Utilization 64.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Highway 2 & 39 Avenue



Lanes, Volumes, Timings  
2: 39 Avenue /39 Avenue & 1 St W

Evolution Lands ASP TIA  
2025 Background + Development AM

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		↑↑	↓			↑
Traffic Volume (vph)	0	308	222	0	0	14
Future Volume (vph)	0	308	222	0	0	14
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)	60.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	30.0				30.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Frt					0.865	0.865
Flt Protected						
Satd. Flow (prot)	0	3385	1781	0	0	1541
Flt Permitted						
Satd. Flow (perm)	0	3385	1781	0	0	1541
Link Speed (k/h)		50	50		50	
Link Distance (m)		386.1	59.4		123.1	
Travel Time (s)		27.8	4.3		8.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	5%	5%	2%	2%	5%
Adj. Flow (vph)	0	328	236	0	0	15
Shared Lane Traffic (%)						10%
Lane Group Flow (vph)	0	328	236	0	2	13
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 22.0%	ICU Level of Service A					
Analysis Period (min) 15						




HCM Unsignalized Intersection Capacity Analysis  
2: 39 Avenue /39 Avenue & 1 St W

Evolution Lands ASP TIA  
2025 Background + Development AM

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		↑↑	↓			↑
Traffic Volume (veh/h)	0	308	222	0	0	14
Future Volume (Veh/h)	0	308	222	0	0	14
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	328	236	0	0	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			59			
pX, platoon unblocked						
vC, conflicting volume	236				400	236
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	236				400	236
tC, single (s)	4.1				6.8	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	1328				578	756
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	164	164	236	15		
Volume Left	0	0	0	0		
Volume Right	0	0	0	15		
cSH	1700	1700	1700	756		
Volume to Capacity	0.10	0.10	0.14	0.02		
Queue Length 95th (m)	0.0	0.0	0.0	0.5		
Control Delay (s)	0.0	0.0	0.0	9.9		
Lane LOS				A		
Approach Delay (s)	0.0		0.0	9.9		
Approach LOS				A		
<b>Intersection Summary</b>						
Average Delay			0.3			
Intersection Capacity Utilization			22.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
3: N Access & 39 Ave W/39 Avenue

Evolution Lands ASP TIA  
2025 Background + Development AM

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	7	1	208	27	1	302
Future Volume (vph)	7	1	208	27	1	302
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983				0.865	
Flt Protected				0.958		
Satd. Flow (prot)	1751	0	0	1707	1541	0
Flt Permitted				0.958		
Satd. Flow (perm)	1751	0	0	1707	1541	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	282.6			386.1	107.6	
Travel Time (s)	20.3			27.8	7.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	7	1	221	29	1	321
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	0	0	250	322	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	45.9%			ICU Level of Service A		
Analysis Period (min)	15					











HCM Unsignalized Intersection Capacity Analysis  
3: N Access & 39 Ave W/39 Avenue

Evolution Lands ASP TIA  
2025 Background + Development AM

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶			↶	↶	
Traffic Volume (veh/h)	7	1	208	27	1	302
Future Volume (Veh/h)	7	1	208	27	1	302
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	7	1	221	29	1	321
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			8		478	8
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			8		478	8
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			86		100	70
cM capacity (veh/h)			1593		465	1066
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	8	250	322			
Volume Left	0	221	1			
Volume Right	1	0	321			
cSH	1700	1593	1062			
Volume to Capacity	0.00	0.14	0.30			
Queue Length 95th (m)	0.0	3.7	9.8			
Control Delay (s)	0.0	6.9	9.9			
Lane LOS		A	A			
Approach Delay (s)	0.0	6.9	9.9			
Approach LOS			A			
Intersection Summary						
Average Delay	8.4					
Intersection Capacity Utilization	45.9%			ICU Level of Service		
Analysis Period (min)	15					
	A					










Lanes, Volumes, Timings  
5: Rge Rd 271 & SE Access

Evolution Lands ASP TIA  
2025 Background + Development AM

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	46	1	0	2	1	28
Future Volume (vph)	46	1	0	2	1	28
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997			0.869		
Flt Protected	0.953					
Satd. Flow (prot)	1693	0	0	1781	1548	0
Flt Permitted	0.953					
Satd. Flow (perm)	1693	0	0	1781	1548	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.7			146.4	224.6	
Travel Time (s)	14.6			10.5	16.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	49	1	0	2	1	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	50	0	0	2	31	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 13.3%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis  
5: Rge Rd 271 & SE Access

Evolution Lands ASP TIA  
2025 Background + Development AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	46	1	0	2	1	28
Future Volume (Veh/h)	46	1	0	2	1	28
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	49	1	0	2	1	30
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	18	16	31			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	18	16	31			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	992	1055	1562			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	50	2	31			
Volume Left	49	0	0			
Volume Right	1	0	30			
cSH	993	1562	1700			
Volume to Capacity	0.05	0.00	0.02			
Queue Length 95th (m)	1.2	0.0	0.0			
Control Delay (s)	8.8	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.8	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay	5.3					
Intersection Capacity Utilization	13.3%			ICU Level of Service		A
Analysis Period (min)	15					

Lanes, Volumes, Timings  
1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2025 Background + Development PM

	↖	→	↘	↙	←	↖	↘	↙	↖	↘	↙	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖			↖		↖	↖		↖	↖	↖
Traffic Volume (vph)	341	51	226	3	29	3	255	540	7	2	474	374
Future Volume (vph)	341	51	226	3	29	3	255	540	7	2	474	374
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	0.0		0.0	0.0		0.0	90.0		0.0	90.0		90.0
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.878			0.989			0.998				0.850
Flt Protected	0.950				0.996		0.950			0.950		
Satd. Flow (prot)	1692	1564	0	0	1602	0	1692	2838	0	1481	2962	1514
Flt Permitted	0.733				0.976		0.350			0.436		
Satd. Flow (perm)	1306	1564	0	0	1570	0	624	2838	0	680	2962	1514
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		238			3			2				394
Link Speed (k/h)	50				50			70				70
Link Distance (m)	59.4				137.7			272.0				229.6
Travel Time (s)	4.3				9.9			14.0				11.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%	15%	15%	15%	5%	25%	20%	20%	20%	5%
Adj. Flow (vph)	359	54	238	3	31	3	268	568	7	2	499	394
Shared Lane Traffic (%)												
Lane Group Flow (vph)	359	292	0	0	37	0	268	575	0	2	499	394
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	3.7				3.7			3.7				3.7
Link Offset(m)	0.0				0.0			0.0				0.0
Crosswalk Width(m)	4.8				4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	20.0		20.0	20.0	20.0
Minimum Split (s)	25.5	25.5		25.5	25.5		15.5	25.5		25.5	25.5	25.5
Total Split (s)	41.0	41.0		41.0	41.0		18.0	49.0		31.0	31.0	31.0
Total Split (%)	45.6%	45.6%		45.6%	45.6%		20.0%	54.4%		34.4%	34.4%	34.4%
Maximum Green (s)	35.5	35.5		35.5	35.5		15.0	43.5		25.5	25.5	25.5
Yellow Time (s)	3.5	3.5		3.5	3.5		2.9	3.5		3.5	3.5	3.5
All-Red Time (s)	2.0	2.0		2.0	2.0		0.1	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5			5.5		3.0	5.5		5.5	5.5	5.5
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Min		Min	Min	Min

Lanes, Volumes, Timings  
1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2025 Background + Development PM

	↖	→	↘	↙	←	↖	↘	↙	↖	↘	↙	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	24.6	24.6			24.6		41.1	38.5		22.0	22.0	22.0
Actuated g/C Ratio	0.33	0.33			0.33		0.55	0.52		0.30	0.30	0.30
v/c Ratio	0.83	0.43			0.07		0.50	0.39		0.01	0.57	0.54
Control Delay	40.3	6.7			16.2		14.0	13.0		23.0	27.0	6.0
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	40.3	6.7			16.2		14.0	13.0		23.0	27.0	6.0
LOS	D	A			B		B	B		C	C	A
Approach Delay		25.2			16.2			13.3			17.8	
Approach LOS		C			B			B			B	
Queue Length 50th (m)	44.9	5.1			3.2		18.2	23.5		0.2	31.6	0.0
Queue Length 95th (m)	83.0	21.9			9.4		41.2	45.1		1.9	55.0	20.5
Internal Link Dist (m)		35.4			113.7			248.0			205.6	
Turn Bay Length (m)							90.0			90.0		90.0
Base Capacity (vph)	639	887			770		565	1703		239	1041	787
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.56	0.33			0.05		0.47	0.34		0.01	0.48	0.50

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 74.4

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 18.2

Intersection LOS: B

Intersection Capacity Utilization 73.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Highway 2 & 39 Avenue



Lanes, Volumes, Timings  
2: 39 Avenue /39 Avenue & 1 St W

Evolution Lands ASP TIA  
2025 Background + Development PM

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		↑↑	↓			↑
Traffic Volume (vph)	0	617	655	3	0	36
Future Volume (vph)	0	617	655	3	0	36
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)	60.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	30.0				30.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Frt			0.999		0.865	0.865
Flt Protected						
Satd. Flow (prot)	0	3385	1780	0	0	1541
Flt Permitted						
Satd. Flow (perm)	0	3385	1780	0	0	1541
Link Speed (k/h)		50	50		50	
Link Distance (m)		386.1	59.4		123.1	
Travel Time (s)		27.8	4.3		8.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	5%	5%	2%	2%	5%
Adj. Flow (vph)	0	649	689	3	0	38
Shared Lane Traffic (%)						10%
Lane Group Flow (vph)	0	649	692	0	4	34
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 45.6%	ICU Level of Service A					
Analysis Period (min) 15						










HCM Unsignalized Intersection Capacity Analysis  
2: 39 Avenue /39 Avenue & 1 St W

Evolution Lands ASP TIA  
2025 Background + Development PM

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		↑↑	↓			↑
Traffic Volume (veh/h)	0	617	655	3	0	36
Future Volume (Veh/h)	0	617	655	3	0	36
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	649	689	3	0	38
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			59			
pX, platoon unblocked	0.91				0.91	0.91
vC, conflicting volume	692				1015	690
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	617				970	615
tC, single (s)	4.1				6.8	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	90
cM capacity (veh/h)	877				229	390
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	324	324	692	38		
Volume Left	0	0	0	0		
Volume Right	0	0	3	38		
cSH	1700	1700	1700	390		
Volume to Capacity	0.19	0.19	0.41	0.10		
Queue Length 95th (m)	0.0	0.0	0.0	2.4		
Control Delay (s)	0.0	0.0	0.0	15.2		
Lane LOS				C		
Approach Delay (s)	0.0		0.0	15.2		
Approach LOS				C		
<b>Intersection Summary</b>						
Average Delay			0.4			
Intersection Capacity Utilization			45.6%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
3: N Access & 39 Ave W/39 Avenue

Evolution Lands ASP TIA  
2025 Background + Development PM

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	27	1	662	29	1	590
Future Volume (vph)	27	1	662	29	1	590
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995				0.865	
Flt Protected				0.954		
Satd. Flow (prot)	1773	0	0	1700	1541	0
Flt Permitted				0.954		
Satd. Flow (perm)	1773	0	0	1700	1541	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	282.6			386.1	107.6	
Travel Time (s)	20.3			27.8	7.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	28	1	697	31	1	621
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	0	0	728	622	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	90.1%			ICU Level of Service E		
Analysis Period (min)	15					










HCM Unsignalized Intersection Capacity Analysis  
3: N Access & 39 Ave W/39 Avenue

Evolution Lands ASP TIA  
2025 Background + Development PM

	→	↗	↖	←	↙	↘
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↱	
Traffic Volume (veh/h)	27	1	662	29	1	590
Future Volume (Veh/h)	27	1	662	29	1	590
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	28	1	697	31	1	621
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			29		1454	28
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			29		1454	28
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			55		99	40
cM capacity (veh/h)			1565		78	1038
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	29	728	622			
Volume Left	0	697	1			
Volume Right	1	0	621			
cSH	1700	1565	1018			
Volume to Capacity	0.02	0.45	0.61			
Queue Length 95th (m)	0.0	17.9	32.9			
Control Delay (s)	0.0	8.9	13.9			
Lane LOS		A	B			
Approach Delay (s)	0.0	8.9	13.9			
Approach LOS			B			
Intersection Summary						
Average Delay	11.0					
Intersection Capacity Utilization	90.1%			ICU Level of Service E		
Analysis Period (min)	15					










Lanes, Volumes, Timings  
5: Rge Rd 271 & SE Access

Evolution Lands ASP TIA  
2025 Background + Development PM

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	60	1	0	1	2	73
Future Volume (vph)	60	1	0	1	2	73
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998				0.868	
Flt Protected	0.953					
Satd. Flow (prot)	1694	0	0	1781	1546	0
Flt Permitted	0.953					
Satd. Flow (perm)	1694	0	0	1781	1546	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.7			146.4	224.6	
Travel Time (s)	14.6			10.5	16.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	63	1	0	1	2	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	64	0	0	1	79	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	100	100	100			100
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	14.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
5: Rge Rd 271 & SE Access

Evolution Lands ASP TIA  
2025 Background + Development PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	1	0	1	2	73
Future Volume (Veh/h)	60	1	0	1	2	73
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	63	1	0	1	2	77
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	42	40	79			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	42	40	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 %	93	100	100			
cM capacity (veh/h)	962	1022	1500			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	64	1	79			
Volume Left	63	0	0			
Volume Right	1	0	77			
cSH	963	1500	1700			
Volume to Capacity	0.07	0.00	0.05			
Queue Length 95th (m)	1.6	0.0	0.0			
Control Delay (s)	9.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.0	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay		4.0				
Intersection Capacity Utilization		14.9%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings  
1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2045 Background AM

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1	2	4	1	1	9	643	9	5	695	16
Future Volume (vph)	6	1	2	4	1	1	9	643	9	5	695	16
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	0.0		0.0	0.0		0.0	90.0		0.0	90.0		90.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.970			0.977			0.998			0.997	
Flt Protected		0.968			0.968		0.950			0.950		
Satd. Flow (prot)	0	1673	0	0	1580	0	1692	2728	0	1457	2914	0
Flt Permitted		0.968			0.968		0.950			0.950		
Satd. Flow (perm)	0	1673	0	0	1580	0	1692	2728	0	1457	2914	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		59.4			137.7			272.0			229.6	
Travel Time (s)		4.3			9.9			19.6			16.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	12%	12%	12%	5%	30%	30%	22%	22%	5%
Adj. Flow (vph)	6	1	2	4	1	1	10	684	10	5	739	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	9	0	0	6	0	10	694	0	5	756	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 30.3%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis  
1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2045 Background AM

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	1	2	4	1	1	9	643	9	5	695	16
Future Volume (Veh/h)	6	1	2	4	1	1	9	643	9	5	695	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	6	1	2	4	1	1	10	684	10	5	739	17
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1121	1472	378	1091	1475	347	756			694		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1121	1472	378	1091	1475	347	756			694		
tC, single (s)	7.6	6.6	7.0	7.7	6.7	7.1	4.2			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.4		
p0 queue free %	96	99	100	97	99	100	99			99		
cM capacity (veh/h)	154	120	611	153	112	621	831			776		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	9	6	10	456	238	5	493	263				
Volume Left	6	4	10	0	0	5	0	0				
Volume Right	2	1	0	0	10	0	0	17				
cSH	178	164	831	1700	1700	776	1700	1700				
Volume to Capacity	0.05	0.04	0.01	0.27	0.14	0.01	0.29	0.15				
Queue Length 95th (m)	1.2	0.9	0.3	0.0	0.0	0.1	0.0	0.0				
Control Delay (s)	26.3	27.8	9.4	0.0	0.0	9.7	0.0	0.0				
Lane LOS	D	D	A			A						
Approach Delay (s)	26.3	27.8	0.1			0.1						
Approach LOS	D	D										

Intersection Summary

Average Delay 0.4

Intersection Capacity Utilization 30.3%

ICU Level of Service

A

Analysis Period (min) 15

## Lanes, Volumes, Timings

2: Rge Rd 271/1 St W &amp; 39 Avenue

## Evolution Lands ASP TIA

2045 Background AM

	↗	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	0	6	0	1	26	0	0	0	2	2	0	1
Future Volume (vph)	0	6	0	1	26	0	0	0	2	2	0	1
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt							0.865				0.955	
Flt Protected					0.998						0.968	
Satd. Flow (prot)	0	1781	0	0	1778	0	0	1541	0	0	1647	0
Flt Permitted					0.998						0.968	
Satd. Flow (perm)	0	1781	0	0	1778	0	0	1541	0	0	1647	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		386.1			59.4			220.9			123.1	
Travel Time (s)		27.8			4.3			15.9			8.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	6	0	1	28	0	0	0	2	2	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	0	0	29	0	0	2	0	0	3	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		10.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 13.3%	ICU Level of Service A											
Analysis Period (min) 15												

## HCM Unsignalized Intersection Capacity Analysis

2: Rge Rd 271/1 St W &amp; 39 Avenue

## Evolution Lands ASP TIA

2045 Background AM

	↗	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	0	6	0	1	26	0	0	0	2	2	0	1
Future Volume (Veh/h)	0	6	0	1	26	0	0	0	2	2	0	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	6	0	1	28	0	0	0	2	2	0	1
<b>Pedestrians</b>												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	20	6	0	8	6	1	1			2		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	20	6	0	8	6	1	1			2		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	100	100	97	100	100			100		
cM capacity (veh/h)	962	882	1076	997	882	1075	1602			1601		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	6	29	2	3								
Volume Left	0	1	0	2								
Volume Right	0	0	2	1								
cSH	882	886	1602	1601								
Volume to Capacity	0.01	0.03	0.00	0.00								
Queue Length 95th (m)	0.2	0.8	0.0	0.0								
Control Delay (s)	9.1	9.2	0.0	4.8								
Lane LOS	A	A		A								
Approach Delay (s)	9.1	9.2	0.0	4.8								
Approach LOS	A	A										
<b>Intersection Summary</b>												
Average Delay		8.4										
Intersection Capacity Utilization		13.3%					ICU Level of Service			A		
Analysis Period (min)		15										

Lanes, Volumes, Timings  
1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2045 Background PM

	←	→	↙	↘	↖	↗	↕	↔	↕	↔	↕	↔
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (vph)	14	3	16	3	3	3	13	703	7	2	643	15
Future Volume (vph)	14	3	16	3	3	3	13	703	7	2	643	15
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	0.0		0.0	0.0		0.0	90.0		0.0	90.0		90.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	0.95
Frt		0.934			0.955			0.999			0.997	
Flt Protected		0.979			0.984		0.950			0.950		
Satd. Flow (prot)	0	1629	0	0	1529	0	1692	2840	0	1481	2961	0
Flt Permitted		0.979			0.984		0.950			0.950		
Satd. Flow (perm)	0	1629	0	0	1529	0	1692	2840	0	1481	2961	0
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		59.4			137.7			272.0			229.6	
Travel Time (s)		4.3			9.9			14.0			11.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%	15%	15%	15%	5%	25%	25%	20%	20%	5%
Adj. Flow (vph)	15	3	17	3	3	3	14	740	7	2	677	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	35	0	0	9	0	14	747	0	2	693	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 30.2%	ICU Level of Service A											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis  
1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2045 Background PM

	←	→	↙	↘	↖	↗	↕	↔	↕	↔	↕	↔
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	14	3	16	3	3	3	13	703	7	2	643	15
Future Volume (Veh/h)	14	3	16	3	3	3	13	703	7	2	643	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	15	3	17	3	3	3	14	740	7	2	677	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1092	1464	346	1132	1468	374	693			747		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1092	1464	346	1132	1468	374	693			747		
tC, single (s)	7.6	6.6	7.0	7.8	6.8	7.2	4.2			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.2	3.4	2.2			2.4		
p0 queue free %	91	98	97	98	97	99	98			100		
cM capacity (veh/h)	159	122	641	134	110	588	878			749		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	35	9	14	493	254	2	451	242				
Volume Left	15	3	14	0	0	2	0	0				
Volume Right	17	3	0	0	7	0	0	16				
cSH	240	165	878	1700	1700	749	1700	1700				
Volume to Capacity	0.15	0.05	0.02	0.29	0.15	0.00	0.27	0.14				
Queue Length 95th (m)	3.8	1.3	0.4	0.0	0.0	0.1	0.0	0.0				
Control Delay (s)	22.5	28.1	9.2	0.0	0.0	9.8	0.0	0.0				
Lane LOS	C	D	A			A						
Approach Delay (s)	22.5	28.1	0.2			0.0						
Approach LOS	C	D										
Intersection Summary												
Average Delay					0.8							
Intersection Capacity Utilization			30.2%			ICU Level of Service				A		
Analysis Period (min)			15									

## Lanes, Volumes, Timings

2: Rge Rd 271/1 St W &amp; 39 Avenue

## Evolution Lands ASP TIA

2045 Background PM

	↗	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	2	24	0	2	26	3	0	1	0	8	0	2
Future Volume (vph)	2	24	0	2	26	3	0	1	0	8	0	2
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.987						0.973	
Flt Protected		0.996			0.997						0.962	
Satd. Flow (prot)	0	1774	0	0	1753	0	0	1781	0	0	1668	0
Flt Permitted		0.996			0.997						0.962	
Satd. Flow (perm)	0	1774	0	0	1753	0	0	1781	0	0	1668	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		386.1			59.4			220.9			123.1	
Travel Time (s)		27.8			4.3			15.9			8.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	2	25	0	2	27	3	0	1	0	8	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	0	0	32	0	0	1	0	0	10	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		10.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

## Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 17.2%

ICU Level of Service A

Analysis Period (min) 15

## HCM Unsignalized Intersection Capacity Analysis

2: Rge Rd 271/1 St W &amp; 39 Avenue

## Evolution Lands ASP TIA

2045 Background PM

	↗	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	2	24	0	2	26	3	0	1	0	8	0	2
Future Volume (Veh/h)	2	24	0	2	26	3	0	1	0	8	0	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	25	0	2	27	3	0	1	0	8	0	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	34	18	1	30	19	1	2			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	34	18	1	30	19	1	2			1		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	97	100	100	97	100	100			100		
cM capacity (veh/h)	935	866	1075	945	865	1075	1601			1602		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	27	32	1	10								
Volume Left	2	2	0	8								
Volume Right	0	3	0	2								
cSH	871	886	1601	1602								
Volume to Capacity	0.03	0.04	0.00	0.00								
Queue Length 95th (m)	0.7	0.9	0.0	0.1								
Control Delay (s)	9.3	9.2	0.0	5.8								
Lane LOS	A	A		A								
Approach Delay (s)	9.3	9.2	0.0	5.8								
Approach LOS	A	A										

## Intersection Summary

Average Delay 8.6

Intersection Capacity Utilization 17.2% ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings  
1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2045 Background + Development AM

	↖	→	↘	↙	←	↖	↘	↙	↖	↘	↙	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖			↖		↖	↖		↖	↖	↖
Traffic Volume (vph)	181	23	102	4	12	1	81	643	9	5	695	128
Future Volume (vph)	181	23	102	4	12	1	81	643	9	5	695	128
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	0.0		0.0	0.0		0.0	90.0		0.0	90.0		90.0
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.877			0.992			0.998				0.850
Flt Protected	0.950				0.989		0.950			0.950		
Satd. Flow (prot)	1692	1562	0	0	1639	0	1692	2728	0	1457	2913	1514
Flt Permitted	0.746				0.936		0.355			0.379		
Satd. Flow (perm)	1329	1562	0	0	1551	0	632	2728	0	581	2913	1514
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		109			1			3				136
Link Speed (k/h)		50			50			70				70
Link Distance (m)		59.4			137.7			272.0				229.6
Travel Time (s)		4.3			9.9			14.0				11.8
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	12%	12%	12%	5%	30%	30%	22%	22%	5%
Adj. Flow (vph)	193	24	109	4	13	1	86	684	10	5	739	136
Shared Lane Traffic (%)												
Lane Group Flow (vph)	193	133	0	0	18	0	86	694	0	5	739	136
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	20.0
Minimum Split (s)	25.5	25.5		25.5	25.5		25.5	25.5		25.5	25.5	25.5
Total Split (s)	29.0	29.0		29.0	29.0		31.0	31.0		31.0	31.0	31.0
Total Split (%)	48.3%	48.3%		48.3%	48.3%		51.7%	51.7%		51.7%	51.7%	51.7%
Maximum Green (s)	23.5	23.5		23.5	23.5		25.5	25.5		25.5	25.5	25.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min

Lanes, Volumes, Timings  
1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2045 Background + Development AM

	↖	→	↘	↙	←	↖	↘	↙	↖	↘	↙	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	12.6	12.6			12.6		22.7	22.7		22.7	22.7	22.7
Actuated g/C Ratio	0.27	0.27			0.27		0.49	0.49		0.49	0.49	0.49
v/c Ratio	0.54	0.26			0.04		0.28	0.52		0.02	0.52	0.17
Control Delay	20.0	6.0			11.8		11.2	10.4		7.8	10.3	2.6
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	20.0	6.0			11.8		11.2	10.4		7.8	10.3	2.6
LOS	C	A			B		B	B		A	B	A
Approach Delay		14.3			11.8			10.5			9.1	
Approach LOS		B			B			B			A	
Queue Length 50th (m)	11.9	1.3			0.9		3.4	16.6		0.2	17.7	0.0
Queue Length 95th (m)	29.4	10.6			4.5		13.4	37.2		1.7	39.1	6.8
Internal Link Dist (m)		35.4			113.7			248.0			205.6	
Turn Bay Length (m)							90.0			90.0		90.0
Base Capacity (vph)	680	853			795		358	1548		329	1651	917
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.28	0.16			0.02		0.24	0.45		0.02	0.45	0.15

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 46.4

Natural Cycle: 55

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 10.5

Intersection LOS: B

Intersection Capacity Utilization 67.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Highway 2 & 39 Avenue



Lanes, Volumes, Timings  
2: 39 Avenue & 1 St W

Evolution Lands ASP TIA  
2045 Background + Development AM

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		↑↑	↑			↑
Traffic Volume (vph)	0	306	221	0	0	14
Future Volume (vph)	0	306	221	0	0	14
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)	60.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	30.0				30.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Frt					0.865	0.865
Flt Protected						
Satd. Flow (prot)	0	3385	1781	0	0	1541
Flt Permitted						
Satd. Flow (perm)	0	3385	1781	0	0	1541
Link Speed (k/h)		50	50		50	
Link Distance (m)		386.1	59.4		123.1	
Travel Time (s)		27.8	4.3		8.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	326	235	0	0	15
Shared Lane Traffic (%)						10%
Lane Group Flow (vph)	0	326	235	0	2	13
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 21.9%	ICU Level of Service A					
Analysis Period (min) 15						











HCM Unsignalized Intersection Capacity Analysis  
2: 39 Avenue & 1 St W

Evolution Lands ASP TIA  
2045 Background + Development AM

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		↑↑	↑			↑
Traffic Volume (veh/h)	0	306	221	0	0	14
Future Volume (Veh/h)	0	306	221	0	0	14
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	326	235	0	0	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			59			
pX, platoon unblocked						
vC, conflicting volume	235				398	235
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	235				398	235
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	1308				572	758
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	163	163	235	15		
Volume Left	0	0	0	0		
Volume Right	0	0	0	15		
cSH	1700	1700	1700	758		
Volume to Capacity	0.10	0.10	0.14	0.02		
Queue Length 95th (m)	0.0	0.0	0.0	0.5		
Control Delay (s)	0.0	0.0	0.0	9.8		
Lane LOS				A		
Approach Delay (s)	0.0		0.0	9.8		
Approach LOS				A		
<b>Intersection Summary</b>						
Average Delay			0.3			
Intersection Capacity Utilization			21.9%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
3: N Access & 39 Ave W

Evolution Lands ASP TIA  
2045 Background + Development AM

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations					 	
Traffic Volume (vph)	7	1	207	27	0	300
Future Volume (vph)	7	1	207	27	0	300
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983				0.865	
Flt Protected				0.958		
Satd. Flow (prot)	1751	0	0	1707	1541	0
Flt Permitted				0.958		
Satd. Flow (perm)	1751	0	0	1707	1541	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	282.6			386.1	107.6	
Travel Time (s)	20.3			27.8	7.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	7	1	220	29	0	319
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	0	0	249	319	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	45.6%			ICU Level of Service A		
Analysis Period (min)	15					










HCM Unsignalized Intersection Capacity Analysis  
3: N Access & 39 Ave W

Evolution Lands ASP TIA  
2045 Background + Development AM

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶			↶	↶	
Traffic Volume (veh/h)	7	1	207	27	0	300
Future Volume (Veh/h)	7	1	207	27	0	300
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	7	1	220	29	0	319
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			8		476	8
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			8		476	8
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			86		100	70
cM capacity (veh/h)			1593		467	1066
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	8	249	319			
Volume Left	0	220	0			
Volume Right	1	0	319			
cSH	1700	1593	1066			
Volume to Capacity	0.00	0.14	0.30			
Queue Length 95th (m)	0.0	3.6	9.6			
Control Delay (s)	0.0	6.9	9.8			
Lane LOS		A	A			
Approach Delay (s)	0.0	6.9	9.8			
Approach LOS			A			
Intersection Summary						
Average Delay	8.4					
Intersection Capacity Utilization	45.6%			ICU Level of Service A		
Analysis Period (min)	15					











Lanes, Volumes, Timings  
5: Rge Rd 271 & SE Access

Evolution Lands ASP TIA  
2045 Background + Development AM

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	46	1	0	2	1	28
Future Volume (vph)	46	1	0	2	1	28
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997				0.869	
Flt Protected	0.953					
Satd. Flow (prot)	1693	0	0	1781	1548	0
Flt Permitted	0.953					
Satd. Flow (perm)	1693	0	0	1781	1548	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.7			146.4	224.6	
Travel Time (s)	14.6			10.5	16.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	49	1	0	2	1	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	50	0	0	2	31	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	13.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
5: Rge Rd 271 & SE Access

Evolution Lands ASP TIA  
2045 Background + Development AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	46	1	0	2	1	28
Future Volume (Veh/h)	46	1	0	2	1	28
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	49	1	0	2	1	30
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	18	16	31			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	18	16	31			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	992	1055	1562			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	50	2	31			
Volume Left	49	0	0			
Volume Right	1	0	30			
cSH	993	1562	1700			
Volume to Capacity	0.05	0.00	0.02			
Queue Length 95th (m)	1.2	0.0	0.0			
Control Delay (s)	8.8	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.8	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay		5.3				
Intersection Capacity Utilization		13.3%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings  
1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2045 Background + Development PM

	↖	→	↘	↙	←	↖	↙	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖			↖		↖	↖		↖	↖	↖
Traffic Volume (vph)	341	51	226	3	29	3	255	638	7	2	564	374
Future Volume (vph)	341	51	226	3	29	3	255	638	7	2	564	374
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	0.0		0.0	0.0		0.0	90.0		0.0	90.0		90.0
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.878			0.989			0.998				0.850
Flt Protected	0.950				0.996		0.950			0.950		
Satd. Flow (prot)	1692	1564	0	0	1602	0	1692	2838	0	1481	2962	1514
Flt Permitted	0.733				0.976		0.285			0.393		
Satd. Flow (perm)	1306	1564	0	0	1570	0	508	2838	0	613	2962	1514
Right Turn on Red		Yes			Yes			Yes				Yes
Satd. Flow (RTOR)		238			3			2				394
Link Speed (k/h)	50				50			70			70	
Link Distance (m)	59.4				137.7			272.0			229.6	
Travel Time (s)	4.3				9.9			14.0			11.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%	15%	15%	15%	5%	25%	20%	20%	20%	5%
Adj. Flow (vph)	359	54	238	3	31	3	268	672	7	2	594	394
Shared Lane Traffic (%)												
Lane Group Flow (vph)	359	292	0	0	37	0	268	679	0	2	594	394
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	3.7				3.7			3.7			3.7	
Link Offset(m)	0.0				0.0			0.0			0.0	
Crosswalk Width(m)	4.8				4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	20.0		20.0	20.0	20.0
Minimum Split (s)	25.5	25.5		25.5	25.5		15.5	25.5		25.5	25.5	25.5
Total Split (s)	41.0	41.0		41.0	41.0		18.0	49.0		31.0	31.0	31.0
Total Split (%)	45.6%	45.6%		45.6%	45.6%		20.0%	54.4%		34.4%	34.4%	34.4%
Maximum Green (s)	35.5	35.5		35.5	35.5		15.0	43.5		25.5	25.5	25.5
Yellow Time (s)	3.5	3.5		3.5	3.5		2.9	3.5		3.5	3.5	3.5
All-Red Time (s)	2.0	2.0		2.0	2.0		0.1	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5			5.5		3.0	5.5		5.5	5.5	5.5
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Min		Min	Min	Min

Lanes, Volumes, Timings  
1: Highway 2 & 39 Avenue

Evolution Lands ASP TIA  
2045 Background + Development PM

	↖	→	↘	↙	←	↖	↙	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	25.2	25.2			25.2		41.9	39.3		22.8	22.8	22.8
Actuated g/C Ratio	0.33	0.33			0.33		0.55	0.52		0.30	0.30	0.30
v/c Ratio	0.83	0.43			0.07		0.55	0.46		0.01	0.67	0.54
Control Delay	40.5	6.7			16.5		15.1	14.0		23.0	29.3	5.9
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	40.5	6.7			16.5		15.1	14.0		23.0	29.3	5.9
LOS	D	A			B		B	B		C	C	A
Approach Delay		25.4			16.5			14.3			20.0	
Approach LOS		C			B			B			B	
Queue Length 50th (m)	46.8	5.3			3.3		19.3	30.7		0.2	40.5	0.0
Queue Length 95th (m)	83.0	21.9			9.4		41.2	54.9		1.9	66.7	20.5
Internal Link Dist (m)		35.4			113.7			248.0			205.6	
Turn Bay Length (m)							90.0			90.0		90.0
Base Capacity (vph)	628	876			757		521	1675		212	1025	781
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.57	0.33			0.05		0.51	0.41		0.01	0.58	0.50

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 75.8

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 19.2

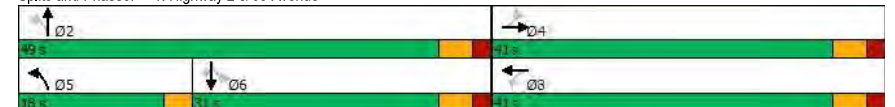
Intersection LOS: B

Intersection Capacity Utilization 74.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Highway 2 & 39 Avenue



Lanes, Volumes, Timings  
2: 39 Avenue & 1 St W

Evolution Lands ASP TIA  
2045 Background + Development PM

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		↑↑	↑			↑
Traffic Volume (vph)	0	617	655	3	0	36
Future Volume (vph)	0	617	655	3	0	36
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)	60.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	30.0				30.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Frt			0.999		0.865	0.865
Flt Protected						
Satd. Flow (prot)	0	3385	1780	0	0	1541
Flt Permitted						
Satd. Flow (perm)	0	3385	1780	0	0	1541
Link Speed (k/h)		50	50		50	
Link Distance (m)		386.1	59.4		123.1	
Travel Time (s)		27.8	4.3		8.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	649	689	3	0	38
Shared Lane Traffic (%)						10%
Lane Group Flow (vph)	0	649	692	0	4	34
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 45.6%	ICU Level of Service A					
Analysis Period (min) 15						











HCM Unsignalized Intersection Capacity Analysis  
2: 39 Avenue & 1 St W

Evolution Lands ASP TIA  
2045 Background + Development PM

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		↑↑	↑			↑
Traffic Volume (veh/h)	0	617	655	3	0	36
Future Volume (Veh/h)	0	617	655	3	0	36
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	649	689	3	0	38
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			59			
pX, platoon unblocked	0.91				0.91	0.91
vC, conflicting volume	692				1015	690
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	617				970	615
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	90
cM capacity (veh/h)	859				225	390
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	324	324	692	38		
Volume Left	0	0	0	0		
Volume Right	0	0	3	38		
cSH	1700	1700	1700	390		
Volume to Capacity	0.19	0.19	0.41	0.10		
Queue Length 95th (m)	0.0	0.0	0.0	2.4		
Control Delay (s)	0.0	0.0	0.0	15.2		
Lane LOS				C		
Approach Delay (s)	0.0		0.0	15.2		
Approach LOS				C		
<b>Intersection Summary</b>						
Average Delay			0.4			
Intersection Capacity Utilization			45.6%		ICU Level of Service	A
Analysis Period (min)			15			










Lanes, Volumes, Timings  
3: N Access & 39 Ave W

Evolution Lands ASP TIA  
2045 Background + Development PM

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations					 	
Traffic Volume (vph)	27	1	662	29	1	590
Future Volume (vph)	27	1	662	29	1	590
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995				0.865	
Flt Protected				0.954		
Satd. Flow (prot)	1773	0	0	1700	1541	0
Flt Permitted				0.954		
Satd. Flow (perm)	1773	0	0	1700	1541	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	282.6			386.1	107.6	
Travel Time (s)	20.3			27.8	7.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	28	1	697	31	1	621
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	0	0	728	622	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	90.1%			ICU Level of Service E		
Analysis Period (min)	15					










HCM Unsignalized Intersection Capacity Analysis  
3: N Access & 39 Ave W

Evolution Lands ASP TIA  
2045 Background + Development PM

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	27	1	662	29	1	590
Future Volume (Veh/h)	27	1	662	29	1	590
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	28	1	697	31	1	621
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			29		1454	28
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			29		1454	28
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			55		99	40
cM capacity (veh/h)			1565		78	1038
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	29	728	622			
Volume Left	0	697	1			
Volume Right	1	0	621			
cSH	1700	1565	1018			
Volume to Capacity	0.02	0.45	0.61			
Queue Length 95th (m)	0.0	17.9	32.9			
Control Delay (s)	0.0	8.9	13.9			
Lane LOS		A	B			
Approach Delay (s)	0.0	8.9	13.9			
Approach LOS			B			
Intersection Summary						
Average Delay			11.0			
Intersection Capacity Utilization			90.1%	ICU Level of Service		E
Analysis Period (min)	15					










Lanes, Volumes, Timings  
5: Rge Rd 271 & SE Access

Evolution Lands ASP TIA  
2045 Background + Development PM

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	60	1	0	1	2	73
Future Volume (vph)	60	1	0	1	2	73
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998				0.868	
Flt Protected	0.953					
Satd. Flow (prot)	1694	0	0	1781	1546	0
Flt Permitted	0.953					
Satd. Flow (perm)	1694	0	0	1781	1546	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.7			146.4	224.6	
Travel Time (s)	14.6			10.5	16.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	63	1	0	1	2	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	64	0	0	1	79	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	100	100	100			100
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	14.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
5: Rge Rd 271 & SE Access

Evolution Lands ASP TIA  
2045 Background + Development PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	1	0	1	2	73
Future Volume (Veh/h)	60	1	0	1	2	73
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	63	1	0	1	2	77
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	42	40	79			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	42	40	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 %	93	100	100			
cM capacity (veh/h)	962	1022	1500			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	64	1	79			
Volume Left	63	0	0			
Volume Right	1	0	77			
cSH	963	1500	1700			
Volume to Capacity	0.07	0.00	0.05			
Queue Length 95th (m)	1.6	0.0	0.0			
Control Delay (s)	9.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.0	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay		4.0				
Intersection Capacity Utilization		14.9%		ICU Level of Service	A	
Analysis Period (min)		15				



**APPENDIX**  
Warrant Results

E



# Alberta Transportation - Traffic Signal & Pedestrian Signal Head Warrant Analysis

Main Street (name)	Highway 2	Direction (EW or NS)	NS	Road Authority:	Alberta Transportation
Side Street (name)	39 Avenue	Direction (EW or NS)	EW	City:	Claresholm
Quadrant / Int #		Comments	2025 Back AM + PM Peak times 2.61	Analysis Date:	2023 Dec 18, Mon
	CHECK SHEET			Count Date:	2023-Nov-22
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	RT Channelization (y/n)	UpStream Signal (m)	# of Thru Lanes	LT Phase Type	RTOR Allowed (y/n)	Actuated Thru Phase
Highway 2	NB	1		1		1							
Highway 2	SB	1		1		1			1,600	2			
39 Avenue	WB				1					1			
39 Avenue	EB				1					1			

Are the 39 Avenue WB right turns significantly impeded by through movements? (y/n) n  
Are the 39 Avenue EB right turns significantly impeded by through movements? (y/n) n  
Are the Highway 2 NB right turns significantly impeded by through movements? (y/n) n  
Are the Highway 2 SB right turns significantly impeded by through movements? (y/n) n

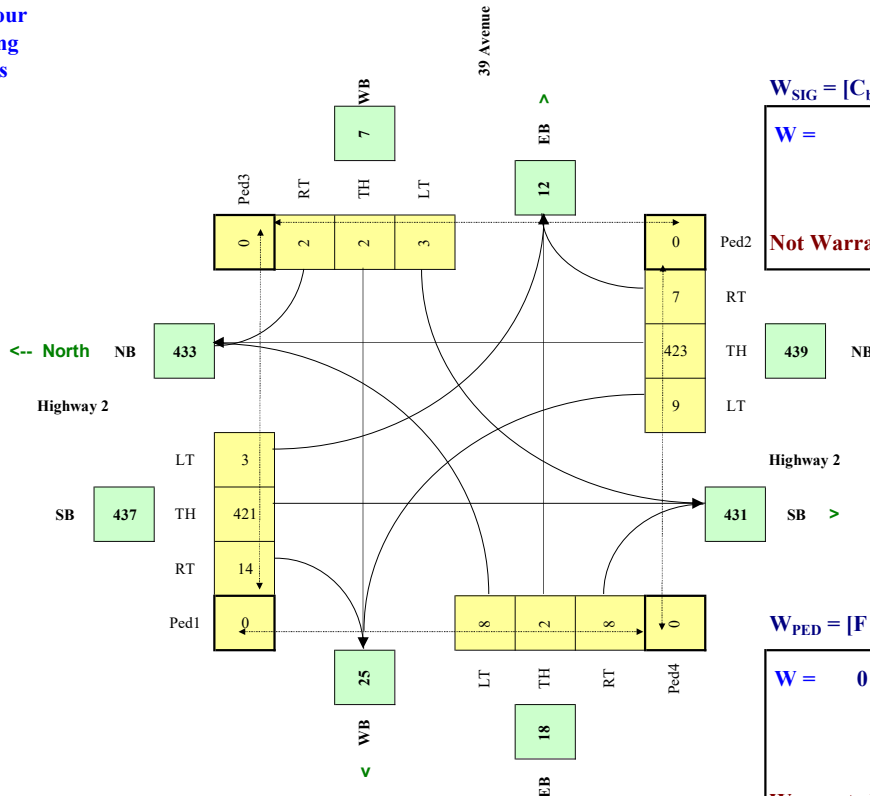
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	4,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Highway 2	NS	70	20.0%	n	0.0
39 Avenue	EW		10.0%	n	0.0

Set Peak Hours														Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
Traffic Input	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	W Side	E Side	N Side	S Side
6 Hour Average																	
	56	2537	42	18	2523	81	18	12	10	50	12	47					
Total (6-hour peak)	56	2,537	42	18	2,523	81	18	12	10	50	12	47	0	0	0	0	0
Average (6-hour peak)	9	423	7	3	421	14	3	2	2	8	2	8	0	0	0	0	0

Actual Pedestrian Crossing Distance (m)

## Average 6-hour Peak Turning Movements



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

W =	14	14	0
		Veh	Ped
Not Warranted - Vs<75			

RESET SHEET

$$W_{PED} = [F((X_{ped_m})d_m/K_2) + (X_{ped_s})d_s/K_3]$$

W =	0
Warranted - Complex Intersection	



# Alberta Transportation - Traffic Signal & Pedestrian Signal Head Warrant Analysis

Main Street (name)	Highway 2	Direction (EW or NS)	NS	Road Authority:	Alberta Transportation
Side Street (name)	39 Avenue	Direction (EW or NS)	EW	City:	Claresholm
Quadrant / Int #		Comments	2025 Back+Dev AM + PM Peak times 2.61	Analysis Date:	2023 Dec 18, Mon
	CHECK SHEET			Count Date:	2023-Nov-22
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	RT Channelization (y/n)	UpStream Signal (m)	# of Thru Lanes	LT Phase Type	RT OR Allowed (y/n)	Actuated Thru Phase
Highway 2	NB	1		1		1			1,600	2			
Highway 2	SB	1		1		1							
39 Avenue	WB				1					1			
39 Avenue	EB	1				1				1			

Are the 39 Avenue WB right turns significantly impeded by through movements? (y/n) n  
Are the 39 Avenue EB right turns significantly impeded by through movements? (y/n) n  
Are the Highway 2 NB right turns significantly impeded by through movements? (y/n) n  
Are the Highway 2 SB right turns significantly impeded by through movements? (y/n) n

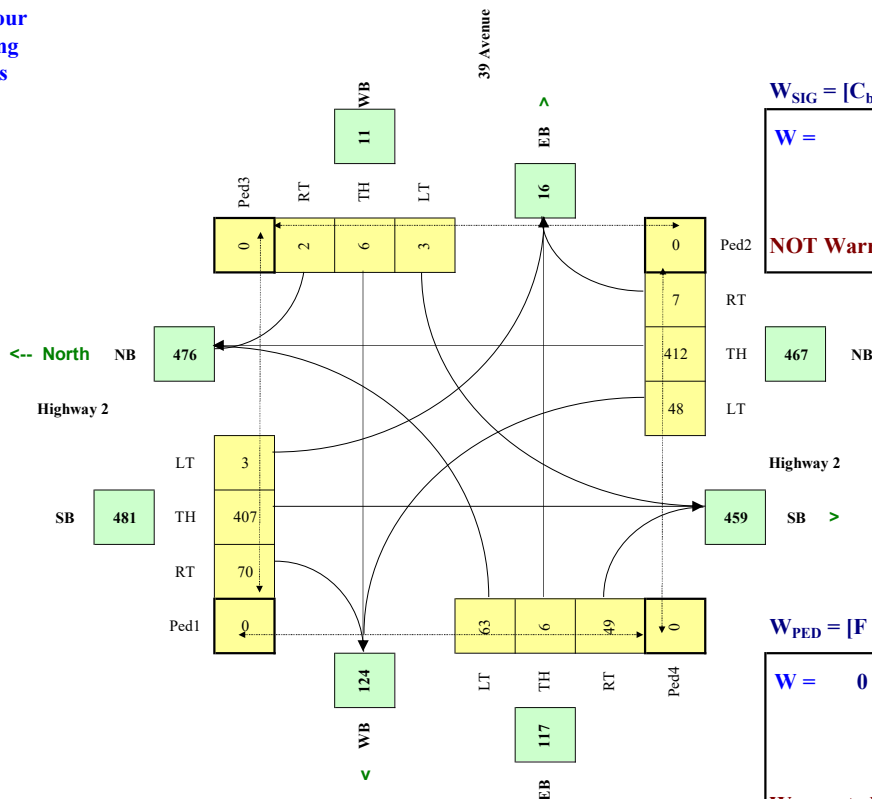
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	4,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Highway 2	NS	70	20.0%	n	0.0
39 Avenue	EW		10.0%	n	0.0

Set Peak Hours														Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
Traffic Input	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	W Side	E Side	N Side	S Side
6 Hour Average																	
	288	2472	42	18	2444	422	18	36	10.44	375	36	291					
Total (6-hour peak)	288	2,472	42	18	2,444	422	18	36	10	375	36	291	0	0	0	0	0
Average (6-hour peak)	48	412	7	3	407	70	3	6	2	63	6	49	0	0	0	0	0

Actual Pedestrian Crossing Distance (m)

## Average 6-hour Peak Turning Movements



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

W =	72	72	0
		Veh	Ped
NOT Warranted			

RESET SHEET

$$W_{PED} = [F((X_{ped_m})d_m/K_2) + (X_{ped_s})d_s/K_3]$$

W =	0
Warranted - Complex Intersection	



# Alberta Transportation - Traffic Signal & Pedestrian Signal Head Warrant Analysis

Main Street (name)	Highway 2	Direction (EW or NS)	NS	Road Authority:	Alberta Transportation
Side Street (name)	39 Avenue	Direction (EW or NS)	EW	City:	Claresholm
Quadrant / Int #		Comments	2035 Back AM + PM Peak times 2.61	Analysis Date:	2023 Dec 18, Mon
	CHECK SHEET			Count Date:	2023-Nov-22
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	RT Channelization (y/n)	UpStream Signal (m)	# of Thru Lanes	LT Phase Type	RTOR Allowed (y/n)	Actuated Thru Phase
Highway 2	NB	1		1		1							
Highway 2	SB	1		1		1			1,600	2			
39 Avenue	WB				1					1			
39 Avenue	EB				1					1			

Are the 39 Avenue WB right turns significantly impeded by through movements? (y/n) n  
Are the 39 Avenue EB right turns significantly impeded by through movements? (y/n) n  
Are the Highway 2 NB right turns significantly impeded by through movements? (y/n) n  
Are the Highway 2 SB right turns significantly impeded by through movements? (y/n) n

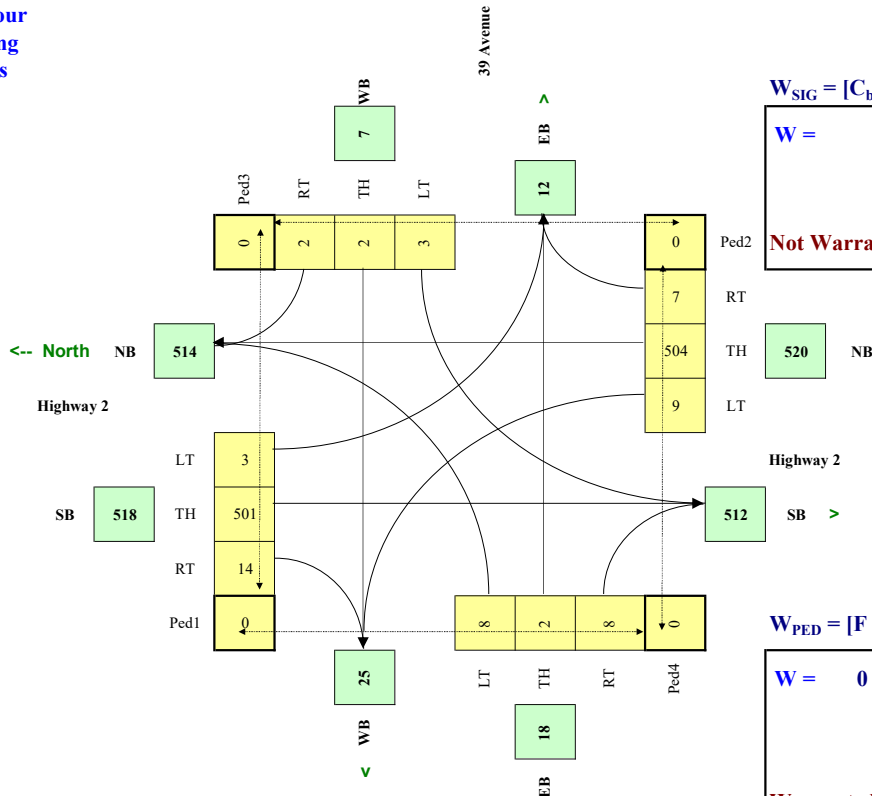
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	4,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Highway 2	NS	70	20.0%	n	0.0
39 Avenue	EW		10.0%	n	0.0

Set Peak Hours														Ped1	Ped2	Ped3	Ped4
Traffic Input		NB		SB		WB		EB						NS	NS	EW	EW
		LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
6 Hour Average																	
		56	3025	42	18	3008	81	18	12	10	50	12	47				
Total (6-hour peak)		56	3,025	42	18	3,008	81	18	12	10	50	12	47	0	0	0	0
Average (6-hour peak)		9	504	7	3	501	14	3	2	2	8	2	8	0	0	0	0

Actual Pedestrian Crossing Distance (m)

## Average 6-hour Peak Turning Movements



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

W =	17	17	0
		Veh	Ped
Not Warranted - Vs<75			

RESET SHEET

$$W_{PED} = [F((X_{ped_m})d_m/K_2) + (X_{ped_s})d_s/K_3]$$

W =	0
Warranted - Complex Intersection	



# Alberta Transportation - Traffic Signal & Pedestrian Signal Head Warrant Analysis

Main Street (name)	Highway 2	Direction (EW or NS)	NS	Road Authority:	Alberta Transportation
Side Street (name)	39 Avenue	Direction (EW or NS)	EW	City:	Claresholm
Quadrant / Int #		Comments	2035 Back+Dev AM + PM Peak times 2.61	Analysis Date:	2023 Dec 18, Mon
	CHECK SHEET			Count Date:	2023-Nov-22
				Date Entry Format:	(yyyy-mm-dd)

for Warrant Calculation Results, please hit 'Page Down'

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	RT Channelization (y/n)	UpStream Signal (m)	# of Thru Lanes	LT Phase Type	RTOR Allowed (y/n)	Actuated Thru Phase
Highway 2	NB	1		1		1							
Highway 2	SB	1		1		1			1,600	2			
39 Avenue	WB				1					1			
39 Avenue	EB				1					1			

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

Are the 39 Avenue WB right turns significantly impeded by through movements? (y/n) n  
 Are the 39 Avenue EB right turns significantly impeded by through movements? (y/n) n  
 Are the Highway 2 NB right turns significantly impeded by through movements? (y/n) n  
 Are the Highway 2 SB right turns significantly impeded by through movements? (y/n) n

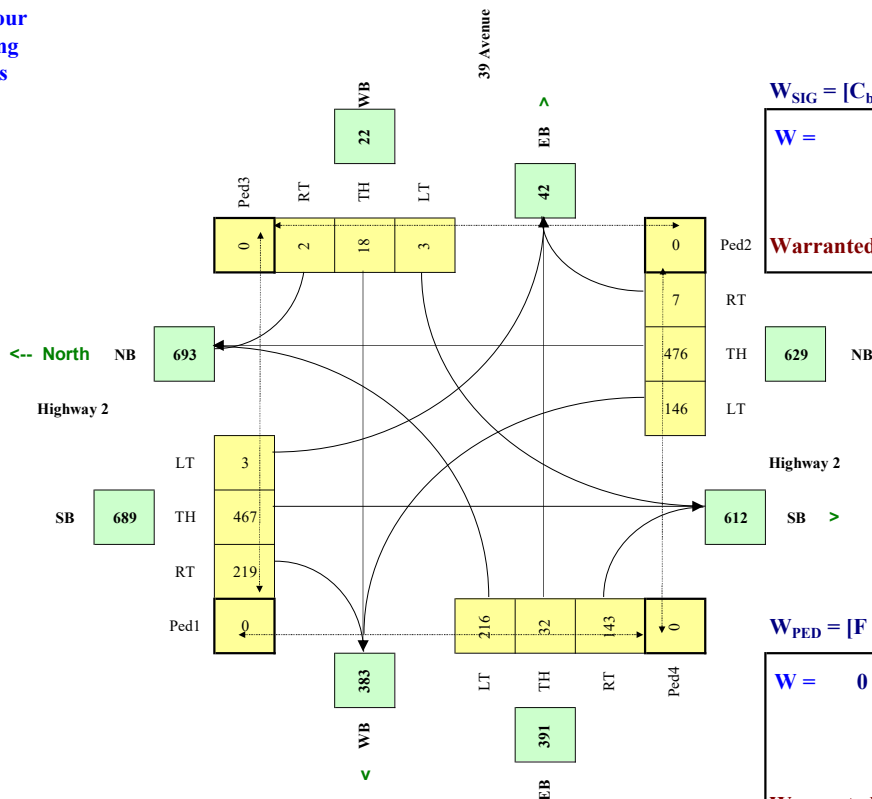
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	4,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Highway 2	NS	70	20.0%	n	0.0
39 Avenue	EW		10.0%	n	0.0

Set Peak Hours													Ped1	Ped2	Ped3	Ped4
Traffic Input													NS	NS	EW	EW
NB				SB			WB			EB			W Side	E Side	N Side	S Side
LT	Th	RT		LT	Th	RT	LT	Th	RT	LT	Th	RT				
878	2855	42		18	2801	1312.897	18	105	10.44	1295	193	855				
Total (6-hour peak)	878	2,855	42	18	2,801	1,313	18	105	10	1,295	193	855	0	0	0	0
Average (6-hour peak)	146	476	7	3	467	219	3	18	2	216	32	143	0	0	0	0

Actual Pedestrian Crossing Distance (m)

## Average 6-hour Peak Turning Movements



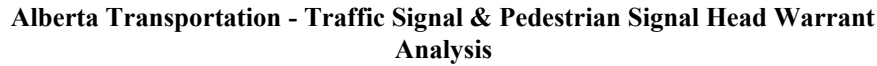
$$W_{SIG} = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p}) L) / K_2] \times C_i$$

W =	311	311	0
		Veh	Ped
Warranted			

RESET SHEET

$$W_{PED} = [F((X_{ped_m})d_m/K_2) + (X_{ped_s})d_s/K_3]$$

W =	0
Warranted - Complex Intersection	



**for Warrant Calculation  
Results, please hit 'Page  
Down'**

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

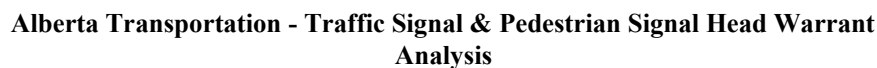
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	4,000
Central Business District	(y/n)	n

Set Peak Hours

**Actual Pedestrian Crossing Distance (m)**

W =	20	20	0
		<i>Veh</i>	<i>Ped</i>
Not Warranted - Vs<75			

**Warranted - Complex Intersection**



<div> <div>for Warrant Calculation</div> <div>Results, please hit 'Page Down'</div> </div>	Main Street (name)	Highway 2	<div> <div>Comments</div> <div>2045 Back+Dev AM + PM Peak times 2.61</div> </div>	Direction (EW or NS)	NS	Road Authority:	Alberta Transportation
	Side Street (name)	39 Avenue		Direction (EW or NS)	EW	City:	Claresholm
	Quadrant / Int #			Analysis Date:	2023 Dec 18, Mon		
	CHECK SHEET	Count Date:		2023-Nov-22			
				Date Entry Format:	(yyyy-mm-dd)		

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	RT	Channelization (y/n)	UpStream Signal (m)	# of Thru Lanes	LT Phase Type	RTOR Allowed (y/n)	Actuated Thru Phase
Highway 2	NB	1		1		1					2			
Highway 2	SB	1		1		1				1,600	2			
39 Avenue	WB				1						1			
39 Avenue	EB				1						1			

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

39 Avenue	EB		
Are the 39 Avenue WB right turns significantly impeded by through movements?	(y/n)		n
Are the 39 Avenue EB right turns significantly impeded by through movements?	(y/n)		n
Are the Highway 2 NB right turns significantly impeded by through movements?	(y/n)		n
Are the Highway 2 SB right turns significantly impeded by through movements?	(y/n)		n

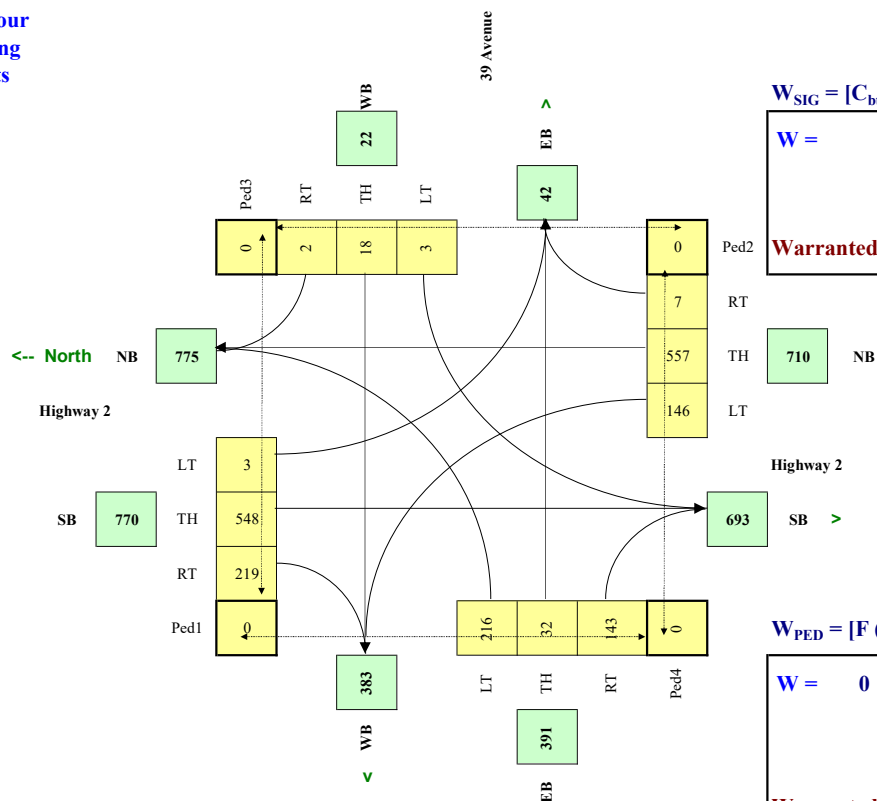
<b>Demographics</b>		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	4,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Highway 2	NS	70	20.0%	n	0.0
39 Avenue	EW		10.0%	n	0.0

39 Avenue	EW		10.0%	n	0.0								Ped1	Ped2	Ped3	Ped4
Set Peak Hours													NS	NS	EW	EW
Traffic Input	NB			SB			WB			EB			W Side	E Side	N Side	S Side
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT				
6 Hour Average																
	878	3343	42	18	3286	1313	18	105	10.44	1295	193	855				
Total (6-hour peak)	878	3,343	42	18	3,286	1,313	18	105	10	1,295	193	855	0	0	0	0
Average (6-hour peak)	146	557	7	3	548	219	3	18	2	216	32	143	0	0	0	0
Actual Pedestrian Crossing Distance (m)																

2	210	52	145
Actual Pedestrian Crossing Distance (m)			

### Average 6-hour Peak Turning Movements



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

Warranted	356	356	0
		<i>Veh</i>	<i>Ped</i>

## RESET SHEET

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

**Warranted - Complex Intersection**

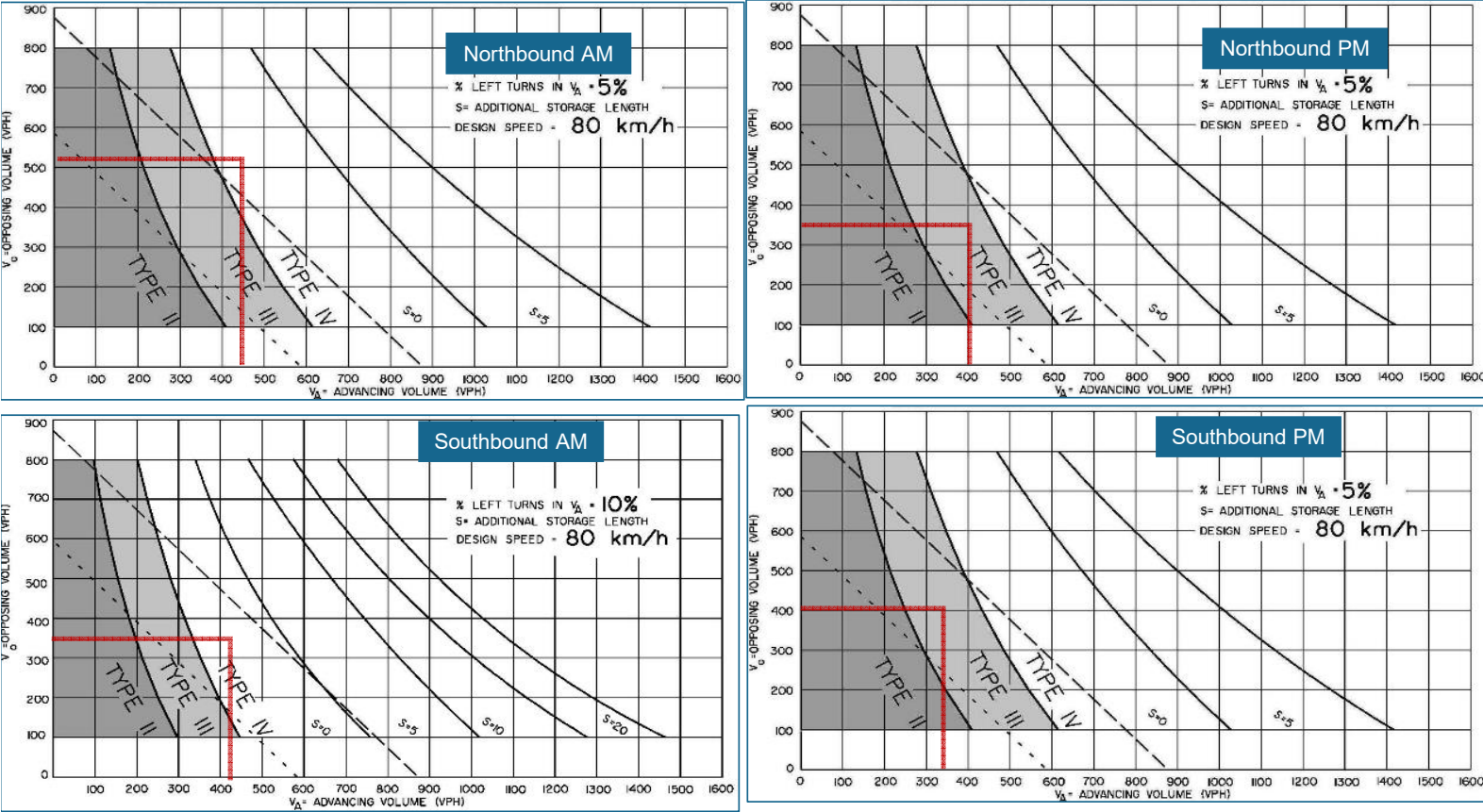
Alberta Transportation Turn Lane Warrants

Intersection: Highway 2 at 39 Ave

Scenario: 2025 Background

Left Turn Warrant

Direction	Period	Volumes					HGDG Chart	Warranted		
		V <sub>l</sub>	V <sub>a</sub>	L	V <sub>o</sub>	Trucks		Treatment	S (m)	St (m)
Northbound	AM	9	476	2%	515	30%	Fig. D-7.6-4a	Type IIIc	-	-
Northbound	PM	13	521	2%	476	25%	Fig. D-7.6-4a	Type IIIc	-	-
Southbound	AM	5	515	1%	476	20%	Fig. D-7.6-4a	Type IVb	-	-
Southbound	PM	2	476	0%	521	20%	Fig. D-7.6-4a	Type IIIc	-	-



Right Turn Warrant

Condition	Northbound		Southbound	
	Value	Test	Value	Test
Main Road AADT $\geq$ 1800	10000	TRUE	10000	TRUE
Intersecting Road AADT $\geq$ 900	200	FALSE	600	FALSE
Right-Turn Daily Traffic $\geq$ 360	70	FALSE	150	FALSE
Exclusive Right Turn Lane	Not Warranted		Not Warranted	

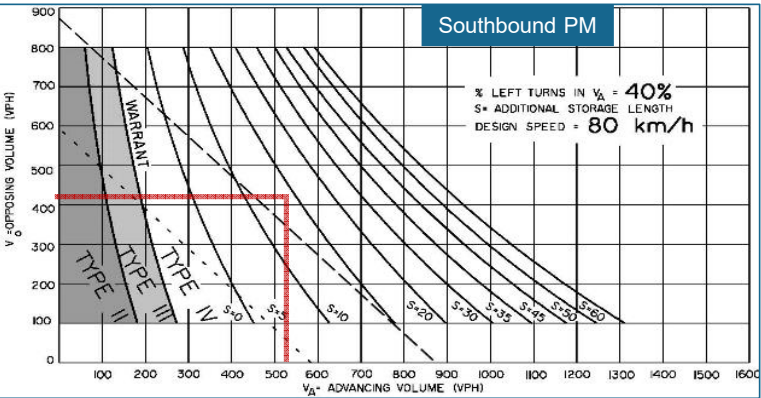
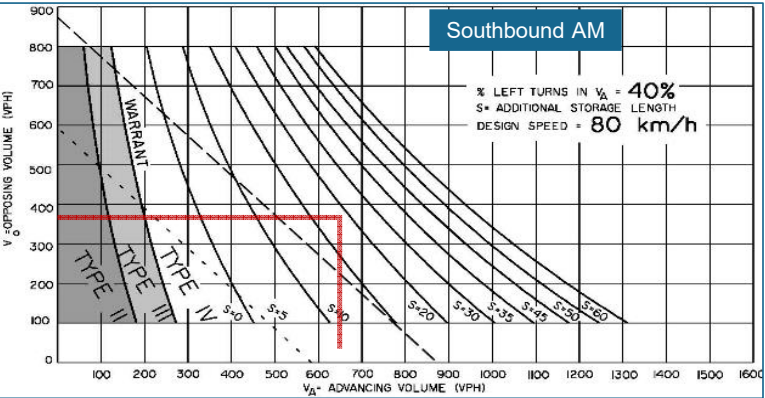
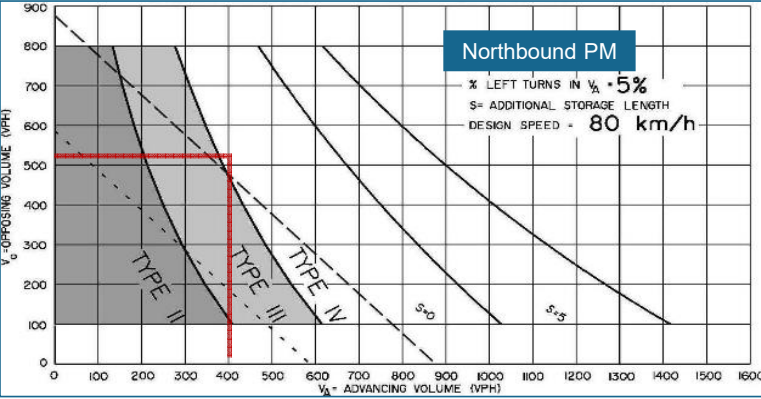
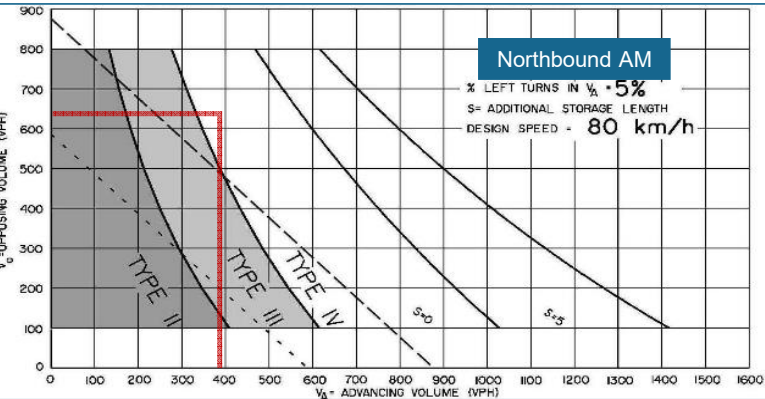
Alberta Transportation Turn Lane Warrants

Intersection: Highway 2 at 39 Ave

Scenario: 2025 Background + Dev

Left Turn Warrant

Direction	Period	Volumes					HGDG Chart	Warranted		
		$V_l$	$V_a$	L	$V_o$	Trucks		Treatment	S (m)	St (m)
Northbound	AM			#DIV/0!		10%	Fig. D-7.6-4a	Type IIIc	-	-
Northbound	PM			#DIV/0!		8%	Fig. D-7.6-4a	Type IIIc	-	-
Southbound	AM		0	#DIV/0!	0	10%	Fig. D-7.6-4d	Type IVb	-	-
Southbound	PM		0	#DIV/0!	0	8%	Fig. D-7.6-4d	Type IVb	-	-



Right Turn Warrant

Condition	Northbound		Southbound	
	Value	Test	Value	Test
Main Road AADT $\geq 1800$	11200	TRUE	12000	TRUE
Intersecting Road AADT $\geq 900$	400	FALSE	5700	TRUE
Right-Turn Daily Traffic $\geq 360$	70	FALSE	1570	TRUE
Exclusive Right Turn Lane	Not Warranted		Warranted	



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