

15 January 2024  
Project: 230080

Rockpoint Properties Inc.  
c/o Nancy Shoemaker  
J.D. Barnes Limited  
257 Woodlawn Road West, Unit 101  
Guelph ON N1H 8J1

Dear Ms. Shoemaker:

**RE: 220 ARKELL ROAD, GUELPH  
TRANSPORTATION IMPACT STUDY TECHNICAL MEMORANDUM**

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Paradigm Transportation Solutions Limited (Paradigm) completed the Transportation Impact Study (TIS) for the above development in April 2019<sup>1</sup> and the subsequent TIS Update in April 2023<sup>2</sup>, which incorporated the updated Draft Plan of Subdivision.

The City of Guelph provided comments on the April 2023 TIS Update on 11 September 2023. This Technical Memo addresses the comments, which are summarized below.

- ▶ The TIS study shows overestimated future traffic projections leading to the prediction of extremely severe congestions in the area road network. As such, staff require the consultant to submit a technical memorandum with revised traffic projections by following the below assumptions.
  - City's comments on the previous TIS study (April 2019) include a suggestion of using more recent traffic counts at the intersection of Victoria/Arkell. The current submitted TIS is still based on the 2016 TMCs. Please use more recent TMCs from October 8, 2019, that can be found in 388 Arkell Road TIS study.
  - Use a 2% annual growth rate up to year 2031 and 1.5% up to year 2036.
  - Generate diagrams showing traffic volumes for the base year, 2036 generalized background traffic growth, other area development trips, development trips, and 2036 total traffic.
  - Provide traffic operation analysis for the horizon year 2036 only.

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<sup>1</sup> Paradigm Transportation Solutions Limited, *220 Arkell Road Transportation Impact Study*, April 2019.

<sup>2</sup> Paradigm Transportation Solutions Limited, *220 Arkell Road Transportation Impact Study Update*, April 2023.

- Provide traffic signal warrant analysis at the intersections of Colonial/Arkell and Summerfield/Arkell under the horizon year 2036.
- The technical memorandum should recognize the change in the posted speed limits from 50 km/h to 40 km/h for these streets: Decorso Drive, Summerfield Drive, Colonial Drive, Zecca Drive and Amos Drive.

The Technical Memo herein includes updates to the base year traffic volumes, forecast traffic volumes, total traffic operational analyses, and signal warrant analysis at the respective intersections, based on traffic data included in the 388 Arkell Road TIS<sup>3</sup>.

## Base Year (2023) Traffic Volumes

As noted above, the base year traffic volumes have been updated based on the 2019 and 2021 counts in the 388 Arkell Road TIS. The volumes at each intersection were grown to a base year 2023 using a 2% per annum growth rate.

**Figure 1a** and **Figure 1b** respectively illustrate the base year (2023) AM and PM weekday peak hour turning movement traffic volumes.

**Table 1** summarizes the peak hours at each intersection and the date of each intersection count.

**TABLE 1: INTERSECTION PEAK HOURS**

Intersection	Count Date	AM Peak Hour	PM Peak Hour
Arkell Road and Summerfield Drive	09 September 2021	8:00 – 9:00	3:00 – 4:00
Arkell Road and Amos Drive/Zecca Drive	09 September 2021	8:00 – 9:00	3:00 – 4:00
Arkell Road and Colonial Drive	08 October 2019	8:00 – 9:00	3:00 – 4:00
Arkell Road and 361 Arkell Road Driveway	09 September 2021	8:00 – 9:00	3:00 – 4:00
Victoria Road and Arkell Road	08 October 2019	8:00 – 9:00	3:00 – 4:00

It is noted that the 388 Arkell Road TIS also has a September 2021 turning movement count at Victoria Drive and Arkell Road; however, and as noted in the 388 Arkell Road TIS, the 2019 volumes are higher than the 2021 volumes. Therefore, the 2019 counts are used for the purposes of this addendum.

**Appendix A** contains the turning movement counts from the 388 Arkell Road TIS.

<sup>3</sup> IBI Group, *388 Arkell Road Transportation Impact Study*, 14 June 2022.



## Future Traffic Volumes

The base year traffic volumes were increased to obtain 2036 traffic conditions using a 2% per annum growth rate between the base year and 2031, and a reduced 1.5% per annum growth rate between 2031 and 2036.

**Figure 2a** and **Figure 2b** illustrate the 2036 background growth traffic volumes during the AM and PM peak hours, respectively.

The other area developments included in the April 2023 TIS Update are also included in the future traffic volumes. **Figure 3a** and **Figure 3b** illustrate the net traffic volumes from the other area developments during the AM and PM peak hours, respectively.

## Development Site Traffic

The site trip generation is unchanged from the April 2023 TIS Update and is summarized in **Table 2**. The trip distribution, also unchanged from the April 2023 TIS Update, is summarized in **Table 3**.

**Figure 4a** and **Figure 4b** illustrate the site-generated traffic volumes during the AM and PM peak hours, respectively.

The Subdivision Plan has recently been updated to include a total of 97 units, comprising 64 townhouse units and 33 single detached units<sup>4</sup>. **Figure 5** illustrates the updated Draft Plan of Subdivision.

The trip generation estimates for the updated Subdivision Plan are noted to be the same as those for 68 townhouse units and 30 single detached units.

**TABLE 2: TRIP GENERATION**

Land Use Code	Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total
<b>210: Single-Family Detached Housing</b>	30	Eq	6	19	<b>25</b>	Eq	20	12	<b>32</b>
<b>215: Single-Family Attached Housing</b>	68	Eq	8	22	<b>30</b>	Eq	22	15	<b>37</b>
<b>Total Trip Generation</b>			<b>14</b>	<b>41</b>	<b>55</b>		<b>42</b>	<b>27</b>	<b>69</b>

LUC 210 | AM:  $\ln(T) = 0.91 \ln(X) + 0.12$  | PM:  $\ln(T) = 0.94 \ln(X) + 0.27$

LUC 215 | AM:  $T = 0.52(X) - 5.70$  | PM:  $T = 0.60(X) - 3.93$

<sup>4</sup> The ITE Trip Generation for 64 townhouse units and 33 detached homes is 55 and 69 AM/PM peak hour trips.



**TABLE 3: TRIP DISTRIBUTION**

Origin/Destination	AM/PM Peak Hour
East via Arkell Road	10%
West via Arkell Road	10%
North via Victoria Road	55%
South via Victoria Road	25%
<b>Total</b>	<b>100%</b>

### 2036 Traffic Conditions

**Figure 6a** and **Figure 6b** respectively illustrate the 2036 total traffic volumes during the AM and PM peak hours. The total traffic volumes include the other area development volumes, the 2036 background growth volumes, and the trips generated by the proposed development.

The 2036 total traffic volumes have been analyzed using the same methodology as in the April 2023 TIS Update. Signal timings have not been optimized.

**Table 4a** and **Table 4b** respectively summarize the results of the 2036 total traffic operations. The results indicate that the study area intersections are forecast to operate at similar levels of service as in the April 2023 TIS Update.

It is noted that the following movements are now forecast to operate at acceptable levels of service, improved from the April 2023 TIS Update:

#### Summerfield Drive and Arkell Road

- ▶ the southbound movement is now forecast to operate at LOS D during the AM and PM peak hours, improved from LOS F during both peak hours; and
- ▶ the northbound movement is now forecast to operate at LOS E and with a v/c ratio of 0.54 during the PM peak hour, improved from LOS F greater than 1.00.

#### Arkell Road and Zecca Drive / Amos Drive

- ▶ the northbound movement is now forecast to operate at LOS D during the PM peak hour, improved from LOS F; and
- ▶ the southbound movement is now forecast to operate at LOS C during the AM and PM peak hours, improved from LOS E during both peak hours;



### Colonial Drive and Arkell Road

- ▶ the northbound and southbound movements are now forecast to operate with respective v/c ratios of 0.78 and 0.76 during the PM peak hour, both improved from greater than 1.00.

### Arkell Road and Residential Access 1

- ▶ the southbound left-turn movement is now forecast to operate at LOS D during the AM and PM peak hours, improved from LOS E and LOS F, respectively.

### Victoria Road and Arkell Road

- ▶ the eastbound left-turn movement is now forecast to operate at LOS D with a v/c ratio of 0.90 and a 95<sup>th</sup> percentile queue length of 34 metres during the PM peak hour, improved from LOS F with a v/c ratio greater than 1.00 and a 95<sup>th</sup> percentile queue length that exceeded the existing storage of 40 metres; and
- ▶ the westbound shared through/right-turn movement is now forecast to operate with a v/c ratio of 0.83 during the PM peak hour, improved from 0.89.

### Victoria Road and Access 2

- ▶ the northbound through movement is now forecast to operate at LOS C with a v/c ratio of 0.94 during the PM peak hour, improved from LOS F and greater than 1.00; and
- ▶ the southbound through movement is now forecast to operate at LOS B with a v/c ratio of 0.78 during the PM peak hour, improved from LOS F and greater than 1.00.

### Victoria Road and Decorso Drive

- ▶ the eastbound right-turn movement is now forecast to operate at LOS C during the PM peak hour, improved from LOS E.

**Appendix B** contains the supporting detailed Synchro 11 reports.



**TABLE 4A: 2036 TOTAL TRAFFIC CONDITIONS – AM PEAK HOUR**

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Summerfield Drive & Arkell Road	TWSC	LOS Delay V/C Q Stor. Avail.	A 8 0.00 0 15 15	A 0 0.00 0 -	> > > > >	A 0	A 9 0.05 2 60 58	A 0 0.00 0 -	> > > > >	A 1	< < < < <	F 92 0.96 67 -	> > > > >	F 92	< < < < <	D 33 0.22 6 -	> > > > >	D 33	
	Zecca Drive/Amos Drive & Arkell Road	TWSC	LOS Delay V/C Q	A 8 0.01 0	A 0 0.00 0	> > >	A 0	A 8 0.00 0	A 0 0.00 0	> > >	A 0	< < <	D 26 0.16 4	> > >	D 26	< < <	C 22 0.29 9	> > >	C 22	
	Colonial Drive & Arkell Road	TWSC	LOS Delay V/C Q Stor. Avail.	A 8 0.01 0 50 50	A 0 0.00 0 -	> > > > >	A 0	A 10 0.10 2 60 58	A 0 0.00 0 -	> > > > >	A 2	< < <	F 660 2.33 251 -	> > >	F 660	< < <	F 958 2.83 142 -	> > >	F 958	
	Residential Entrance/Access 1 & Arkell Road	TWSC	LOS Delay V/C Q Stor. Avail.	A 9 0.08 2 25 23	A 0 0.00 0 -	> > > > >	A 1	< < <	A 0 0.00 0 -	> > >	A 0	< < <	C 23 0.01 0 -	> > >	C 23	D 30 0.04 1 -	B 11 0.05 2 -	> > >	B 14	
	Victoria Road & Arkell Road	TCS	LOS Delay V/C Q Stor. Avail.	F 283 1.54 200 40 -160	D 35 0.81 20 -	> > > > >	F 197	C 25 0.63 8 20 12	C 30 0.68 12 -	> > > > >	C 28	B 18 0.33 1 90 89	F 240 1.47 321 -	> > >	F 225	B 17 0.31 0 50 50	F 267 1.53 344 -	> > >	F 250 201	
	Victoria Road & Access 2	TCS	LOS Delay V/C Q Stor. Avail.	C 27 0.40 5 -	C 26 0.27 3 -	> > >	C 27	C 27 0.27 3 -	C 27 0.27 3 -	> > >	C 27	C 26 0.27 3 30 27	F 129 1.25 302 -	> > >	F 125	B 17 0.86 21 -	A 4 0.13 1 60 59	> > >	B 15 75	
	Victoria Road & Decorso Drive	TWSC	LOS Delay V/C Q Stor. Avail.	F 4707 10.58 193 20 -173	C 25 0.24 7 -	> > > > >	F 3680	C 25 0.24 7 -	C 25 0.24 7 -	> > > > >	C 25	B 11 0.03 1 30 29	A 0 0.00 0 -	> > >	A 0	A 0 0.00 0 -	> > >	A 0		

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

</> - Shared with through movement



**TABLE 4B: 2036 TOTAL TRAFFIC CONDITIONS – PM PEAK HOUR**

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Summerfield Drive & Arkell Road	TWSC	LOS Delay V/C Q Stor. Avail.	A 8 0.00 0 15 15	A 0 0.00 0 -	> > > > >	A 0	A 9 0.05 2 60 58	A 0 0.00 0 -	> > > > >	A 1	< < < < <	E 38 0.54 21 -	> > > > >	E 38	< < < < <	D 30 0.12 3 -	> > > > >	D 30	
	Zecca Drive/Amos Drive & Arkell Road	TWSC	LOS Delay V/C Q Stor. Avail.	A 8 0.03 1 -	A 0 0.00 0 -	> > > > >	A 0	A 8 0.01 0 -	A 0 0.00 0 -	> > > > >	A 0	< < < < <	D 26 0.12 3 -	> > > > >	D 26	< < < < <	C 19 0.13 3 -	> > > > >	C 19	
	Colonial Drive & Arkell Road	TWSC	LOS Delay V/C Q Stor. Avail.	A 9 0.03 1 50 49	A 0 0.00 0 -	> > > > >	A 1	A 9 0.04 1 60 59	A 0 0.00 0 -	> > > > >	A 1	< < < < <	F 52 0.78 44 -	> > > > >	F 52	< < < < <	F 82 0.76 35 -	> > > > >	F 82	
	Residential Entrance/Access 1 & Arkell Road	TWSC	LOS Delay V/C Q Stor. Avail.	A 9 0.01 0 25 25	A 0 0.00 0 -	> > > > >	A 0	< < < < <	A 9 0.00 0 -	> > > > >	A 0	< < < < <	C 19 0.01 0 -	> > > > >	C 19	D 27 0.05 1 -	B 12 0.02 1 -	> > > > >	C 19	
	Victoria Road & Arkell Road	TCS	LOS Delay V/C Q Stor. Avail.	D 54 0.90 34 40 6	C 33 0.76 26 -	> > > > >	D 44	C 22 0.35 6 20 14	D 38 0.83 28 -	> > > > >	C 34	B 18 0.49 3 90 87	F 262 1.51 382 -	> > > > >	F 236	B 18 0.32 2 50 48	F 280 1.55 382 -	> > > > >	F 263 186	
	Victoria Road & Access 2	TCS	LOS Delay V/C Q Stor. Avail.	C 29 0.27 4 -	C 28 0.14 2 -	> > > > >	C 29	C 29 0.17 4 -	C 29 0.17 4 -	> > > > >	C 29	B 16 0.08 1 30 29	C 23 0.94 38 -	> > > > >	C 22	B 11 0.78 13 -	A 3 0.04 0 60 60	> > > > >	B 11 17	
	Victoria Road & Decorso Drive	TWSC	LOS Delay V/C Q Stor. Avail.	F 1600 3.94 104 20 -84	C 22 0.17 4 -	> > > > >	F 1180	C 22 0.17 4 -	C 22 0.17 4 -	> > > > >	C 22	B 12 0.12 3 30 27	A 0 0.00 0 -	> > > > >	A 1	A 0 0.00 0 -	> > > > >	A 0		

MOE - Measure of Effectiveness  
 LOS - Level of Service  
 Delay - Average Delay per Vehicle in Seconds  
 V/C - Volume to Capacity Ratio  
 Q - 95th Percentile Queue Length (m)  
 Stor. - Existing Storage (m)  
 Avail. - Available Storage (m)  
 TCS - Traffic Control Signal  
 TWSC - Two-Way Stop Control  
 </> - Shared with through movement

## Traffic Signal Warrant

The requirement for traffic signal control at the intersections of (1) Arkell Road and Colonial Drive and (2) Arkell Road and Summerfield Drive were assessed using the Ontario Traffic Manual (OTM) signal warrant guidelines<sup>5</sup>.

Based on the warrant analysis, traffic signal control is not warranted under the 2036 forecast total traffic conditions at the Arkell Road intersections with either Colonial Drive or Summerfield Drive.

**Appendix C** contains the warrant analysis worksheets.

## Speed Limits

It is noted that the speed limits on the following roadways will be reduced from 50 km/h to 40 km/h:

- ▶ Decorso Drive;
- ▶ Summerfield Drive;
- ▶ Colonial Drive;
- ▶ Zecca Drive; and
- ▶ Amos Drive.

We trust this Memo addresses the comments provided by the City of Guelph. Please do not hesitate to contact us if you need further information or clarification on the material included in this submission.

Yours very truly,

**PARADIGM TRANSPORTATION SOLUTIONS LIMITED**



**Rajan Philips**

M.Sc. (PI), P.Eng.

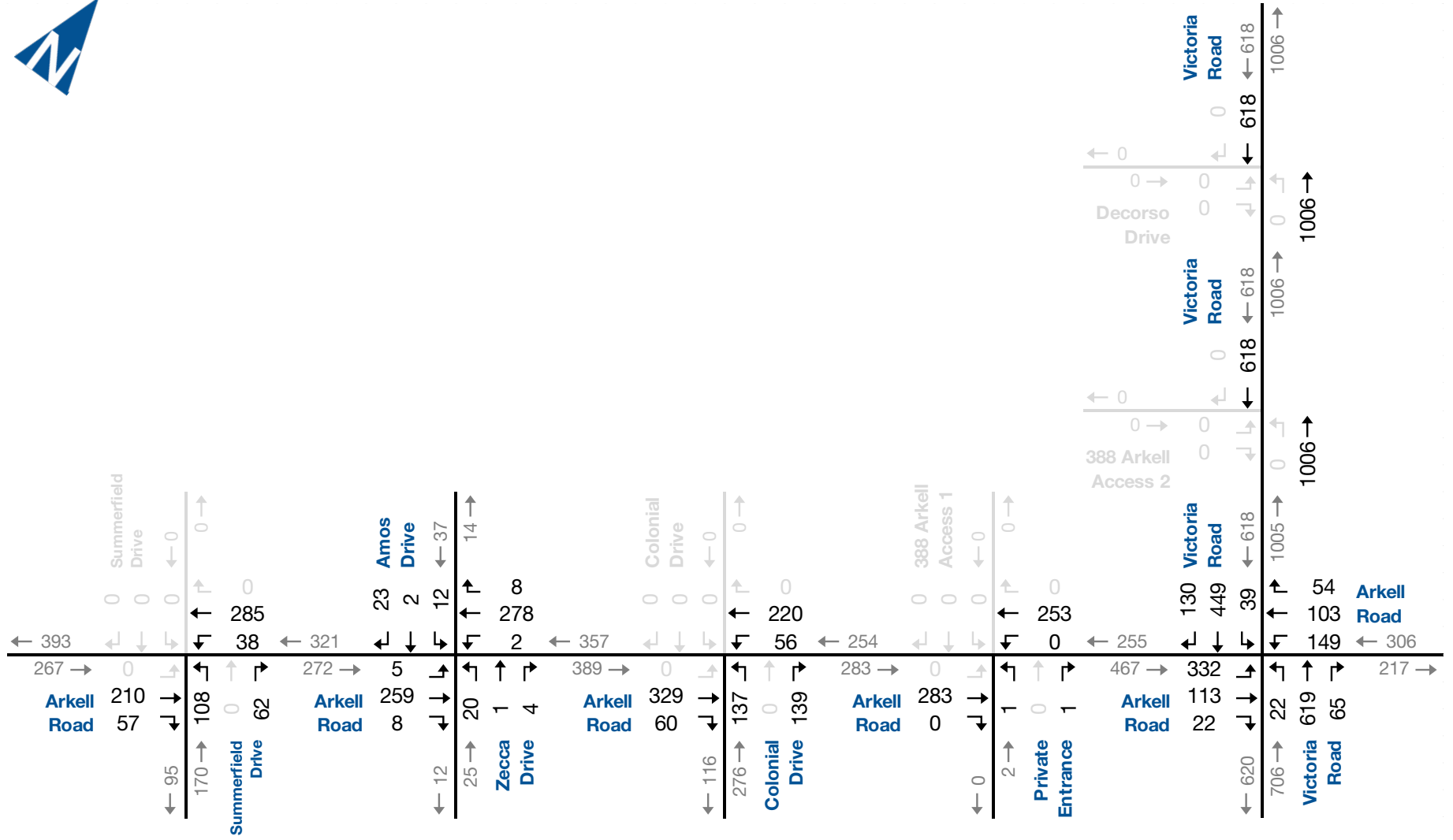
Senior Transportation Consultant

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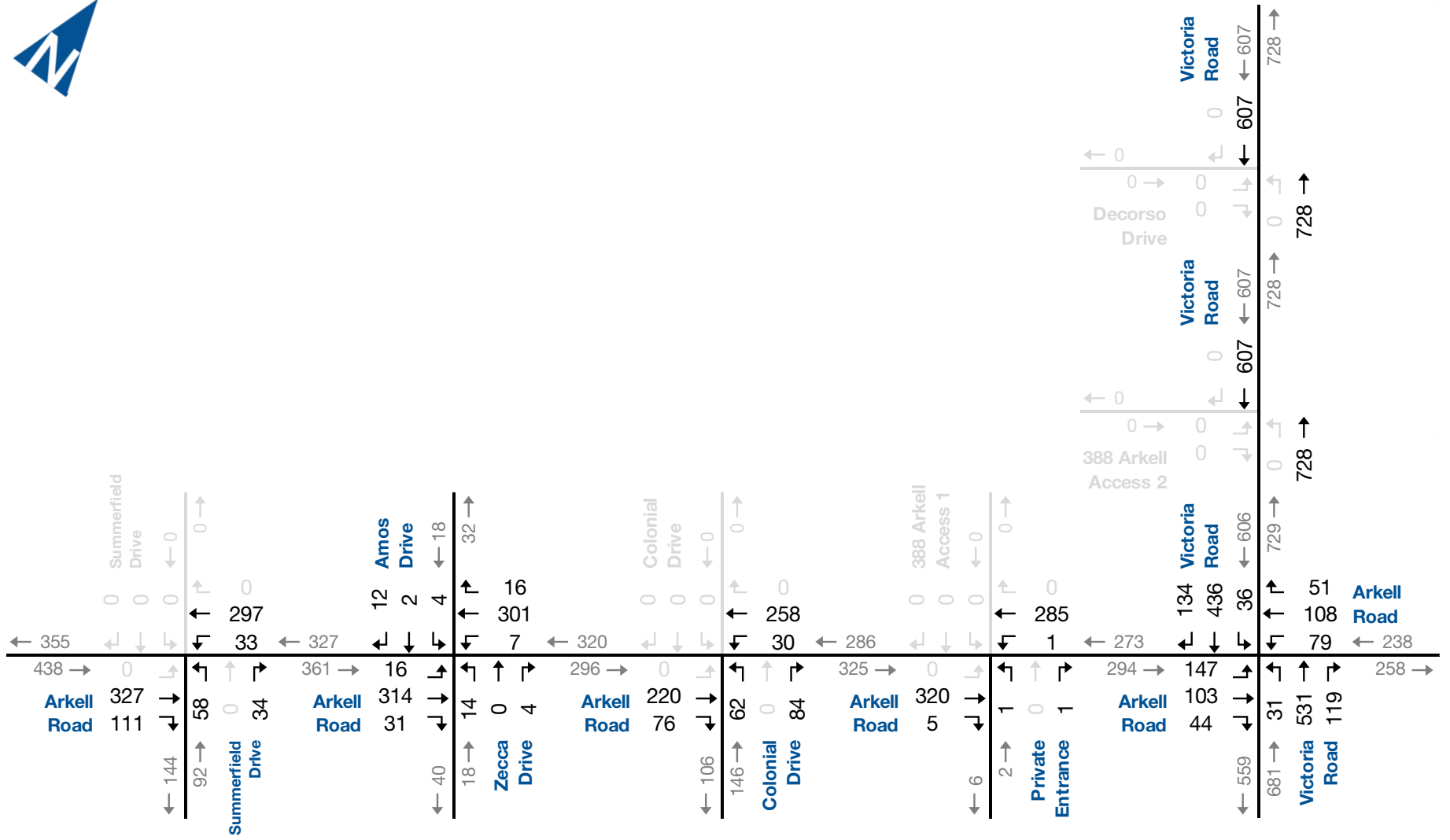
<sup>5</sup> Ontario Traffic Manual Book 12 – Traffic Signals





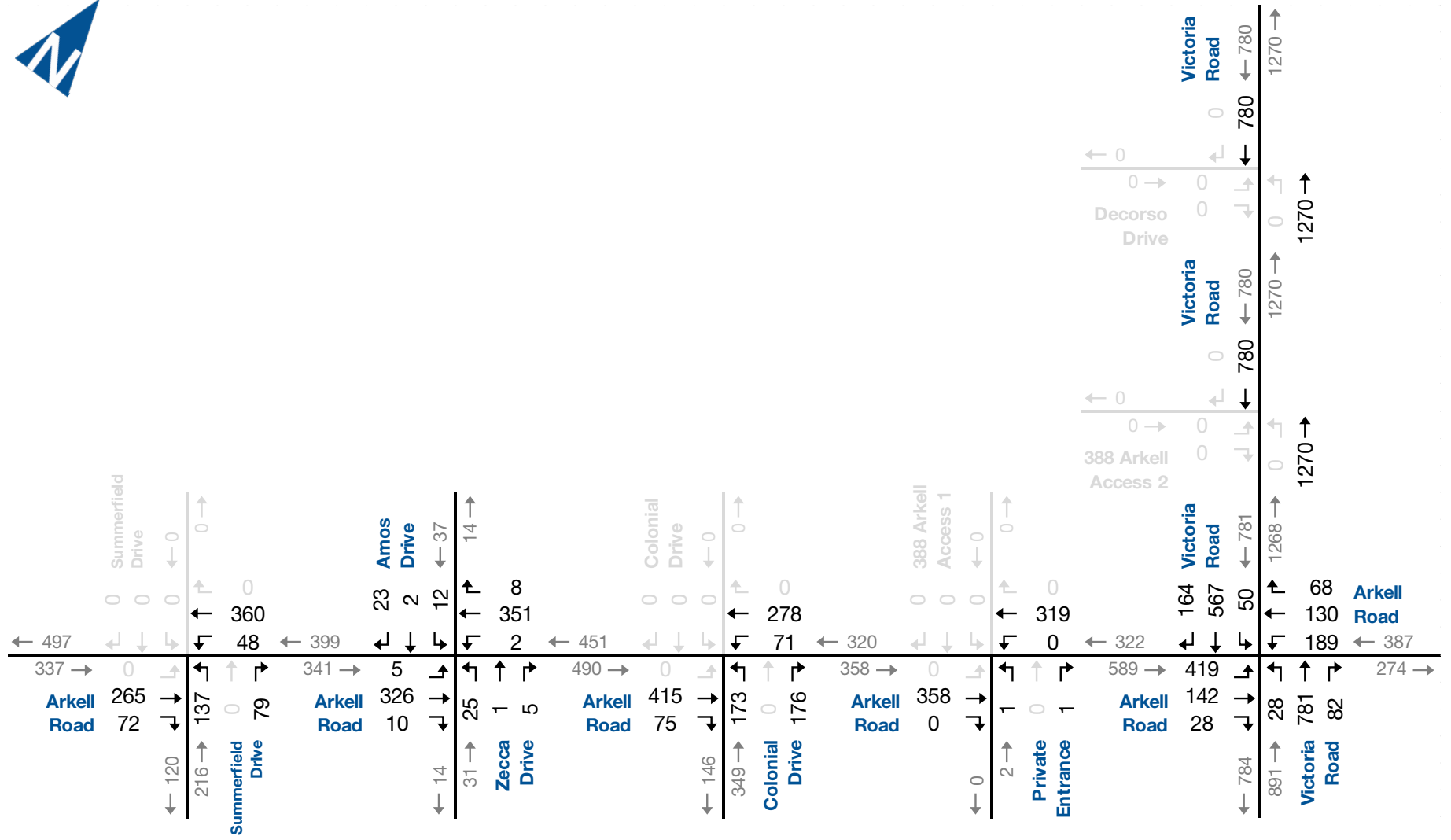


# Base Year (2023) AM Traffic Volumes

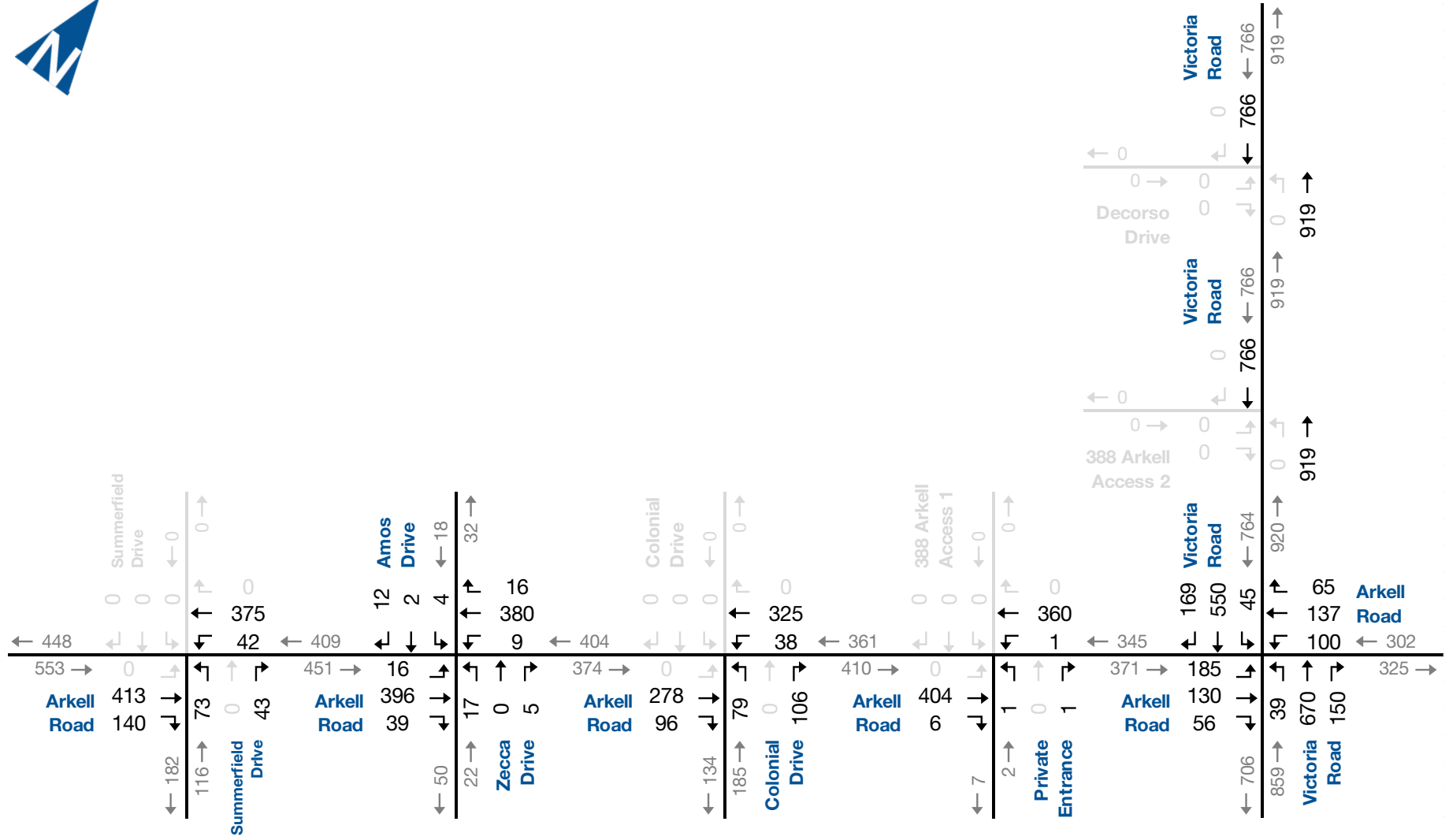


## Base Year (2023) PM Traffic Volumes

Figure 1b

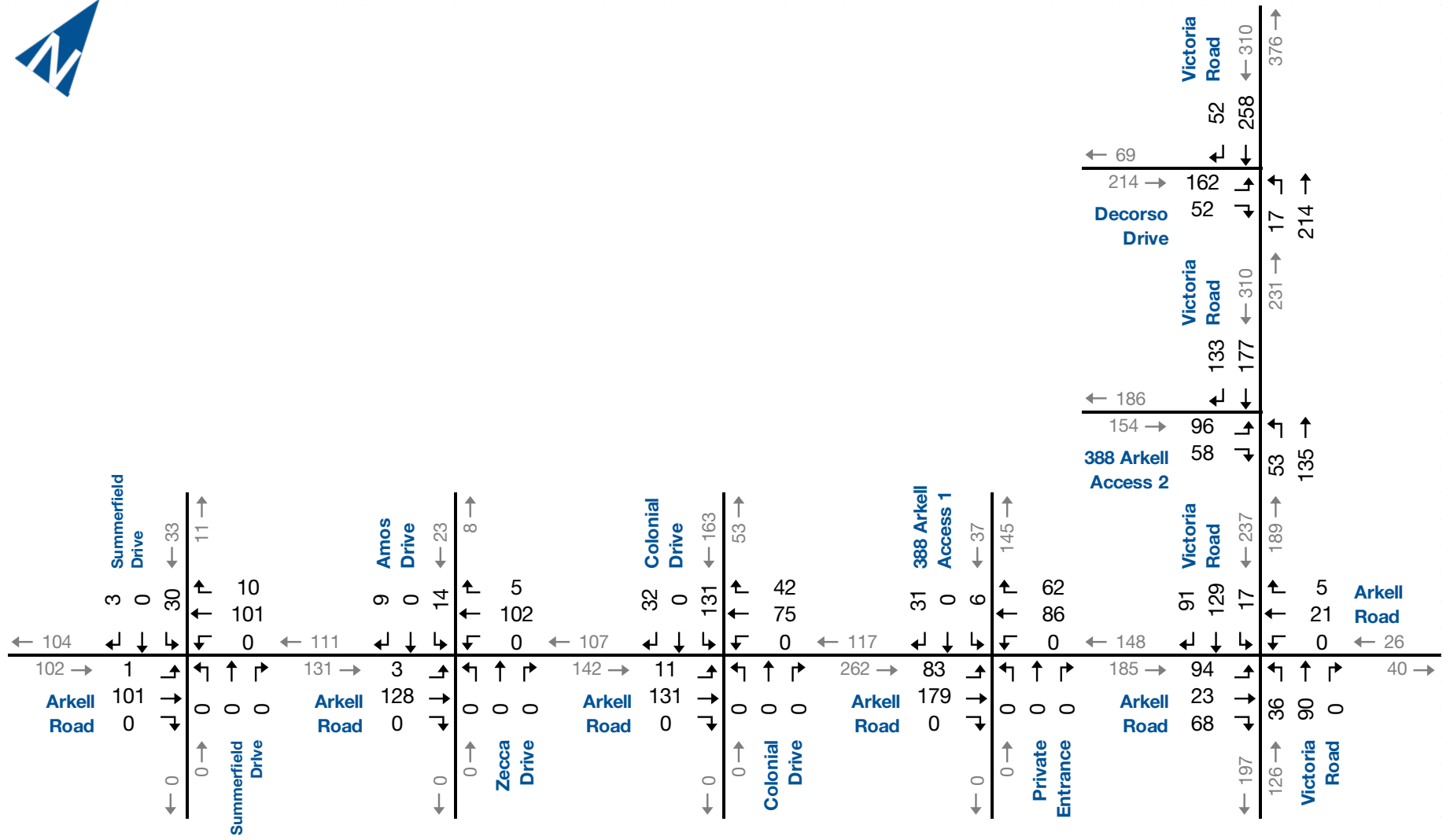


## 2036 AM Generalized Growth Background Traffic Forecasts

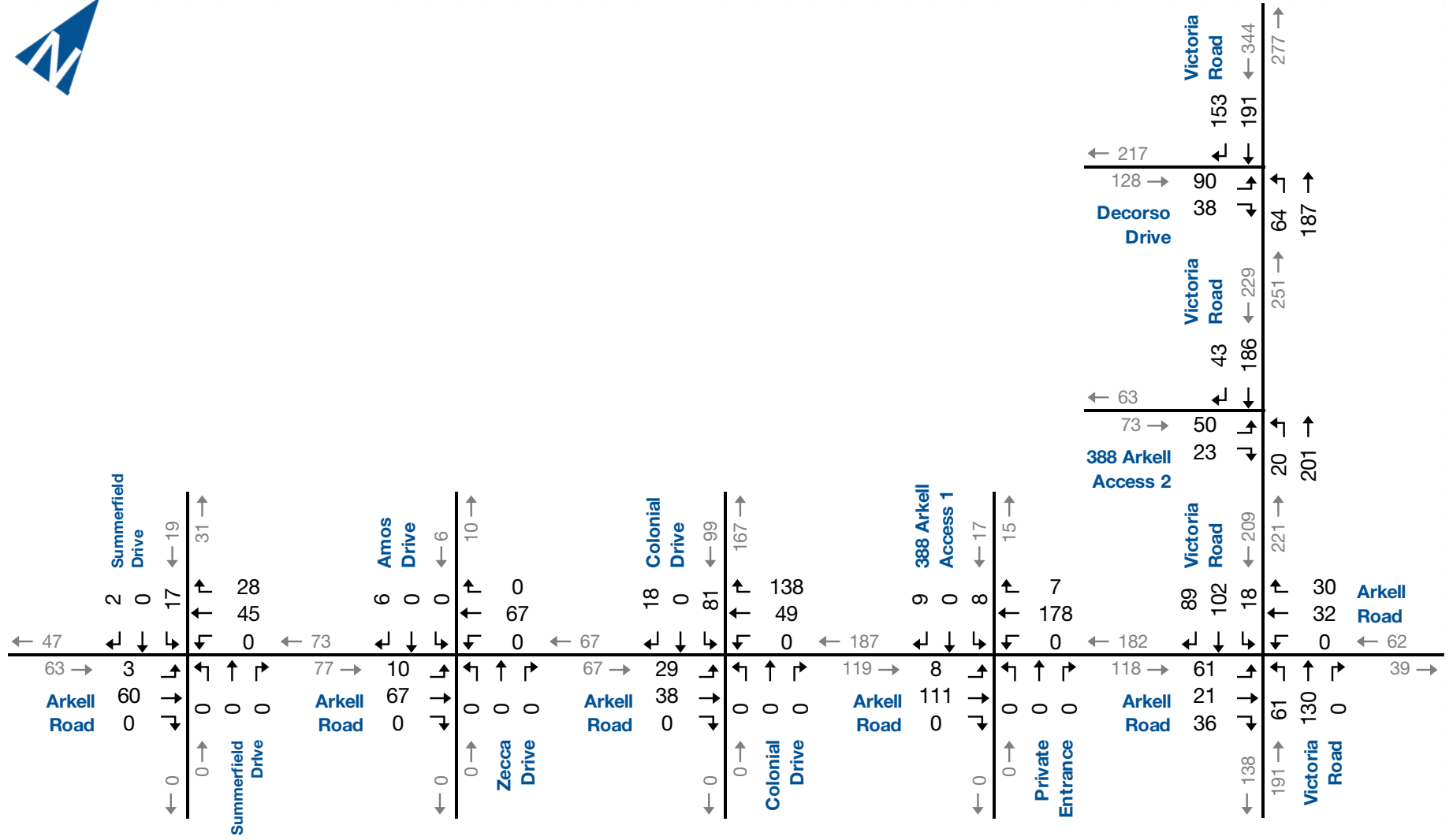


## 2036 PM Generalized Growth Background Traffic Forecasts

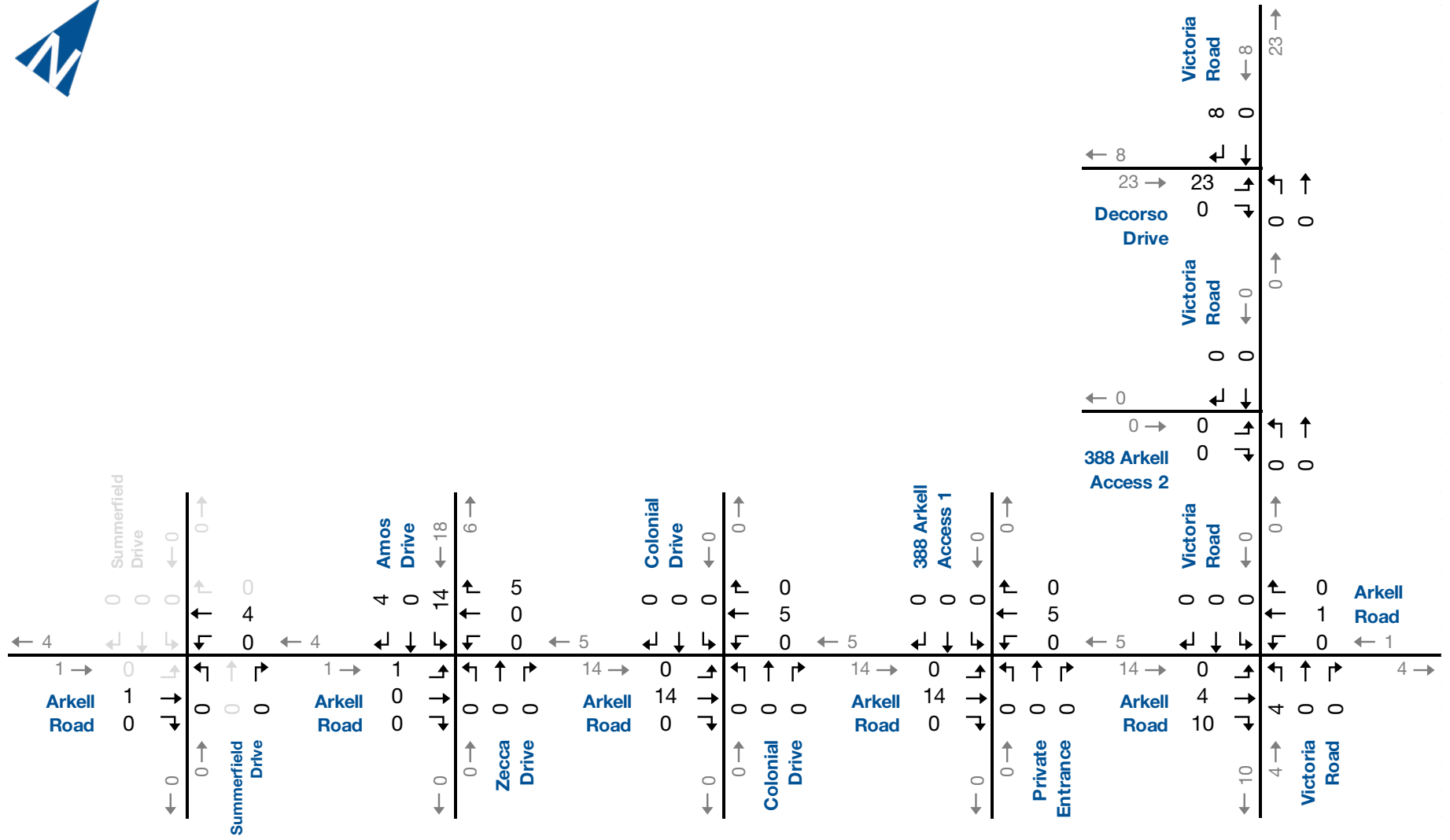
Figure 2b



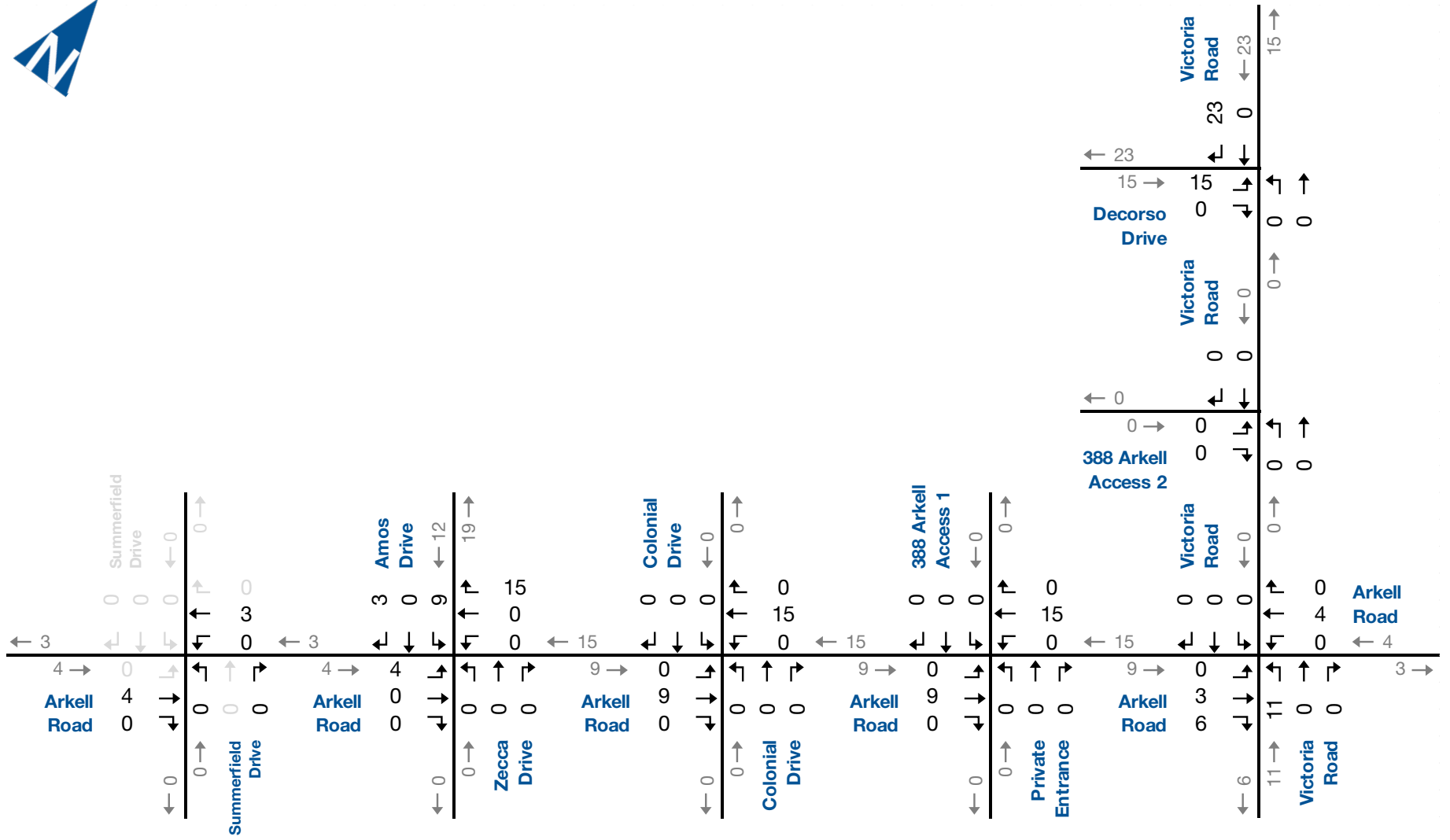
## Other Area Development Traffic Forecasts AM Peak Hour



## Other Area Development Traffic Forecasts PM Peak Hour

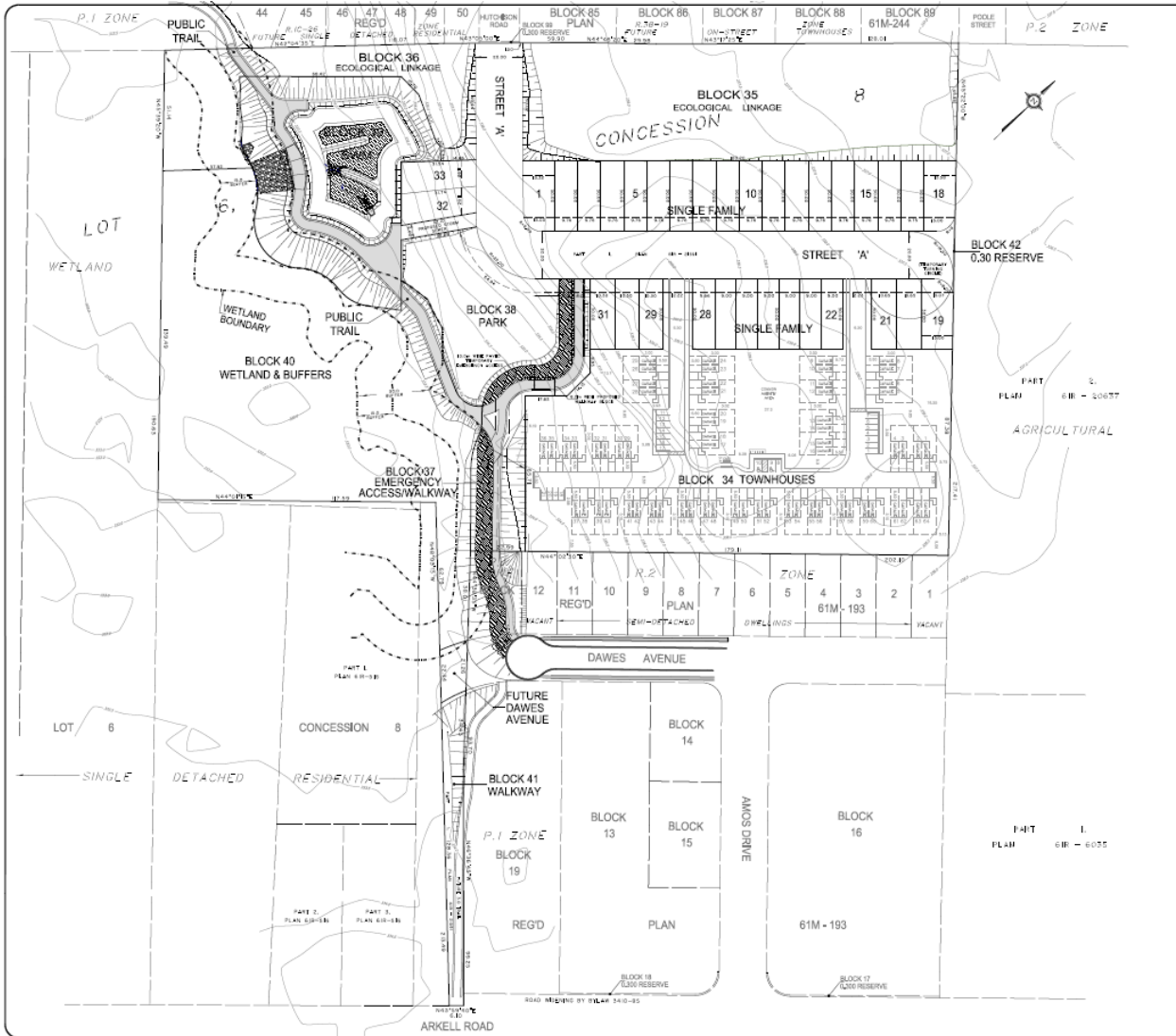


## AM Development Traffic Forecasts



## PM Development Traffic Forecasts





**KEY PLAN** N.T.S. SUBJECT LANDS

**ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51 (17) OF THE PLANNING ACT**

1) 10' (3) (a) - 10' AS SHOWN  
 (b) - 10' AS SHOWN  
 (c) - 10' AS SHOWN  
 (d) - 10' AS SHOWN  
 (e) - 10' AS SHOWN  
 (f) - 10' AS SHOWN  
 (g) - 10' AS SHOWN  
 (h) - 10' AS SHOWN  
 (i) - 10' AS SHOWN  
 (j) - 10' AS SHOWN

**OWNERS CERTIFICATE**  
 I HEREBY AUTHORISE J.D. BARNES LIMITED, TO SUBMIT THIS DRAFT PLAN OF SUBDIVISION.  
December 13, 2019 DATE J.D. BARNES SUBMITTER'S NAME

**SURVEYOR'S CERTIFICATE**  
 I HEREBY CERTIFY THAT THE DIMENSIONS OF THE LANDS TO BE SUBDIVIDED AND THE RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.  
December 13, 2019 DATE J.D. BARNES LEGAL NAME OF SURVEYOR

**METRIC**  
 DISTANCES SHOWN ON THIS PLAN ARE IN METERS AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

RELEVANT INFORMATION			
LOT 1 TO 33	SINGLE-FAMILY RESIDENTIAL	33	1,000
LOT 34	STAFF/TOWNHOUSE	64	1,000
LOT 35 TO 36	ECOLOGICAL LINKAGE		2,000
LOT 37	ECOLOGICAL LINKAGE		2,000
LOT 38	ECOLOGICAL LINKAGE		2,000
LOT 39	PARK		2,000
LOT 40	WETLAND & BUFFERS		1,000
LOT 41	WETLAND & BUFFERS		1,000
LOT 42	0.300 RESERVE		1,000
STREETS			1,000
<b>TOTAL</b>		<b>97</b>	<b>7,000</b>

**DRAFT PLAN OF SUBDIVISION**  
 OF PART OF  
 LOT 6, CONCESSION 8  
 (GEOGRAPHIC TOWNSHIP OF PUSLINC)  
 CITY OF GUELPH  
 COUNTY OF WELLINGTON

J.D. BARNES LIMITED  
 SCALE 1:750

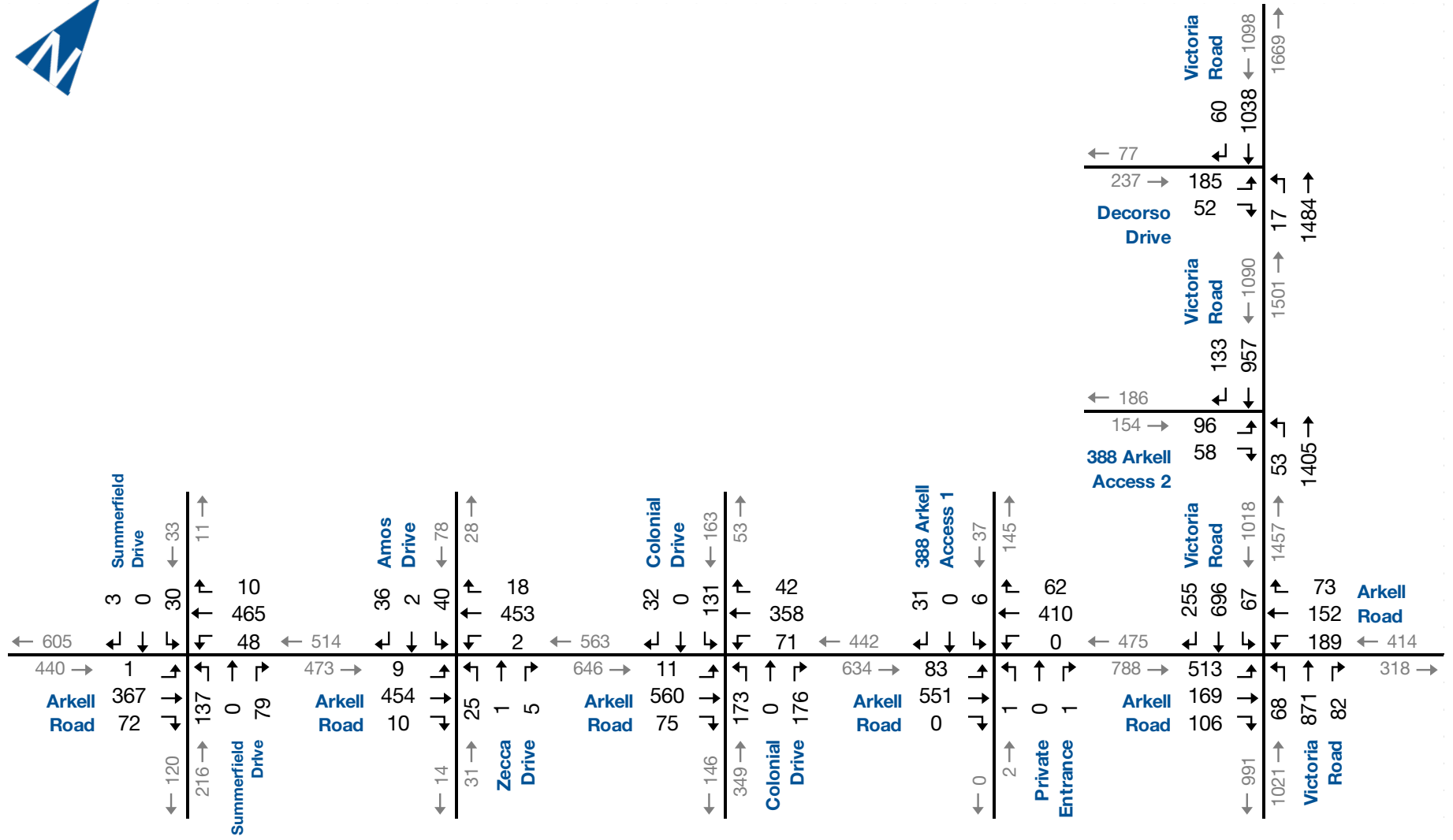
**J.D. BARNES**  
 LAND INFORMATION SPECIALISTS  
 2700 SHEPPARD AVENUE EAST, SUITE 1000, SCARBOROUGH, ONTARIO M1S 1T6  
 TEL: (416) 291-1111 FAX: (416) 291-1112 www.jdbarnes.com



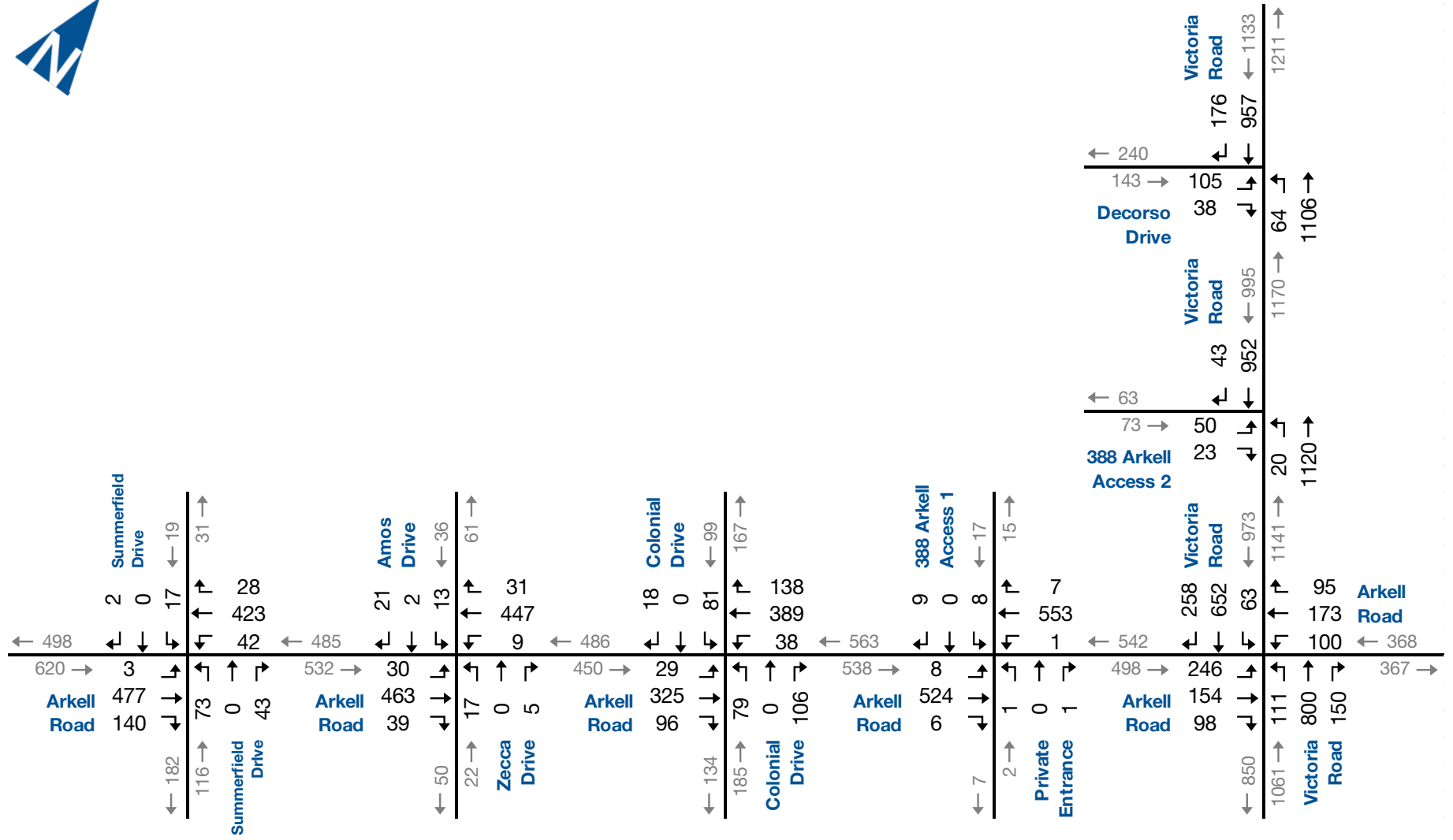
# Draft Plan of Subdivision

220 Arkell Road Transportation Impact Study  
 230080 / 180099

Figure 5



## 2036 AM Total Traffic Forecasts



## 2036 PM Total Traffic Forecasts

## Appendix A

### Updated Turning Movement Count Data





Paradigm Transportation Solutions Limited  
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8  
519-896-3163 cbowness@ptsI.com

Count Name: Victoria Road & Arkell Road  
Site Code:  
Start Date: 10/08/2019  
Page No: 3

### Turning Movement Peak Hour Data (8:00 AM)

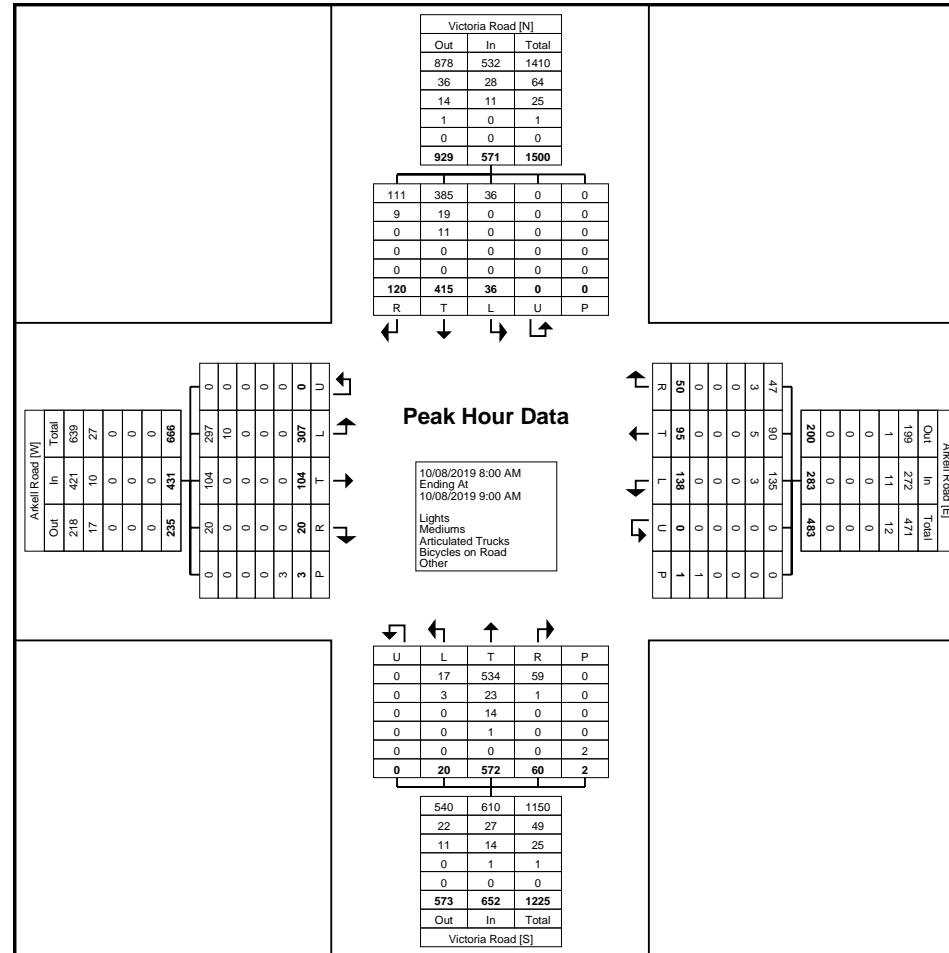
Start Time	Arkell Road Eastbound						Arkell Road Westbound						Victoria Road Northbound						Victoria Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:00 AM	82	21	1	0	0	104	33	18	15	0	0	66	2	151	12	0	1	165	9	111	27	0	0	147	482
8:15 AM	97	33	6	0	0	136	35	30	10	0	1	75	3	125	17	0	1	145	12	103	38	0	0	153	509
8:30 AM	76	31	5	0	1	112	38	26	14	0	0	78	10	152	9	0	0	171	6	95	30	0	0	131	492
8:45 AM	52	19	8	0	2	79	32	21	11	0	0	64	5	144	22	0	0	171	9	106	25	0	0	140	454
<b>Total</b>	<b>307</b>	<b>104</b>	<b>20</b>	<b>0</b>	<b>3</b>	<b>431</b>	<b>138</b>	<b>95</b>	<b>50</b>	<b>0</b>	<b>1</b>	<b>283</b>	<b>20</b>	<b>572</b>	<b>60</b>	<b>0</b>	<b>2</b>	<b>652</b>	<b>36</b>	<b>415</b>	<b>120</b>	<b>0</b>	<b>0</b>	<b>571</b>	<b>1937</b>
Approach %	71.2	24.1	4.6	0.0	-	-	48.8	33.6	17.7	0.0	-	-	3.1	87.7	9.2	0.0	-	-	6.3	72.7	21.0	0.0	-	-	-
Total %	15.8	5.4	1.0	0.0	-	22.3	7.1	4.9	2.6	0.0	-	14.6	1.0	29.5	3.1	0.0	-	33.7	1.9	21.4	6.2	0.0	-	29.5	-
PHF	0.791	0.788	0.625	0.000	-	0.792	0.908	0.792	0.833	0.000	-	0.907	0.500	0.941	0.682	0.000	-	0.953	0.750	0.935	0.789	0.000	-	0.933	0.951
Lights	297	104	20	0	-	421	135	90	47	0	-	272	17	534	59	0	-	610	36	385	111	0	-	532	1835
% Lights	96.7	100.0	100.0	-	-	97.7	97.8	94.7	94.0	-	-	96.1	85.0	93.4	98.3	-	-	93.6	100.0	92.8	92.5	-	-	93.2	94.7
Mediums	10	0	0	0	-	10	3	5	3	0	-	11	3	23	1	0	-	27	0	19	9	0	-	28	76
% Mediums	3.3	0.0	0.0	-	-	2.3	2.2	5.3	6.0	-	-	3.9	15.0	4.0	1.7	-	-	4.1	0.0	4.6	7.5	-	-	4.9	3.9
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	14	0	0	-	14	0	11	0	0	-	11	25
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	2.4	0.0	-	-	2.1	0.0	2.7	0.0	-	-	1.9	1.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



Paradigm Transportation Solutions Limited  
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8  
519-896-3163 cbowness@ptsI.com

Count Name: Victoria Road & Arkell Road  
Site Code:  
Start Date: 10/08/2019  
Page No: 4



Turning Movement Peak Hour Data Plot (8:00 AM)



Paradigm Transportation Solutions Limited  
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8  
519-896-3163 cbowness@pts1.com

Count Name: Victoria Road & Arkell Road  
Site Code:  
Start Date: 10/08/2019  
Page No: 5

### Turning Movement Peak Hour Data (3:00 PM)

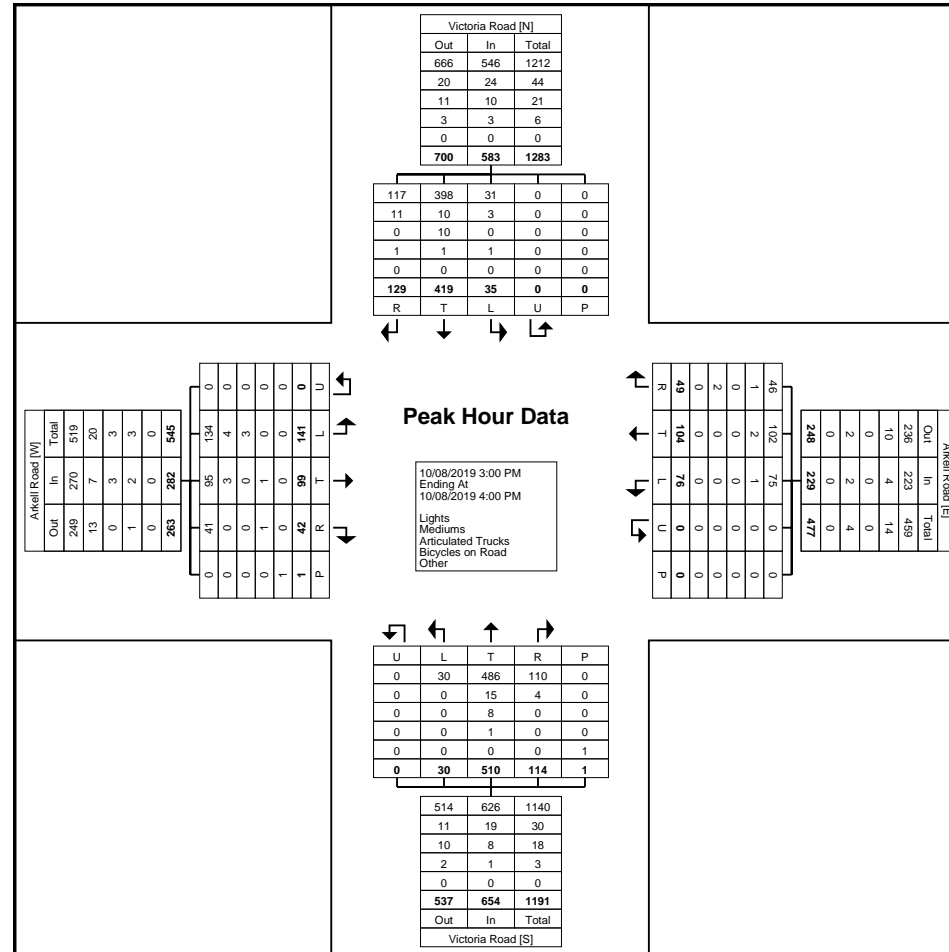
Start Time	Arkell Road Eastbound						Arkell Road Westbound						Victoria Road Northbound						Victoria Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
3:00 PM	19	20	5	0	0	44	18	22	10	0	0	50	6	117	21	0	1	144	3	86	27	0	0	116	354
3:15 PM	34	30	19	0	1	83	11	26	8	0	0	45	8	142	37	0	0	187	7	121	32	0	0	160	475
3:30 PM	46	25	9	0	0	80	13	20	19	0	0	52	7	131	28	0	0	166	9	100	24	0	0	133	431
3:45 PM	42	24	9	0	0	75	34	36	12	0	0	82	9	120	28	0	0	157	16	112	46	0	0	174	488
Total	141	99	42	0	1	282	76	104	49	0	0	229	30	510	114	0	1	654	35	419	129	0	0	583	1748
Approach %	50.0	35.1	14.9	0.0	-	-	33.2	45.4	21.4	0.0	-	-	4.6	78.0	17.4	0.0	-	-	6.0	71.9	22.1	0.0	-	-	-
Total %	8.1	5.7	2.4	0.0	-	16.1	4.3	5.9	2.8	0.0	-	13.1	1.7	29.2	6.5	0.0	-	37.4	2.0	24.0	7.4	0.0	-	33.4	-
PHF	0.766	0.825	0.553	0.000	-	0.849	0.559	0.722	0.645	0.000	-	0.698	0.833	0.898	0.770	0.000	-	0.874	0.547	0.866	0.701	0.000	-	0.838	0.895
Lights	134	95	41	0	-	270	75	102	46	0	-	223	30	486	110	0	-	626	31	398	117	0	-	546	1665
% Lights	95.0	96.0	97.6	-	-	95.7	98.7	98.1	93.9	-	-	97.4	100.0	95.3	96.5	-	-	95.7	88.6	95.0	90.7	-	-	93.7	95.3
Mediums	4	3	0	0	-	7	1	2	1	0	-	4	0	15	4	0	-	19	3	10	11	0	-	24	54
% Mediums	2.8	3.0	0.0	-	-	2.5	1.3	1.9	2.0	-	-	1.7	0.0	2.9	3.5	-	-	2.9	8.6	2.4	8.5	-	-	4.1	3.1
Articulated Trucks	3	0	0	0	-	3	0	0	0	0	-	0	0	8	0	0	-	8	0	10	0	0	-	10	21
% Articulated Trucks	2.1	0.0	0.0	-	-	1.1	0.0	0.0	0.0	-	-	0.0	0.0	1.6	0.0	-	-	1.2	0.0	2.4	0.0	-	-	1.7	1.2
Bicycles on Road	0	1	1	0	-	2	0	0	2	0	-	2	0	1	0	0	-	1	1	1	1	0	-	3	8
% Bicycles on Road	0.0	1.0	2.4	-	-	0.7	0.0	0.0	4.1	-	-	0.9	0.0	0.2	0.0	-	-	0.2	2.9	0.2	0.8	-	-	0.5	0.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-



Paradigm Transportation Solutions Limited  
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8  
519-896-3163 cbowness@pts.com

Count Name: Victoria Road & Arkell Road  
Site Code:  
Start Date: 10/08/2019  
Page No: 6



Turning Movement Peak Hour Data Plot (3:00 PM)





Paradigm Transportation Solutions Limited  
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8  
519-896-3163 cbowness@ptsI.com

Count Name: Arkell Road & Colonial Drive  
Site Code:  
Start Date: 10/08/2019  
Page No: 3

### Turning Movement Peak Hour Data (8:00 AM)

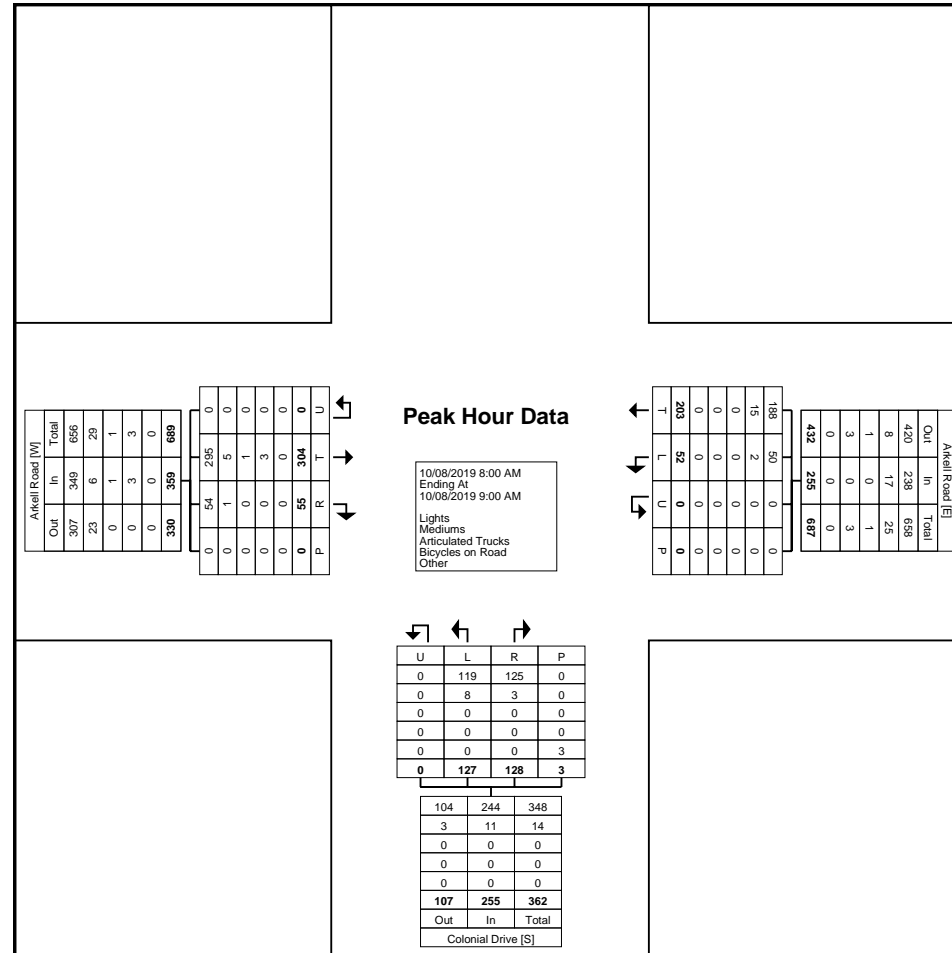
Start Time	Arkell Road Eastbound					Arkell Road Westbound					Colonial Drive Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
8:00 AM	81	10	0	0	91	12	36	0	0	48	28	30	0	1	58	197
8:15 AM	91	15	0	0	106	19	59	0	0	78	27	33	0	0	60	244
8:30 AM	70	19	0	0	89	19	59	0	0	78	44	41	0	1	85	252
8:45 AM	62	11	0	0	73	2	49	0	0	51	28	24	0	1	52	176
Total	304	55	0	0	359	52	203	0	0	255	127	128	0	3	255	869
Approach %	84.7	15.3	0.0	-	-	20.4	79.6	0.0	-	-	49.8	50.2	0.0	-	-	-
Total %	35.0	6.3	0.0	-	41.3	6.0	23.4	0.0	-	29.3	14.6	14.7	0.0	-	29.3	-
PHF	0.835	0.724	0.000	-	0.847	0.684	0.860	0.000	-	0.817	0.722	0.780	0.000	-	0.750	0.862
Lights	295	54	0	-	349	50	188	0	-	238	119	125	0	-	244	831
% Lights	97.0	98.2	-	-	97.2	96.2	92.6	-	-	93.3	93.7	97.7	-	-	95.7	95.6
Mediums	5	1	0	-	6	2	15	0	-	17	8	3	0	-	11	34
% Mediums	1.6	1.8	-	-	1.7	3.8	7.4	-	-	6.7	6.3	2.3	-	-	4.3	3.9
Articulated Trucks	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Articulated Trucks	0.3	0.0	-	-	0.3	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	3	0	0	-	3	0	0	0	-	0	0	0	0	-	0	3
% Bicycles on Road	1.0	0.0	-	-	0.8	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited  
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8  
519-896-3163 cbowness@ptsl.com

Count Name: Arkell Road & Colonial Drive  
Site Code:  
Start Date: 10/08/2019  
Page No: 4



Turning Movement Peak Hour Data Plot (8:00 AM)



Paradigm Transportation Solutions Limited  
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8  
519-896-3163 cbowness@pts.com

Count Name: Arkell Road & Colonial Drive  
Site Code:  
Start Date: 10/08/2019  
Page No: 5

### Turning Movement Peak Hour Data (3:00 PM)

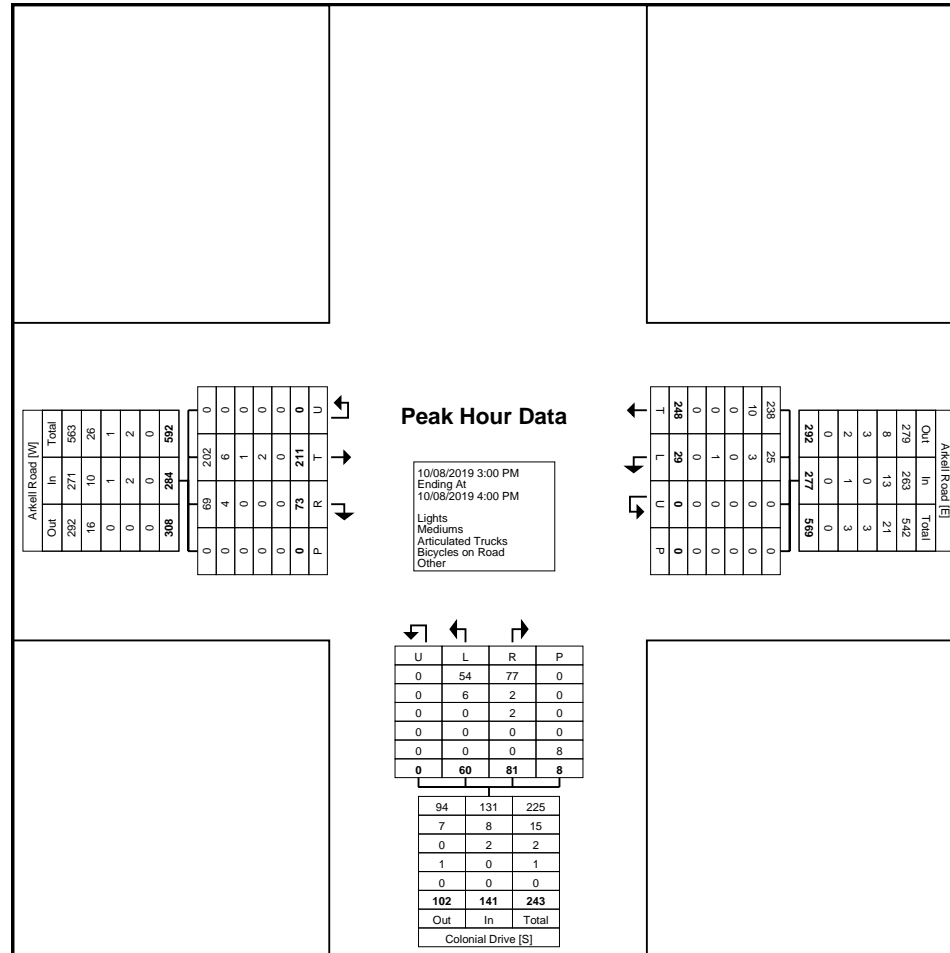
Start Time	Arkell Road Eastbound					Arkell Road Westbound					Colonial Drive Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
3:00 PM	34	10	0	0	44	12	46	0	0	58	27	13	0	1	40	142
3:15 PM	57	22	0	0	79	6	64	0	0	70	20	34	0	3	54	203
3:30 PM	64	13	0	0	77	5	50	0	0	55	8	23	0	1	31	163
3:45 PM	56	28	0	0	84	6	88	0	0	94	5	11	0	3	16	194
Total	211	73	0	0	284	29	248	0	0	277	60	81	0	8	141	702
Approach %	74.3	25.7	0.0	-	-	10.5	89.5	0.0	-	-	42.6	57.4	0.0	-	-	-
Total %	30.1	10.4	0.0	-	40.5	4.1	35.3	0.0	-	39.5	8.5	11.5	0.0	-	20.1	-
PHF	0.824	0.652	0.000	-	0.845	0.604	0.705	0.000	-	0.737	0.556	0.596	0.000	-	0.653	0.865
Lights	202	69	0	-	271	25	238	0	-	263	54	77	0	-	131	665
% Lights	95.7	94.5	-	-	95.4	86.2	96.0	-	-	94.9	90.0	95.1	-	-	92.9	94.7
Mediums	6	4	0	-	10	3	10	0	-	13	6	2	0	-	8	31
% Mediums	2.8	5.5	-	-	3.5	10.3	4.0	-	-	4.7	10.0	2.5	-	-	5.7	4.4
Articulated Trucks	1	0	0	-	1	0	0	0	-	0	0	2	0	-	2	3
% Articulated Trucks	0.5	0.0	-	-	0.4	0.0	0.0	-	-	0.0	0.0	2.5	-	-	1.4	0.4
Bicycles on Road	2	0	0	-	2	1	0	0	-	1	0	0	0	-	0	3
% Bicycles on Road	0.9	0.0	-	-	0.7	3.4	0.0	-	-	0.4	0.0	0.0	-	-	0.0	0.4
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	12.5	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	87.5	-	-



Paradigm Transportation Solutions Limited  
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8  
519-896-3163 cbowness@ptsI.com

Count Name: Arkell Road & Colonial Drive  
Site Code:  
Start Date: 10/08/2019  
Page No: 6



Turning Movement Peak Hour Data Plot (3:00 PM)



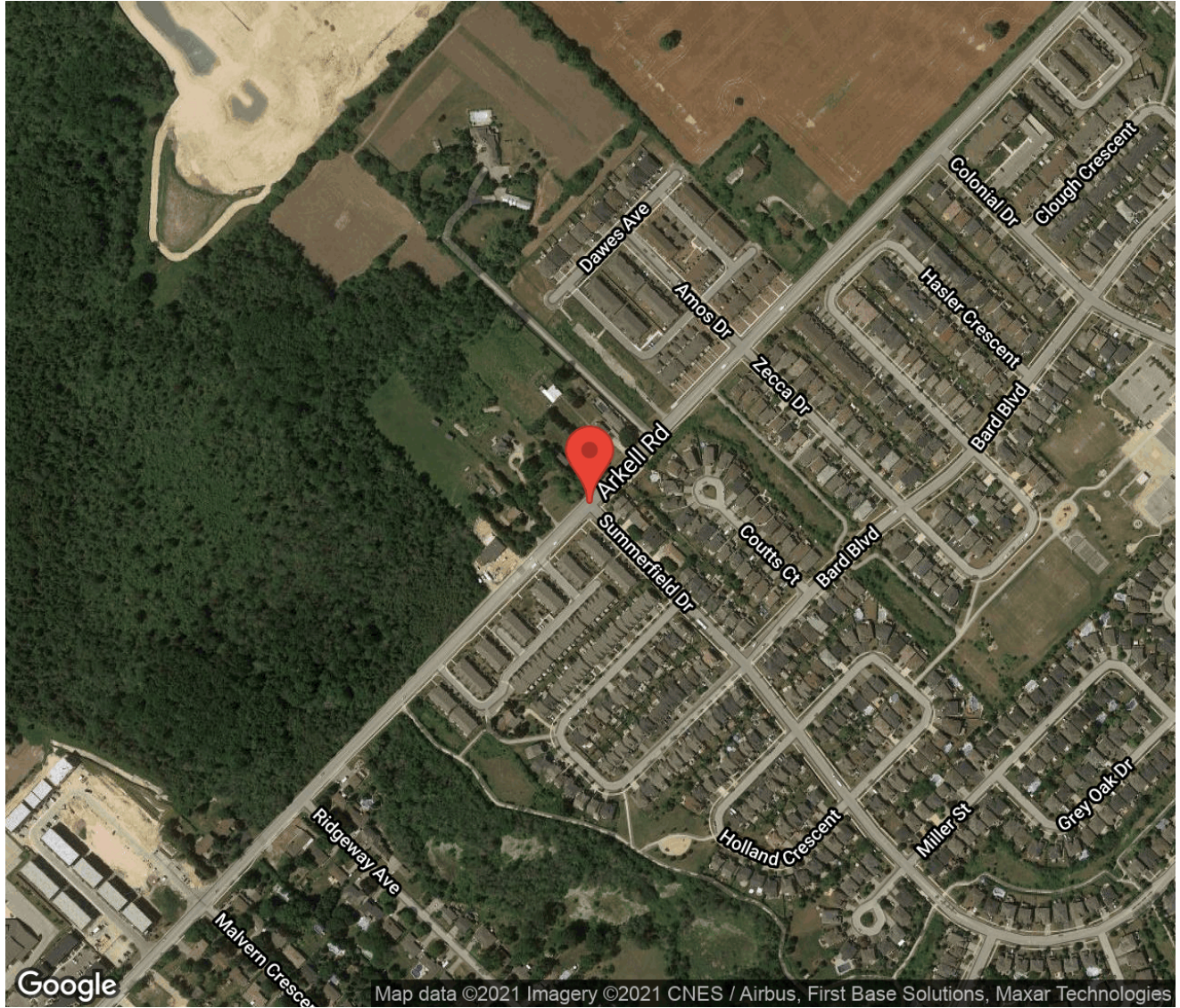
## Project #21-166 - IBI Group

### Intersection Count Report

<b>Intersection:</b>	Arkell Rd & Summerfield Dr
<b>Municipality:</b>	Guelph
<b>Count Date:</b>	Sep 09, 2021
<b>Site Code:</b>	2116600001
<b>Count Categories:</b>	Cars, Trucks, Bicycles, Pedestrians
<b>Count Period:</b>	08:00-09:00, 15:00-16:00
<b>Weather:</b>	Clear

## Traffic Count Map

Intersection: Arkell Rd & Summerfield Dr  
Site Code: 211660001  
Municipality: Guelph  
Count Date: Sep 09, 2021





## Traffic Count Summary

Intersection: Arkell Rd & Summerfield Dr  
 Site Code: 2116600001  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### Summerfield Dr - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
08:00 - 09:00	0	0	0	0	0	0	104	0	60	0	164	12	164
BREAK													
15:00 - 16:00	0	0	0	0	0	0	56	0	33	0	89	5	89
<b>GRAND TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>160</b>	<b>0</b>	<b>93</b>	<b>0</b>	<b>253</b>	<b>17</b>	<b>253</b>



## Traffic Count Summary

Intersection: Arkell Rd & Summerfield Dr  
 Site Code: 2116600001  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### Arkell Rd - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
<b>08:00 - 09:00</b>	37	274	0	0	311	0	0	202	55	0	257	0	568
BREAK													
<b>15:00 - 16:00</b>	32	285	0	0	317	0	0	314	107	0	421	0	738
<b>GRAND TOTAL</b>	<b>69</b>	<b>559</b>	<b>0</b>	<b>0</b>	<b>628</b>	<b>0</b>	<b>0</b>	<b>516</b>	<b>162</b>	<b>0</b>	<b>678</b>	<b>0</b>	<b>1306</b>





## Traffic Count Data

Intersection: Arkell Rd & Summerfield Dr  
 Site Code: 2116600001  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### South Approach - Summerfield Dr

Start Time	Cars					Trucks					Bicycles					Total Peds	
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total		
08:00	28	0	18	0	46	0	0	0	0	0	0	0	0	0	0	0	2
08:15	24	0	15	0	39	0	0	0	0	0	0	0	0	0	0	0	3
08:30	30	0	12	0	42	2	0	1	0	3	1	0	4	0	5	0	4
08:45	18	0	10	0	28	0	0	0	0	0	1	0	0	0	1	0	3
<b>SUBTOTAL</b>	100	0	55	0	155	2	0	1	0	3	2	0	4	0	6	0	12



## Traffic Count Data

Intersection: Arkell Rd & Summerfield Dr  
 Site Code: 2116600001  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### South Approach - Summerfield Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	20	0	11	0	31	0	0	0	0	0	0	0	0	0	0	3
15:15	10	0	8	0	18	0	0	1	0	1	0	0	0	0	0	2
15:30	18	0	8	0	26	0	0	0	0	0	0	0	0	0	0	0
15:45	8	0	5	0	13	0	0	0	0	0	0	0	0	0	0	0
<b>SUBTOTAL</b>	56	0	32	0	88	0	0	1	0	1	0	0	0	0	0	5
<b>GRAND TOTAL</b>	156	0	87	0	243	2	0	2	0	4	2	0	4	0	6	17



## Traffic Count Data

Intersection: Arkell Rd & Summerfield Dr  
 Site Code: 2116600001  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### East Approach - Arkell Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
08:00	8	58	0	0	66	1	3	0	0	4	0	1	0	0	1	0
08:15	9	68	0	0	77	0	7	0	0	7	0	0	0	0	0	0
08:30	6	77	0	0	83	1	7	0	0	8	0	0	0	0	0	0
08:45	12	50	0	0	62	0	3	0	0	3	0	0	0	0	0	0
<b>SUBTOTAL</b>	35	253	0	0	288	2	20	0	0	22	0	1	0	0	1	0



## Traffic Count Data

Intersection: Arkell Rd & Summerfield Dr  
 Site Code: 2116600001  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### East Approach - Arkell Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	8	75	0	0	83	1	3	0	0	4	0	0	0	0	0	0
15:15	8	63	0	0	71	0	3	0	0	3	0	1	0	0	1	0
15:30	3	63	0	0	66	2	4	0	0	6	0	0	0	0	0	0
15:45	9	71	0	0	80	1	2	0	0	3	0	0	0	0	0	0
<b>SUBTOTAL</b>	28	272	0	0	300	4	12	0	0	16	0	1	0	0	1	0
<b>GRAND TOTAL</b>	63	525	0	0	588	6	32	0	0	38	0	2	0	0	2	0



## Traffic Count Data

Intersection: Arkell Rd & Summerfield Dr  
 Site Code: 2116600001  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### West Approach - Arkell Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
08:00	0	59	5	0	64	0	1	0	0	1	0	0	0	0	0	0
08:15	0	49	19	0	68	0	1	1	0	2	0	0	0	0	0	0
08:30	0	42	13	0	55	0	4	1	0	5	0	0	0	0	0	0
08:45	0	45	16	0	61	0	1	0	0	1	0	0	0	0	0	0
<b>SUBTOTAL</b>	0	195	53	0	248	0	7	2	0	9	0	0	0	0	0	0



## Traffic Count Data

Intersection: Arkell Rd & Summerfield Dr  
 Site Code: 2116600001  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### West Approach - Arkell Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	0	58	22	0	80	0	1	0	0	1	0	0	0	0	0	0
15:15	0	71	37	0	108	0	2	0	0	2	0	0	1	0	1	0
15:30	0	93	20	0	113	0	4	2	0	6	0	0	1	0	1	0
15:45	0	81	22	0	103	0	3	2	0	5	0	1	0	0	1	0
<b>SUBTOTAL</b>	0	303	101	0	404	0	10	4	0	14	0	1	2	0	3	0
<b>GRAND TOTAL</b>	0	498	154	0	652	0	17	6	0	23	0	1	2	0	3	0

## Peak Hour Diagram

### Specified Period

From: 08:00:00  
To: 09:00:00

### One Hour Peak

From: 08:00:00  
To: 09:00:00

**Intersection:** Arkell Rd & Summerfield Dr  
**Site Code:** 2116600001  
**Count Date:** Sep 09, 2021

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Arkell Rd runs E/W

### East Approach

	Out	In	Total
	288	250	538
	22	8	30
	1	4	5
<b>Totals</b>	<b>311</b>	<b>262</b>	<b>573</b>

### Arkell Rd

			Totals
0	0	0	0
0	7	195	202
0	2	53	55

Peds: 0

Peds: 0



Peds: 0

### Arkell Rd

Totals			
0	0	0	0
274	253	20	1
37	35	2	0

Peds: 12

### West Approach

	Out	In	Total
	248	353	601
	9	22	31
	0	3	3
<b>Totals</b>	<b>257</b>	<b>378</b>	<b>635</b>

Totals	104	60	0
	100	55	0
	2	1	0
	2	4	0

Summerfield Dr

### South Approach

	Out	In	Total
	155	88	243
	3	4	7
	6	0	6
<b>Totals</b>	<b>164</b>	<b>92</b>	<b>256</b>

- Cars

- Trucks

- Bicycles

### Comments



## Peak Hour Summary

Intersection: Arkell Rd & Summerfield Dr  
 Site Code: 2116600001  
 Count Date: Sep 09, 2021  
 Period: 08:00 - 09:00

### Peak Hour Data (08:00 - 09:00)

Start Time	North Approach				South Approach Summerfield Dr				East Approach Arkell Rd				West Approach Arkell Rd				Total Vehicles									
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻		Peds	Total							
08:00					0		28		18	0	2	46	9	62			0	0	71		60	5	0	0	65	182
08:15					0		24		15	0	3	39	9	75			0	0	84		50	20	0	0	70	193
08:30					0		33		17	0	4	50	7	84			0	0	91		46	14	0	0	60	201
08:45					0		19		10	0	3	29	12	53			0	0	65		46	16	0	0	62	156
<b>Grand Total</b>					<b>0</b>	<b>0</b>	<b>104</b>	<b>60</b>	<b>0</b>	<b>12</b>	<b>164</b>	<b>37</b>	<b>274</b>	<b>0</b>	<b>0</b>	<b>311</b>	<b>202</b>	<b>55</b>	<b>0</b>	<b>0</b>	<b>257</b>	<b>732</b>				
Approach %					-		63.4	36.6	0	-		11.9	88.1	0	-		78.6	21.4	0	-						
Totals %					0		14.2	8.2	0	22.4	5.1	37.4	0	42.5	27.6	7.5	0	35.1								
<b>PHF</b>					<b>0</b>	<b>0.79</b>	<b>0.83</b>	<b>0</b>	<b>0.82</b>	<b>0.77</b>	<b>0.82</b>	<b>0</b>	<b>0.85</b>	<b>0.84</b>	<b>0.69</b>	<b>0</b>	<b>0.92</b>	<b>0.91</b>								
Cars					0	100	55	0	155	35	253	0	288	195	53	0	248	691								
% Cars					0	96.2	91.7	0	94.5	94.6	92.3	0	92.6	96.5	96.4	0	96.5	94.4								
Trucks					0	2	1	0	3	2	20	0	22	7	2	0	9	34								
% Trucks					0	1.9	1.7	0	1.8	5.4	7.3	0	7.1	3.5	3.6	0	3.5	4.6								
Bicycles					0	2	4	0	6	0	1	0	1	0	0	0	0	7								
% Bicycles					0	1.9	6.7	0	3.7	0	0.4	0	0.3	0	0	0	0	1								
Peds					0	-		12	-		0	-				0	-	12								
% Peds					0	-		100	-		0	-				0	-									



## Peak Hour Diagram

### Specified Period

From: 15:00:00  
To: 16:00:00

### One Hour Peak

From: 15:00:00  
To: 16:00:00

**Intersection:** Arkell Rd & Summerfield Dr  
**Site Code:** 2116600001  
**Count Date:** Sep 09, 2021

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Arkell Rd runs E/W

### East Approach

	Out	In	Total
	300	335	635
	16	11	27
	1	1	2
<b>Totals</b>	<b>317</b>	<b>347</b>	<b>664</b>

### Arkell Rd

				Totals
	0	0	0	0
	1	10	303	314
	2	4	101	107

Peds: 0

Peds: 0



Peds: 0

Peds: 5

### Arkell Rd

Totals			
0	0	0	0
285	272	12	1
32	28	4	0

### West Approach

	Out	In	Total
	404	328	732
	14	12	26
	3	1	4
<b>Totals</b>	<b>421</b>	<b>341</b>	<b>762</b>

Totals	56	33	0
	56	32	0
	0	1	0
	0	0	0

Summerfield Dr

### South Approach

	Out	In	Total
	88	129	217
	1	8	9
	0	2	2
<b>Totals</b>	<b>89</b>	<b>139</b>	<b>228</b>

- Cars

- Trucks

- Bicycles

### Comments



## Peak Hour Summary

Intersection: Arkell Rd & Summerfield Dr  
 Site Code: 2116600001  
 Count Date: Sep 09, 2021  
 Period: 15:00 - 16:00

### Peak Hour Data (15:00 - 16:00)

Start Time	North Approach				South Approach Summerfield Dr				East Approach Arkell Rd				West Approach Arkell Rd				Total Vehicles									
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻		Peds	Total							
15:00					0		20		11	0	3	31	9	78			0	0	87		59	22	0	0	81	199
15:15					0		10		9	0	2	19	8	67			0	0	75		73	38	0	0	111	205
15:30					0		18		8	0	0	26	5	67			0	0	72		97	23	0	0	120	218
15:45					0		8		5	0	0	13	10	73			0	0	83		85	24	0	0	109	205
<b>Grand Total</b>					<b>0</b>	<b>0</b>	<b>56</b>	<b>33</b>	<b>0</b>	<b>5</b>	<b>89</b>	<b>32</b>	<b>285</b>	<b>0</b>	<b>0</b>	<b>317</b>	<b>314</b>	<b>107</b>	<b>0</b>	<b>0</b>	<b>421</b>	<b>827</b>				
Approach %					-		62.9	37.1	0	-		10.1	89.9	0	-		74.6	25.4	0	-						
Totals %					0		6.8	4	0	10.8	3.9	34.5	0	38.3	38	12.9	0	50.9								
<b>PHF</b>					<b>0</b>	<b>0.7</b>	<b>0.75</b>	<b>0</b>	<b>0.72</b>	<b>0.8</b>	<b>0.91</b>	<b>0</b>	<b>0.91</b>	<b>0.81</b>	<b>0.7</b>	<b>0</b>	<b>0.88</b>	<b>0.95</b>								
Cars					0	56	32	0	88	28	272	0	300	303	101	0	404	792								
% Cars					0	100	97	0	98.9	87.5	95.4	0	94.6	96.5	94.4	0	96	95.8								
Trucks					0	0	1	0	1	4	12	0	16	10	4	0	14	31								
% Trucks					0	0	3	0	1.1	12.5	4.2	0	5	3.2	3.7	0	3.3	3.7								
Bicycles					0	0	0	0	0	0	1	0	1	1	2	0	3	4								
% Bicycles					0	0	0	0	0	0	0.4	0	0.3	0.3	1.9	0	0.7	0.5								
Peds					0	-			5	-			0	-			0	-	5							
% Peds					0	-			100	-			0	-			0	-								



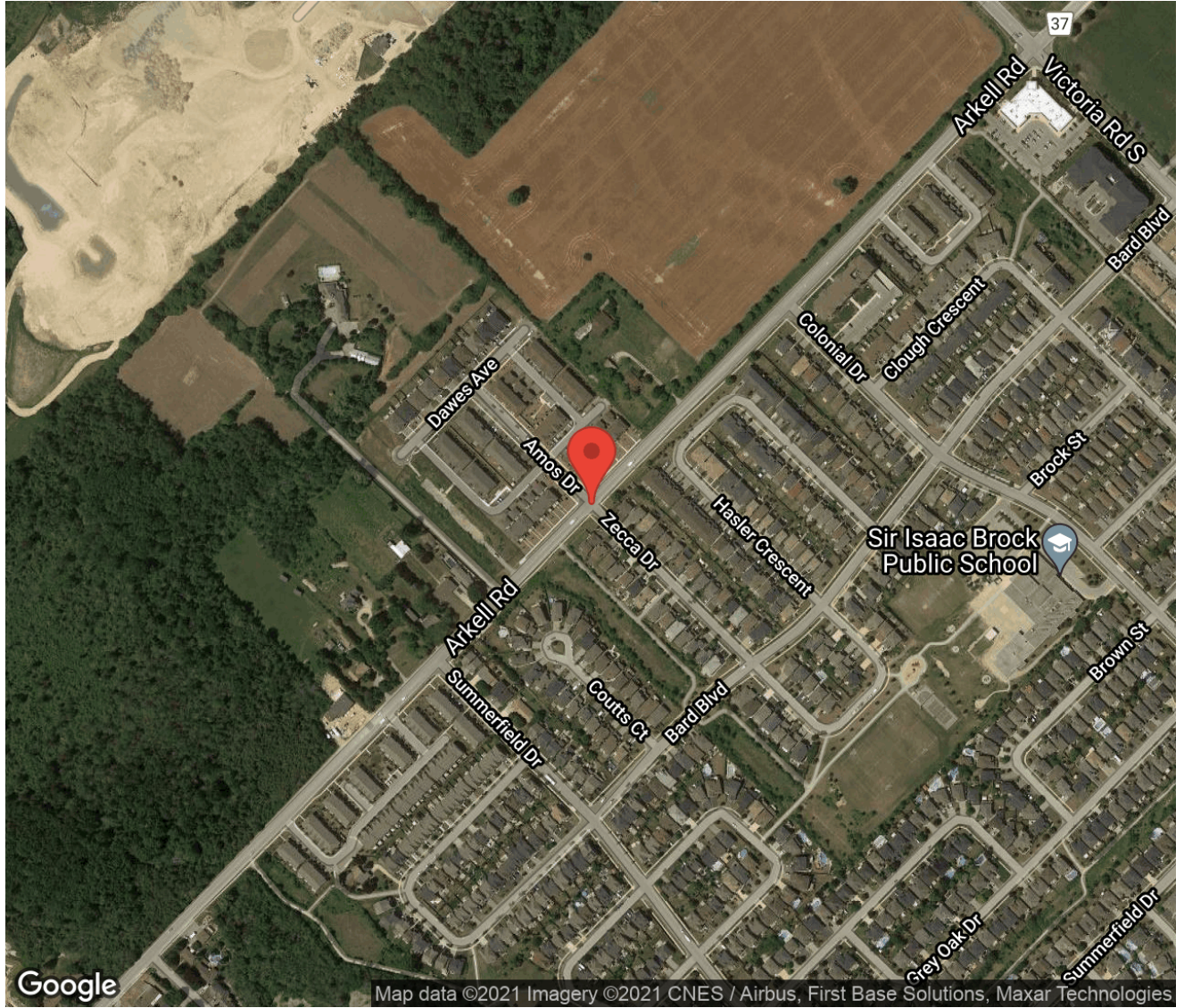
## Project #21-166 - IBI Group

### Intersection Count Report

<b>Intersection:</b>	Arkell Rd & Zecca Dr-Amos Dr
<b>Municipality:</b>	Guelph
<b>Count Date:</b>	Sep 09, 2021
<b>Site Code:</b>	2116600002
<b>Count Categories:</b>	Cars, Trucks, Bicycles, Pedestrians
<b>Count Period:</b>	08:00-09:00, 15:00-16:00
<b>Weather:</b>	Clear

## Traffic Count Map

Intersection: Arkell Rd & Zecca Dr-Amos Dr  
Site Code: 2116600002  
Municipality: Guelph  
Count Date: Sep 09, 2021





## Traffic Count Summary

Intersection: Arkell Rd & Zecca Dr-Amos Dr  
 Site Code: 2116600002  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### Amos Dr - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
08:00 - 09:00	12	2	22	0	36	6	19	1	4	1	25	11	61
BREAK													
15:00 - 16:00	4	2	12	0	18	0	13	0	4	0	17	4	35
<b>GRAND TOTAL</b>	<b>16</b>	<b>4</b>	<b>34</b>	<b>0</b>	<b>54</b>	<b>6</b>	<b>32</b>	<b>1</b>	<b>8</b>	<b>1</b>	<b>42</b>	<b>15</b>	<b>96</b>



## Traffic Count Summary

Intersection: Arkell Rd & Zecca Dr-Amos Dr  
 Site Code: 2116600002  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### Arkell Rd - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
08:00 - 09:00	2	267	8	0	277	6	5	249	8	0	262	24	539
BREAK													
15:00 - 16:00	7	289	15	1	312	6	15	302	30	0	347	24	659
<b>GRAND TOTAL</b>	<b>9</b>	<b>556</b>	<b>23</b>	<b>1</b>	<b>589</b>	<b>12</b>	<b>20</b>	<b>551</b>	<b>38</b>	<b>0</b>	<b>609</b>	<b>48</b>	<b>1198</b>





## Traffic Count Data

Intersection: Arkell Rd & Zecca Dr-Amos Dr  
 Site Code: 2116600002  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### North Approach - Amos Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	1	0	1	0	2	0	0	1	0	1	0	0	0	0	0	0
15:15	2	0	2	0	4	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	2	0	2	0	0	0	0	0	0	1	0	0	1	0
15:45	1	1	6	0	8	0	0	0	0	0	0	0	0	0	0	0
<b>SUBTOTAL</b>	4	1	11	0	16	0	0	1	0	1	0	1	0	0	1	0
<b>GRAND TOTAL</b>	16	3	33	0	52	0	0	1	0	1	0	1	0	0	1	6





## Traffic Count Data

Intersection: Arkell Rd & Zecca Dr-Amos Dr  
 Site Code: 2116600002  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### South Approach - Zecca Dr

Start Time	Cars					Trucks					Bicycles					Total Peds	
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total		
08:00	6	0	2	0	8	0	0	0	0	0	0	0	0	0	0	0	4
08:15	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	1
08:30	6	0	1	0	7	0	0	0	0	0	0	0	0	0	0	0	2
08:45	4	0	1	0	5	0	0	0	0	0	0	0	0	1	1	0	4
<b>SUBTOTAL</b>	19	1	4	0	24	0	0	0	0	0	0	0	0	1	1	0	11



## Traffic Count Data

Intersection: Arkell Rd & Zecca Dr-Amos Dr  
 Site Code: 2116600002  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### South Approach - Zecca Dr

Start Time	Cars					Trucks					Bicycles					Total Peds	
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total		
15:00	4	0	1	0	5	0	0	0	0	0	0	0	0	0	0	0	3
15:15	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
15:30	4	0	0	0	4	0	0	0	0	0	0	0	1	0	1	0	1
15:45	2	0	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0
<b>SUBTOTAL</b>	13	0	3	0	16	0	0	0	0	0	0	0	1	0	1	0	4
<b>GRAND TOTAL</b>	32	1	7	0	40	0	0	0	0	0	0	0	1	1	2	0	15



## Traffic Count Data

Intersection: Arkell Rd & Zecca Dr-Amos Dr  
 Site Code: 2116600002  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### East Approach - Arkell Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
08:00	0	52	1	0	53	1	3	0	0	4	0	1	0	0	1	5
08:15	0	61	2	0	63	1	7	0	0	8	0	0	0	0	0	0
08:30	0	75	1	0	76	0	7	0	0	7	0	0	0	0	0	0
08:45	0	57	4	0	61	0	4	0	0	4	0	0	0	0	0	1
<b>SUBTOTAL</b>	0	245	8	0	253	2	21	0	0	23	0	1	0	0	1	6



## Traffic Count Data

Intersection: Arkell Rd & Zecca Dr-Amos Dr  
 Site Code: 2116600002  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### East Approach - Arkell Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	0	75	7	0	82	1	2	1	0	4	0	0	0	0	0	1
15:15	2	68	2	0	72	1	3	0	0	4	0	1	0	0	1	4
15:30	3	58	3	1	65	0	7	0	0	7	0	0	0	0	0	1
15:45	0	73	2	0	75	0	2	0	0	2	0	0	0	0	0	0
<b>SUBTOTAL</b>	5	274	14	1	294	2	14	1	0	17	0	1	0	0	1	6
<b>GRAND TOTAL</b>	5	519	22	1	547	4	35	1	0	40	0	2	0	0	2	12



## Traffic Count Data

Intersection: Arkell Rd & Zecca Dr-Amos Dr  
 Site Code: 2116600002  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### West Approach - Arkell Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
08:00	0	73	2	0	75	0	1	0	0	1	0	0	0	0	0	9
08:15	0	65	2	0	67	0	1	0	0	1	0	0	0	0	0	9
08:30	4	51	1	0	56	1	4	0	0	5	0	2	0	0	2	2
08:45	0	51	3	0	54	0	1	0	0	1	0	0	0	0	0	4
<b>SUBTOTAL</b>	4	240	8	0	252	1	7	0	0	8	0	2	0	0	2	24



## Traffic Count Data

Intersection: Arkell Rd & Zecca Dr-Amos Dr  
 Site Code: 2116600002  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### West Approach - Arkell Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	3	63	4	0	70	0	1	0	0	1	0	0	0	0	0	12
15:15	4	67	8	0	79	0	2	1	0	3	0	0	0	0	0	6
15:30	3	89	10	0	102	0	3	0	0	3	0	0	0	0	0	2
15:45	5	74	6	0	85	0	3	0	0	3	0	0	1	0	1	4
<b>SUBTOTAL</b>	15	293	28	0	336	0	9	1	0	10	0	0	1	0	1	24
<b>GRAND TOTAL</b>	19	533	36	0	588	1	16	1	0	18	0	2	1	0	3	48

## Peak Hour Diagram

### Specified Period

From: 08:00:00  
To: 09:00:00

### One Hour Peak

From: 08:00:00  
To: 09:00:00

**Intersection:** Arkell Rd & Zecca Dr-Amos Dr  
**Site Code:** 2116600002  
**Count Date:** Sep 09, 2021

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Arkell Rd runs E/W

### North Approach

	Out	In	Total
	36	13	49
	0	1	1
	0	0	0
<b>Totals</b>	<b>36</b>	<b>14</b>	<b>50</b>

### Amos Dr

	0	0	0	0
	0	0	0	0
	22	2	12	0
<b>Totals</b>	<b>22</b>	<b>2</b>	<b>12</b>	<b>0</b>

### East Approach

	Out	In	Total
	253	256	509
	23	7	30
	1	2	3
<b>Totals</b>	<b>277</b>	<b>265</b>	<b>542</b>

### Arkell Rd

				Totals	
0	0	0	0	<b>0</b>	
0	1	4	5	<b>5</b>	
2	7	240	<b>249</b>	<b>249</b>	
0	0	8	<b>8</b>	<b>8</b>	

Peds: 6



### Arkell Rd

Totals			
<b>0</b>	0	0	0
<b>8</b>	8	0	0
<b>267</b>	245	21	1
<b>2</b>	0	2	0

### West Approach

	Out	In	Total
	252	286	538
	8	21	29
	2	1	3
<b>Totals</b>	<b>262</b>	<b>308</b>	<b>570</b>

Totals				
<b>19</b>	<b>1</b>	<b>4</b>	<b>1</b>	
	19	1	4	0
	0	0	0	0
	0	0	0	1

Zecca Dr

### South Approach

Out	In	Total
24	10	34
0	2	2
1	1	2
<b>25</b>	<b>13</b>	<b>38</b>

- Cars

- Trucks

- Bicycles

### Comments



## Peak Hour Summary

Intersection: Arkell Rd & Zecca Dr-Amos Dr  
 Site Code: 2116600002  
 Count Date: Sep 09, 2021  
 Period: 08:00 - 09:00

### Peak Hour Data (08:00 - 09:00)

Start Time	North Approach Amos Dr						South Approach Zecca Dr						East Approach Arkell Rd						West Approach Arkell Rd						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
08:00	4	0	6	0	2	10	6	0	2	0	4	8	1	56	1	0	5	58	0	74	2	0	9	76	152
08:15	7	1	10	0	2	18	3	1	0	0	1	4	1	68	2	0	0	71	0	66	2	0	9	68	161
08:30	1	1	4	0	1	6	6	0	1	0	2	7	0	82	1	0	0	83	5	57	1	0	2	63	159
08:45	0	0	2	0	1	2	4	0	1	1	4	6	0	61	4	0	1	65	0	52	3	0	4	55	128
<b>Grand Total</b>	<b>12</b>	<b>2</b>	<b>22</b>	<b>0</b>	<b>6</b>	<b>36</b>	<b>19</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>11</b>	<b>25</b>	<b>2</b>	<b>267</b>	<b>8</b>	<b>0</b>	<b>6</b>	<b>277</b>	<b>5</b>	<b>249</b>	<b>8</b>	<b>0</b>	<b>24</b>	<b>262</b>	<b>600</b>
Approach %	33.3	5.6	61.1	0	-	-	76	4	16	4	-	-	0.7	96.4	2.9	0	-	-	1.9	95	3.1	0	-	-	-
Totals %	2	0.3	3.7	0	6	3.2	0.2	0.7	0.2	4.2	0.3	44.5	1.3	0	46.2	0.8	41.5	1.3	0	43.7	-	-	-	-	-
<b>PHF</b>	<b>0.43</b>	<b>0.5</b>	<b>0.55</b>	<b>0</b>	<b>0.5</b>	<b>0.79</b>	<b>0.25</b>	<b>0.5</b>	<b>0.25</b>	<b>0.78</b>	<b>0.5</b>	<b>0.81</b>	<b>0.5</b>	<b>0</b>	<b>0.83</b>	<b>0.25</b>	<b>0.84</b>	<b>0.67</b>	<b>0</b>	<b>0.86</b>	<b>0.93</b>	<b>0.93</b>	<b>0.93</b>	<b>0.93</b>	<b>0.93</b>
Cars	12	2	22	0	36	19	1	4	0	24	0	245	8	0	253	4	240	8	0	252	565				
% Cars	100	100	100	0	100	100	100	100	0	96	0	91.8	100	0	91.3	80	96.4	100	0	96.2	94.2				
Trucks	0	0	0	0	0	0	0	0	0	0	2	21	0	0	23	1	7	0	0	8	31				
% Trucks	0	0	0	0	0	0	0	0	0	0	100	7.9	0	0	8.3	20	2.8	0	0	3.1	5.2				
Bicycles	0	0	0	0	0	0	0	0	1	1	0	1	0	0	1	0	2	0	0	2	4				
% Bicycles	0	0	0	0	0	0	0	0	100	4	0	0.4	0	0	0.4	0	0.8	0	0	0.8	0.7				
Peds					6	-				11	-					6	-			24	-			47	
% Peds					12.8	-				23.4	-					12.8	-			51.1	-			-	



## Peak Hour Diagram

### Specified Period

From: 15:00:00  
To: 16:00:00

### One Hour Peak

From: 15:00:00  
To: 16:00:00

**Intersection:** Arkell Rd & Zecca Dr-Amos Dr  
**Site Code:** 2116600002  
**Count Date:** Sep 09, 2021

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Arkell Rd runs E/W

### North Approach

	Out	In	Total
	16	29	45
	1	1	2
	1	0	1
<b>Totals</b>	<b>18</b>	<b>30</b>	<b>48</b>

### Amos Dr

	0	1	0	0
	1	0	0	0
	11	1	4	0
<b>Totals</b>	<b>12</b>	<b>2</b>	<b>4</b>	<b>0</b>

### East Approach

	Out	In	Total
	294	301	595
	17	9	26
	1	1	2
<b>Totals</b>	<b>312</b>	<b>311</b>	<b>623</b>

### Arkell Rd

				Totals
	0	0	0	<b>0</b>
	0	0	15	<b>15</b>
	0	9	293	<b>302</b>
	1	1	28	<b>30</b>

Peds: 0

Peds: 24



Peds: 6

Peds: 4

### Arkell Rd

Totals			
<b>1</b>	1	0	0
<b>15</b>	14	1	0
<b>289</b>	274	14	1
<b>7</b>	5	2	0

### West Approach

	Out	In	Total
	336	298	634
	10	15	25
	1	1	2
<b>Totals</b>	<b>347</b>	<b>314</b>	<b>661</b>

Totals				
<b>13</b>	<b>0</b>	<b>4</b>	<b>0</b>	
	13	0	3	0
	0	0	0	0
	0	0	1	0

Zecca Dr

### South Approach

	Out	In	Total
	16	34	50
	0	3	3
	1	2	3
<b>Totals</b>	<b>17</b>	<b>39</b>	<b>56</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Summary

Intersection: Arkell Rd & Zecca Dr-Amos Dr  
 Site Code: 2116600002  
 Count Date: Sep 09, 2021  
 Period: 15:00 - 16:00

### Peak Hour Data (15:00 - 16:00)

Start Time	North Approach Amos Dr						South Approach Zecca Dr						East Approach Arkell Rd						West Approach Arkell Rd						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
15:00	1	0	2	0	0	3	4	0	1	0	3	5	1	77	8	0	1	86	3	64	4	0	12	71	165
15:15	2	0	2	0	0	4	3	0	0	0	0	3	3	72	2	0	4	77	4	69	9	0	6	82	166
15:30	0	1	2	0	0	3	4	0	1	0	1	5	3	65	3	1	1	72	3	92	10	0	2	105	185
15:45	1	1	6	0	0	8	2	0	2	0	0	4	0	75	2	0	0	77	5	77	7	0	4	89	178
<b>Grand Total</b>	<b>4</b>	<b>2</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>13</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>17</b>	<b>7</b>	<b>289</b>	<b>15</b>	<b>1</b>	<b>6</b>	<b>312</b>	<b>15</b>	<b>302</b>	<b>30</b>	<b>0</b>	<b>24</b>	<b>347</b>	<b>694</b>
Approach %	22.2	11.1	66.7	0	-	-	76.5	0	23.5	0	-	-	2.2	92.6	4.8	0.3	-	-	4.3	87	8.6	0	-	-	-
Totals %	0.6	0.3	1.7	0	2.6	-	1.9	0	0.6	0	2.4	-	1	41.6	2.2	0.1	45	-	2.2	43.5	4.3	0	50	-	-
<b>PHF</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	<b>0</b>	<b>0.56</b>	<b>0.81</b>	<b>0</b>	<b>0.5</b>	<b>0</b>	<b>0.85</b>	<b>0.58</b>	<b>0.94</b>	<b>0.47</b>	<b>0.25</b>	<b>0.91</b>	<b>0.75</b>	<b>0.82</b>	<b>0.75</b>	<b>0</b>	<b>0.83</b>	<b>0.94</b>	<b>0.94</b>	<b>0.94</b>		
Cars	4	1	11	0	16	13	0	3	0	16	5	274	14	1	294	15	293	28	0	336	662	662			
% Cars	100	50	91.7	0	88.9	100	0	75	0	94.1	71.4	94.8	93.3	100	94.2	100	97	93.3	0	96.8	95.4	95.4			
Trucks	0	0	1	0	1	0	0	0	0	0	2	14	1	0	17	0	9	1	0	10	28	28			
% Trucks	0	0	8.3	0	5.6	0	0	0	0	0	28.6	4.8	6.7	0	5.4	0	3	3.3	0	2.9	4	4			
Bicycles	0	1	0	0	1	0	0	1	0	1	0	1	0	0	1	0	0	1	0	1	4	4			
% Bicycles	0	50	0	0	5.6	0	0	25	0	5.9	0	0.3	0	0	0.3	0	0	3.3	0	0.3	0.6	0.6			
Peds					0	-				4	-				6	-				24	-	34	34		
% Peds					0	-				11.8	-				17.6	-				70.6	-	34	34		



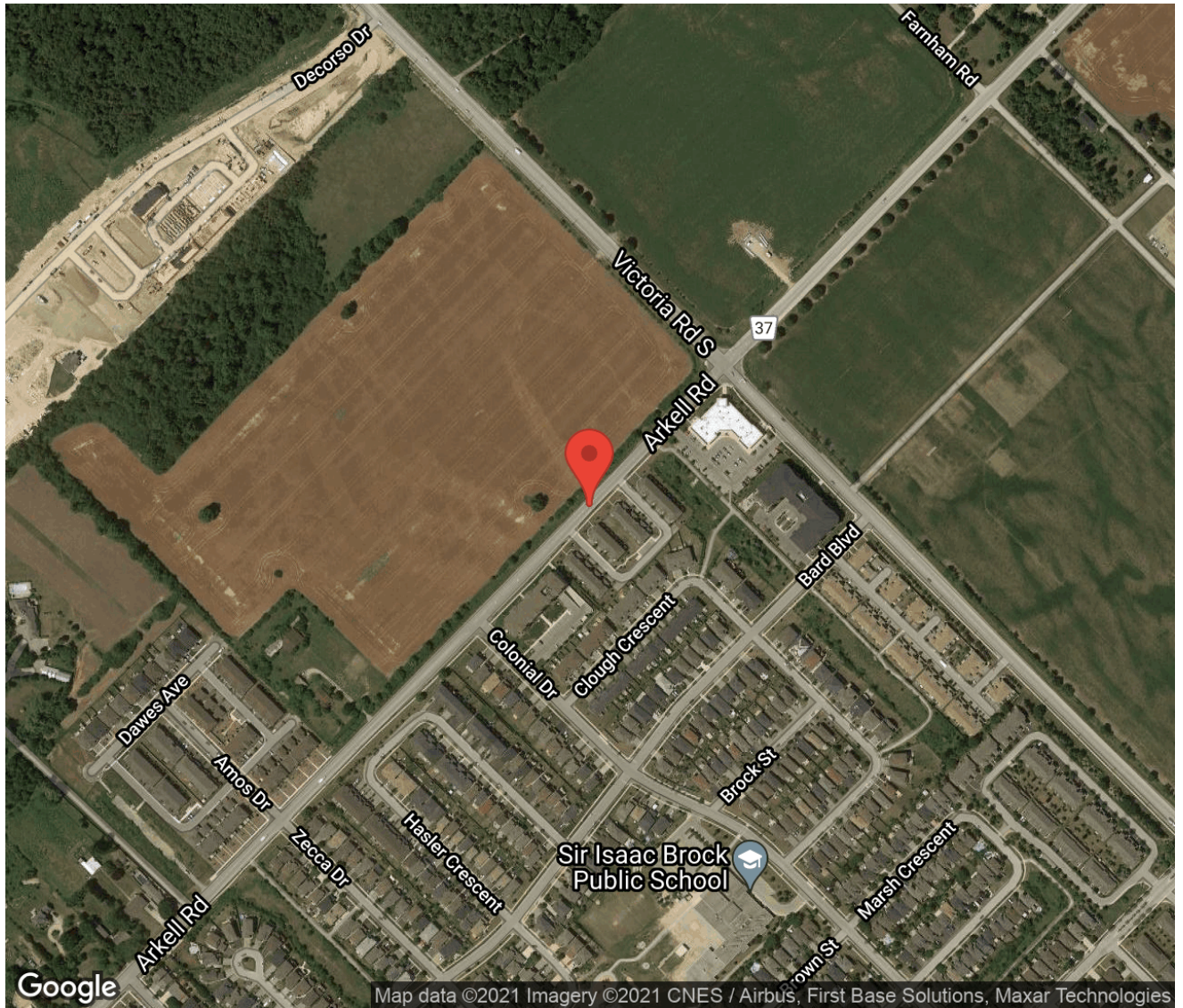
## Project #21-166 - IBI Group

### Intersection Count Report

**Intersection:** Arkell Rd & 361 Arkell Rd (2 Townhouse Driveways)  
**Municipality:** Guelph  
**Count Date:** Sep 09, 2021  
**Site Code:** 2116600003  
**Count Categories:** Cars, Trucks, Bicycles, Pedestrians  
**Count Period:** 08:00-09:00, 15:00-16:00  
**Weather:** Clear

## Traffic Count Map

Intersection: Arkell Rd & 361 Arkell Rd (2 Townhouse Driveways)  
Site Code: 2116600003  
Municipality: Guelph  
Count Date: Sep 09, 2021





## Traffic Count Summary

Intersection: Arkell Rd & 361 Arkell Rd (2 Townhouse Driveways)  
 Site Code: 2116600003  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### 361 Arkell Rd (2 Townhouse Driveways) - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
08:00 - 09:00	0	0	0	0	0	0	1	0	1	0	2	34	2
BREAK													
15:00 - 16:00	0	0	0	0	0	0	1	0	1	0	2	11	2
<b>GRAND TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>45</b>	<b>4</b>



## Traffic Count Summary

Intersection: Arkell Rd & 361 Arkell Rd (2 Townhouse Driveways)  
 Site Code: 2116600003  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### Arkell Rd - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
08:00 - 09:00	0	243	0	0	243	1	0	272	0	0	272	0	515
BREAK													
15:00 - 16:00	1	274	0	0	275	1	0	308	5	0	313	0	588
<b>GRAND TOTAL</b>	<b>1</b>	<b>517</b>	<b>0</b>	<b>0</b>	<b>518</b>	<b>2</b>	<b>0</b>	<b>580</b>	<b>5</b>	<b>0</b>	<b>585</b>	<b>0</b>	<b>1103</b>









## Traffic Count Data

Intersection: Arkell Rd & 361 Arkell Rd (2 Townhouse Driveways)  
 Site Code: 2116600003  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### East Approach - Arkell Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
08:00	0	45	0	0	45	0	4	0	0	4	0	2	0	0	2	0
08:15	0	60	0	0	60	0	6	0	0	6	0	1	0	0	1	1
08:30	0	64	0	0	64	0	5	0	0	5	0	0	0	0	0	0
08:45	0	51	0	0	51	0	5	0	0	5	0	0	0	0	0	0
<b>SUBTOTAL</b>	0	220	0	0	220	0	20	0	0	20	0	3	0	0	3	1



## Traffic Count Data

Intersection: Arkell Rd & 361 Arkell Rd (2 Townhouse Driveways)  
 Site Code: 2116600003  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### East Approach - Arkell Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	0	66	0	0	66	0	2	0	0	2	0	2	0	0	2	0
15:15	0	66	0	0	66	0	3	0	0	3	0	4	0	0	4	1
15:30	0	53	0	0	53	0	4	0	0	4	0	0	0	0	0	0
15:45	1	71	0	0	72	0	3	0	0	3	0	0	0	0	0	0
<b>SUBTOTAL</b>	1	256	0	0	257	0	12	0	0	12	0	6	0	0	6	1
<b>GRAND TOTAL</b>	1	476	0	0	477	0	32	0	0	32	0	9	0	0	9	2



## Traffic Count Data

Intersection: Arkell Rd & 361 Arkell Rd (2 Townhouse Driveways)  
 Site Code: 2116600003  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### West Approach - Arkell Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
08:00	0	84	0	0	84	0	1	0	0	1	0	0	0	0	0	0
08:15	0	67	0	0	67	0	0	0	0	0	0	0	0	0	0	0
08:30	0	60	0	0	60	0	3	0	0	3	0	1	0	0	1	0
08:45	0	54	0	0	54	0	1	0	0	1	0	1	0	0	1	0
<b>SUBTOTAL</b>	0	265	0	0	265	0	5	0	0	5	0	2	0	0	2	0



## Traffic Count Data

Intersection: Arkell Rd & 361 Arkell Rd (2 Townhouse Driveways)  
 Site Code: 2116600003  
 Municipality: Guelph  
 Count Date: Sep 09, 2021

### West Approach - Arkell Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	0	71	3	0	74	0	1	0	0	1	0	2	0	0	2	0
15:15	0	62	0	0	62	0	2	0	0	2	0	0	0	0	0	0
15:30	0	89	1	0	90	0	2	0	0	2	0	1	0	0	1	0
15:45	0	72	1	0	73	0	3	0	0	3	0	3	0	0	3	0
<b>SUBTOTAL</b>	0	294	5	0	299	0	8	0	0	8	0	6	0	0	6	0
<b>GRAND TOTAL</b>	0	559	5	0	564	0	13	0	0	13	0	8	0	0	8	0

## Peak Hour Diagram

### Specified Period

From: 08:00:00  
To: 09:00:00

### One Hour Peak

From: 08:00:00  
To: 09:00:00

**Intersection:** Arkell Rd & 361 Arkell Rd (2 Townhouse Driveways)  
**Site Code:** 2116600003  
**Count Date:** Sep 09, 2021

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Arkell Rd runs E/W

### East Approach

	Out	In	Total
	220	266	486
	20	5	25
	3	2	5
	<b>243</b>	<b>273</b>	<b>516</b>

### Arkell Rd

			Totals
0	0	0	<b>0</b>
2	5	265	<b>272</b>
0	0	0	<b>0</b>

Peds: 0

Peds: 0



Peds: 1

### Arkell Rd

Totals			
<b>0</b>	0	0	0
<b>243</b>	220	20	3
<b>0</b>	0	0	0

Peds: 34

### West Approach

	Out	In	Total
	265	221	486
	5	20	25
	2	3	5
	<b>272</b>	<b>244</b>	<b>516</b>

Totals			
	<b>1</b>	<b>1</b>	<b>0</b>
	1	1	0
	0	0	0
	0	0	0

**361 Arkell Rd (2 Townhouse Driveways)**

### South Approach

	Out	In	Total
	2	0	2
	0	0	0
	0	0	0
	<b>2</b>	<b>0</b>	<b>2</b>

- Cars

- Trucks

- Bicycles

### Comments



## Peak Hour Summary

Intersection: Arkell Rd & 361 Arkell Rd (2 Townhouse Driveways)  
 Site Code: 2116600003  
 Count Date: Sep 09, 2021  
 Period: 08:00 - 09:00

### Peak Hour Data (08:00 - 09:00)

Start Time	North Approach				South Approach 361 Arkell Rd (2 Townhouse Driveways)				East Approach Arkell Rd				West Approach Arkell Rd				Total Vehicles							
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻		Peds	Total					
08:00					0		0		0	3	0	0	51					85	0	0	0	85	136	
08:15					0		1		1	0	20	2	0	67					67	0	0	0	67	136
08:30					0		0		0	0	1	0	0	69					64	0	0	0	64	133
08:45					0		0		0	0	10	0	0	56					56	0	0	0	56	112
<b>Grand Total</b>					<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>34</b>	<b>2</b>	<b>0</b>	<b>243</b>	<b>0</b>	<b>1</b>	<b>243</b>	<b>272</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>272</b>	<b>517</b>		
Approach %					-		50	50	0	-		0	100	0	-		100	0	0	-				
Totals %					0		0.2	0.2	0	0.4		0	47	0	47		52.6	0	0	52.6				
<b>PHF</b>					<b>0</b>	<b>0.25</b>	<b>0.25</b>	<b>0</b>	<b>0.25</b>	<b>0</b>	<b>0.88</b>	<b>0</b>	<b>0.88</b>	<b>0</b>	<b>0.8</b>	<b>0</b>	<b>0</b>	<b>0.8</b>	<b>0</b>	<b>0</b>	<b>0.8</b>	<b>0.95</b>		
Cars					0		1	1	0	2		0	220	0	220		265	0	0	265		487		
% Cars					0		100	100	0	100		0	90.5	0	90.5		97.4	0	0	97.4		94.2		
Trucks					0		0	0	0	0		0	20	0	20		5	0	0	5		25		
% Trucks					0		0	0	0	0		0	8.2	0	8.2		1.8	0	0	1.8		4.8		
Bicycles					0		0	0	0	0		0	3	0	3		2	0	0	2		5		
% Bicycles					0		0	0	0	0		0	1.2	0	1.2		0.7	0	0	0.7		1		
Peds					0	-				34	-				1	-				0	-	35		
% Peds					0	-				97.1	-				2.9	-				0	-			

## Peak Hour Diagram

### Specified Period

From: 15:00:00  
To: 16:00:00

### One Hour Peak

From: 15:00:00  
To: 16:00:00




**Intersection:** Arkell Rd & 361 Arkell Rd (2 Townhouse Driveways)  
**Site Code:** 2116600003  
**Count Date:** Sep 09, 2021

**Weather conditions:** Clear




**\*\* Unsignalized Intersection \*\***

**Major Road:** Arkell Rd runs E/W

### East Approach

	Out	In	Total
	257	295	552
	12	8	20
	6	6	12
<b>Totals</b>	<b>275</b>	<b>309</b>	<b>584</b>

### Arkell Rd

			Totals
0	0	0	<b>0</b>
6	8	294	<b>308</b>
0	0	5	<b>5</b>

Peds: 0




Peds: 0






Peds: 1







Peds: 11

### Arkell Rd




Totals			
<b>0</b>	0	0	0
<b>274</b>	256	12	6
<b>1</b>	1	0	0

### West Approach

	Out	In	Total
	299	257	556
	8	12	20
	6	6	12
<b>Totals</b>	<b>313</b>	<b>275</b>	<b>588</b>


Totals			
<b>1</b>	1	1	0
	1	1	0
	0	0	0
	0	0	0

### South Approach

	Out	In	Total
	2	6	8
	0	0	0
	0	0	0
<b>Totals</b>	<b>2</b>	<b>6</b>	<b>8</b>

**361 Arkell Rd (2 Townhouse Driveways)**

 - Cars

 - Trucks

 - Bicycles

### Comments



## Peak Hour Summary

Intersection: Arkell Rd & 361 Arkell Rd (2 Townhouse Driveways)  
 Site Code: 2116600003  
 Count Date: Sep 09, 2021  
 Period: 15:00 - 16:00

### Peak Hour Data (15:00 - 16:00)

Start Time	North Approach				South Approach 361 Arkell Rd (2 Townhouse Driveways)				East Approach Arkell Rd				West Approach Arkell Rd				Total Vehicles							
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻		Peds	Total					
15:00					0		1		0	0	7	1	0	70		0	0	70	74	3	0	0	77	148
15:15					0		0		1	0	0	1	0	73		0	1	73	64	0	0	0	64	138
15:30					0		0		0	0	0	0	0	57		0	0	57	92	1	0	0	93	150
15:45					0		0		0	0	4	0	1	74		0	0	75	78	1	0	0	79	154
<b>Grand Total</b>					<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>11</b>	<b>2</b>	<b>1</b>	<b>274</b>	<b>0</b>	<b>1</b>	<b>275</b>	<b>308</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>313</b>	<b>590</b>		
Approach %					-		50	50	0	-		0.4	99.6	0	-		98.4	1.6	0	-				
Totals %					0		0.2	0.2	0	0.3		0.2	46.4	0	46.6		52.2	0.8	0	53.1				
<b>PHF</b>					<b>0</b>		<b>0.25</b>	<b>0.25</b>	<b>0</b>	<b>0.5</b>		<b>0.25</b>	<b>0.93</b>	<b>0</b>	<b>0.92</b>		<b>0.84</b>	<b>0.42</b>	<b>0</b>	<b>0.84</b>	<b>0.96</b>			
Cars					0		1	1	0	2		1	256	0	257		294	5	0	299	558			
% Cars					0		100	100	0	100		100	93.4	0	93.5		95.5	100	0	95.5	94.6			
Trucks					0		0	0	0	0		0	12	0	12		8	0	0	8	20			
% Trucks					0		0	0	0	0		0	4.4	0	4.4		2.6	0	0	2.6	3.4			
Bicycles					0		0	0	0	0		0	6	0	6		6	0	0	6	12			
% Bicycles					0		0	0	0	0		0	2.2	0	2.2		1.9	0	0	1.9	2			
Peds					0	-				11	-				1	-				0	-	12		
% Peds					0	-				91.7	-				8.3	-				0	-			



## Appendix B

### 2036 Total Traffic Operations Reports



Lanes, Volumes, Timings  
1: Summerfield Drive & Arkell Road

2036 AM Total  
220 Arkell Road TIS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔			↔	
Traffic Volume (vph)	1	367	72	48	465	10	137	0	79	30	0	3
Future Volume (vph)	1	367	72	48	465	10	137	0	79	30	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	60.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.975			0.997			0.951			0.989	
Flt Protected	0.950			0.950				0.969			0.956	
Satd. Flow (prot)	1770	1781	0	1719	1772	0	0	1717	0	0	1761	0
Flt Permitted	0.950			0.950				0.969			0.956	
Satd. Flow (perm)	1770	1781	0	1719	1772	0	0	1717	0	0	1761	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		290.6			206.6			213.5			173.3	
Travel Time (s)		20.9			14.9			15.4			12.5	
Confl. Peds. (#/hr)			12	12								
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	4%	4%	5%	7%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	403	79	53	511	11	151	0	87	33	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	482	0	53	522	0	0	238	0	0	36	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM 6th TWSC  
1: Summerfield Drive & Arkell Road

2036 AM Total  
220 Arkell Road TIS

Intersection												
Int Delay, s/veh	17.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔			↔	
Traffic Vol, veh/h	1	367	72	48	465	10	137	0	79	30	0	3
Future Vol, veh/h	1	367	72	48	465	10	137	0	79	30	0	3
Conflicting Peds, #/hr	0	0	12	12	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	15	-	-	60	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	4	4	5	7	2	2	2	2	2	2	2
Mvmt Flow	1	403	79	53	511	11	151	0	87	33	0	3

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	522	0	0	494
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.12	-	-	4.15
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.245
Pot Cap-1 Maneuver	1044	-	-	1054
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1044	-	-	1043
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	91.8	33.1
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	246	1044	-	-	1043	-	-	164
HCM Lane V/C Ratio	0.965	0.001	-	-	0.051	-	-	0.221
HCM Control Delay (s)	91.8	8.5	-	-	8.6	-	-	33.1
HCM Lane LOS	F	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	8.9	0	-	-	0.2	-	-	0.8

Lanes, Volumes, Timings  
2: Zecca Drive/Amos Drive & Arkell Road

2036 AM Total  
220 Arkell Road TIS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	9	454	10	2	453	18	25	1	5	40	2	36
Future Volume (vph)	9	454	10	2	453	18	25	1	5	40	2	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Fit		0.997			0.995			0.980			0.937	
Fit Protected		0.999						0.961			0.975	
Satd. Flow (prot)	0	1806	0	0	1771	0	0	1719	0	0	1736	0
Fit Permitted		0.999						0.961			0.975	
Satd. Flow (perm)	0	1806	0	0	1771	0	0	1719	0	0	1736	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		206.6			261.6			219.2			154.5	
Travel Time (s)		14.9			18.8			15.8			11.1	
Confl. Peds. (#/hr)	1		8	8		1	13		10	10		13
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	5%	0%	5%	7%	0%	5%	0%	0%	0%	0%	0%
Adj. Flow (vph)	10	488	11	2	487	19	27	1	5	43	2	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	509	0	0	508	0	0	33	0	0	84	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.6%
ICU Level of Service A	
Analysis Period (min)	15

HCM 6th TWSC  
2: Zecca Drive/Amos Drive & Arkell Road

2036 AM Total  
220 Arkell Road TIS

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	454	10	2	453	18	25	1	5	40	2	36
Future Vol, veh/h	9	454	10	2	453	18	25	1	5	40	2	36
Conflicting Peds, #/hr	1	0	8	8	0	1	13	0	10	10	0	13
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	5	0	5	7	0	5	0	0	0	0	0
Mvmt Flow	10	488	11	2	487	19	27	1	5	43	2	39

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	507	0	0	507
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.1	-	-	4.15
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.245
Pot Cap-1 Maneuver	1068	-	-	1043
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1067	-	-	1036
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	26.1	22.1
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	204	1067	-	-	1036	-	-	293
HCM Lane V/C Ratio	0.163	0.009	-	-	0.002	-	-	0.286
HCM Control Delay (s)	26.1	8.4	0	-	8.5	0	-	22.1
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-	-	1.2

Lanes, Volumes, Timings  
3: Colonial Drive & Arkell Road

2036 AM Total  
220 Arkell Road TIS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔			↔	
Traffic Volume (vph)	11	560	75	71	358	42	173	0	176	131	0	32
Future Volume (vph)	11	560	75	71	358	42	173	0	176	131	0	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5		7.5			7.5			7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.982			0.984			0.932			0.974	
Flt Protected	0.950			0.950				0.976			0.961	
Satd. Flow (prot)	1770	1829	0	1736	1756	0	0	1662	0	0	1744	0
Flt Permitted	0.950			0.950				0.976			0.961	
Satd. Flow (perm)	1770	1829	0	1736	1756	0	0	1662	0	0	1744	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		261.6			193.8			209.6			91.7	
Travel Time (s)		18.8			14.0			15.1			6.6	
Confl. Peds. (#/hr)			3	3								
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	2%	2%	2%	4%	7%	2%	6%	2%	2%	2%	2%	2%
Adj. Flow (vph)	13	651	87	83	416	49	201	0	205	152	0	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	738	0	83	465	0	0	406	0	0	189	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	68.0%
ICU Level of Service	C
Analysis Period (min)	15

HCM 6th TWSC  
3: Colonial Drive & Arkell Road

2036 AM Total  
220 Arkell Road TIS

Intersection												
Int Delay, s/veh	237.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔			↔	
Traffic Vol, veh/h	11	560	75	71	358	42	173	0	176	131	0	32
Future Vol, veh/h	11	560	75	71	358	42	173	0	176	131	0	32
Conflicting Peds, #/hr	0	0	3	3	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	60	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	4	7	2	6	2	2	2	2	2
Mvmt Flow	13	651	87	83	416	49	201	0	205	152	0	37

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	465	0	0	741
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.12	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.236
Pot Cap-1 Maneuver	1096	-	-	857
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1096	-	-	855
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.5	\$ 659.5	\$ 957.8
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	174	1096	-	-	855	-	-	67
HCM Lane V/C Ratio	2.332	0.012	-	-	0.097	-	-	2.829
HCM Control Delay (s)	\$ 659.5	8.3	-	-	9.7	-	-	\$ 957.8
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	33.5	0	-	-	0.3	-	-	19

Notes

--: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Lanes, Volumes, Timings

4: Residential Entrance/Access 1 & Arkell Road

2036 AM Total

220 Arkell Road TIS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	83	551	0	0	410	62	1	0	1	6	0	31
Future Volume (vph)	83	551	0	0	410	62	1	0	1	6	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.982			0.932				0.850
Flt Protected	0.950							0.976		0.950		
Satd. Flow (prot)	1805	1863	0	0	1744	0	0	1728	0	1805	0	1615
Flt Permitted	0.950							0.976		0.950		
Satd. Flow (perm)	1805	1863	0	0	1744	0	0	1728	0	1805	0	1615
Link Speed (k/h)		50			50			50		50		
Link Distance (m)		193.8			144.3			68.0		96.7		
Travel Time (s)		14.0			10.4			4.9		7.0		
Confl. Peds. (#/hr)			34	34					1	1		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	0%	0%	8%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	87	580	0	0	432	65	1	0	1	6	0	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	580	0	0	497	0	0	2	0	6	0	33
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	68.0%
ICU Level of Service	C
Analysis Period (min)	15

HCM 6th TWSC

4: Residential Entrance/Access 1 & Arkell Road

2036 AM Total

220 Arkell Road TIS

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	83	551	0	0	410	62	1	0	1	6	0	31
Future Vol, veh/h	83	551	0	0	410	62	1	0	1	6	0	31
Conflicting Peds, #/hr	0	0	34	34	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25		-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	2	0	0	8	0	0	0	0	0	0	0
Mvmt Flow	87	580	0	0	432	65	1	0	1	6	0	33

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	497	0	0	614
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.1	-	-	4.1
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2
Pot Cap-1 Maneuver	1077	-	-	975
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1077	-	-	947
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0	23.1	14.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	201	1077	-	-	947	-	-	148	602
HCM Lane V/C Ratio	0.01	0.081	-	-	-	-	-	0.043	0.054
HCM Control Delay (s)	23.1	8.6	-	-	0	-	-	30.4	11.3
HCM Lane LOS	C	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0	0.3	-	-	0	-	-	0.1	0.2

Lanes, Volumes, Timings  
5: Victoria Road & Arkell Road

2036 AM Total  
220 Arkell Road TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	513	169	106	189	152	73	68	871	82	67	696	255
Future Volume (vph)	513	169	106	189	152	73	68	871	82	67	696	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	20.0		0.0	90.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		1.00			1.00		1.00		1.00	0.99
Frt		0.942			0.951			0.987				0.960
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1773	0	1770	1716	0	1570	1772	0	1805	1689	0
Flt Permitted	0.496			0.383			0.141			0.141		
Satd. Flow (perm)	915	1773	0	712	1716	0	233	1772	0	268	1689	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			29			6			25	
Link Speed (k/h)		50			60			70			70	
Link Distance (m)		144.3			357.4			823.5			155.4	
Travel Time (s)		10.4			21.4			42.4			8.0	
Conf. Peds. (#/hr)			2	2			3		1	1		3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	0%	0%	2%	5%	6%	15%	6%	2%	0%	7%	8%
Adj. Flow (vph)	540	178	112	199	160	77	72	917	86	71	733	268
Shared Lane Traffic (%)												
Lane Group Flow (vph)	540	290	0	199	237	0	72	1003	0	71	1001	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	10.0	26.0		10.0	26.0		10.0	34.0		10.0	34.0	
Total Split (s)	10.0	26.0		10.0	26.0		10.0	34.0		10.0	34.0	
Total Split (%)	12.5%	32.5%		12.5%	32.5%		12.5%	42.5%		12.5%	42.5%	
Maximum Green (s)	7.0	20.0		7.0	20.0		7.0	28.0		7.0	28.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0		0.0	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)	3.0	6.0		3.0	6.0		3.0	6.0		3.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)		7.0			7.0			13.0			13.0	
Flash Dont Walk (s)		13.0			13.0			15.0			15.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	25.6	15.5		25.6	15.5		36.7	28.3		36.7	28.3	
Actuated g/C Ratio	0.35	0.21		0.35	0.21		0.50	0.38		0.50	0.38	
v/c Ratio	1.36	0.72		0.57	0.62		0.30	1.47		0.25	1.51	

Lanes, Volumes, Timings  
5: Victoria Road & Arkell Road

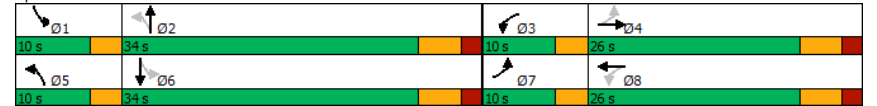
2036 AM Total  
220 Arkell Road TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	200.1	34.7		23.7	31.0		12.7	241.7		11.7	259.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	200.1	34.7		23.7	31.0		12.7	241.7		11.7	259.6	
LOS	F	C		C	C		B	F		B	F	
Approach Delay		142.3			27.6			226.3			243.2	
Approach LOS		F			C			F			F	
Queue Length 50th (m)	-103.6	35.6		20.5	28.6		4.9	-218.9		4.8	-219.3	
Queue Length 95th (m)	#171.6	61.5		35.7	50.9		12.1	#310.4		11.8	#310.5	
Internal Link Dist (m)		120.3			333.4			799.5			131.4	
Turn Bay Length (m)	40.0			20.0			90.0			50.0		
Base Capacity (vph)	398	514		348	491		244	684		281	664	
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	1.36	0.56		0.57	0.48		0.30	1.47		0.25	1.51	

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	73.7
Natural Cycle:	150
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.51
Intersection Signal Delay:	185.8
Intersection Capacity Utilization:	110.7%
ICU Level of Service:	H
Intersection LOS:	F
Analysis Period (min):	15
-	Volume exceeds capacity, queue is theoretically infinite.
-	Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer.
-	Queue shown is maximum after two cycles.

Splits and Phases: 5: Victoria Road & Arkell Road



HCM 6th Signalized Intersection Summary  
5: Victoria Road & Arkell Road

2036 AM Total  
220 Arkell Road TIS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	513	169	106	189	152	73	68	871	82	67	696	255	
Future Volume (veh/h)	513	169	106	189	152	73	68	871	82	67	696	255	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No			
Adj Sat Flow, veh/h/ln	1856	1900	1900	1870	1826	1811	1678	1811	1870	1900	1796	1781	
Adj Flow Rate, veh/h	540	178	112	199	160	77	72	917	86	71	733	268	
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	
Percent Heavy Veh, %	3	0	0	2	5	6	15	6	2	0	7	8	
Cap, veh/h	351	219	138	318	234	112	216	625	59	231	480	176	
Arrive On Green	0.10	0.20	0.20	0.10	0.20	0.20	0.07	0.38	0.38	0.07	0.38	0.38	
Sat Flow, veh/h	1767	1088	685	1781	1162	559	1598	1630	153	1810	1253	458	
Grp Volume(v), veh/h	540	0	290	199	0	237	72	0	1003	71	0	1001	
Grp Sat Flow(s),veh/h/ln	1767	0	1773	1781	0	1722	1598	0	1783	1810	0	1712	
Q Serve(g_s), s	7.0	0.0	11.4	6.5	0.0	9.3	1.9	0.0	28.0	1.6	0.0	28.0	
Cycle Q Clear(g_c), s	7.0	0.0	11.4	6.5	0.0	9.3	1.9	0.0	28.0	1.6	0.0	28.0	
Prop In Lane	1.00		0.39	1.00		0.32	1.00		0.09	1.00		0.27	
Lane Grp Cap(c), veh/h	351	0	356	318	0	346	216	0	684	231	0	656	
V/C Ratio(X)	1.54	0.00	0.81	0.63	0.00	0.68	0.33	0.00	1.47	0.31	0.00	1.53	
Avail Cap(c_a), veh/h	351	0	485	318	0	471	252	0	684	272	0	656	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	
Uniform Delay (d), s/veh	27.1	0.0	27.9	21.4	0.0	27.0	16.7	0.0	22.5	16.6	0.0	22.5	
Incr Delay (d2), s/veh	256.1	0.0	7.5	3.8	0.0	2.4	0.9	0.0	217.8	0.7	0.0	244.5	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	26.6	0.0	2.7	1.0	0.0	1.6	0.1	0.0	42.8	0.0	0.0	45.8	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	283.2	0.0	35.4	25.3	0.0	29.5	17.6	0.0	240.3	17.4	0.0	267.0	
LnGrp LOS	F	A	D	C	A	C	B	A	F	B	A	F	
Approach Vol, veh/h	830			436			1075			1072			
Approach Delay, s/veh	196.6			27.6			225.4			250.5			
Approach LOS	F			C			F			F			
Timer - Assigned Phs	1	2	3	4	5	6	7	8					
Phs Duration (G+Y+Rc), s	8.3	34.0	10.0	20.7	8.4	34.0	10.0	20.7					
Change Period (Y+Rc), s	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0					
Max Green Setting (Gmax), s	7.0	28.0	7.0	20.0	7.0	28.0	7.0	20.0					
Max Q Clear Time (g_c+I1), s	3.6	30.0	8.5	13.4	3.9	30.0	9.0	11.3					
Green Ext Time (p_c), s	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.9					

Intersection Summary			
HCM 6th Ctrl Delay	201.0		
HCM 6th LOS	F		

Lanes, Volumes, Timings  
6: Victoria Road & Access 2

2036 AM Total  
220 Arkell Road TIS

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Volume (vph)	96	58	53	1405	957	133	
Future Volume (vph)	96	58	53	1405	957	133	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0	30.0			60.0	
Storage Lanes	1	1	1			1	
Taper Length (m)	7.5		7.5				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.850					0.850	
Fit Protected	0.950		0.950				
Satd. Flow (prot)	1805	1615	1805	1792	1759	1615	
Fit Permitted	0.950		0.163				
Satd. Flow (perm)	1805	1615	310	1792	1759	1615	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		63				142	
Link Speed (k/h)	50		70	70			
Link Distance (m)	97.9		155.4	308.2			
Travel Time (s)	7.0		8.0	15.9			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	0%	6%	8%	0%	
Adj. Flow (vph)	104	63	58	1527	1040	145	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	104	63	58	1527	1040	145	
Turn Type	Prot	Perm	Perm	NA	NA	Perm	
Protected Phases	4			2	6		
Permitted Phases		4	2			6	
Detector Phase	4	4	2	2	6	6	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	
Total Split (s)	24.0	24.0	51.0	51.0	51.0	51.0	
Total Split (%)	32.0%	32.0%	68.0%	68.0%	68.0%	68.0%	
Maximum Green (s)	18.0	18.0	45.0	45.0	45.0	45.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	
Act Efect Green (s)	10.7	10.7	52.0	52.0	52.0	52.0	
Actuated g/C Ratio	0.15	0.15	0.74	0.74	0.74	0.74	
v/c Ratio	0.38	0.21	0.25	1.15	0.80	0.12	
Control Delay	30.8	9.3	8.4	93.3	15.5	1.2	
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	

Lanes, Volumes, Timings  
6: Victoria Road & Access 2

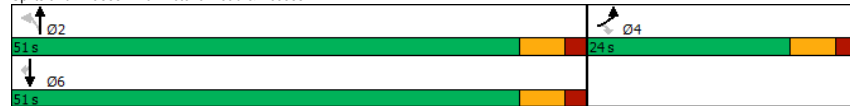
2036 AM Total  
220 Arkell Road TIS

	↖	↗	↙	↘	↑	↓
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Delay	30.8	9.3	8.4	93.4	15.5	1.2
LOS	C	A	A	F	B	A
Approach Delay	22.7			90.3	13.8	
Approach LOS	C			F	B	
Queue Length 50th (m)	12.9	0.0	2.5	~264.2	90.7	0.1
Queue Length 95th (m)	26.0	9.3	9.7	#354.0	#207.8	5.2
Internal Link Dist (m)	73.9			131.4	284.2	
Turn Bay Length (m)			30.0			60.0
Base Capacity (vph)	465	463	230	1330	1305	1235
Starvation Cap Reductn	0	0	0	37	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.14	0.25	1.18	0.80	0.12

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	70.1
Natural Cycle:	150
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.15
Intersection Signal Delay:	55.6
Intersection LOS:	E
Intersection Capacity Utilization:	92.3%
ICU Level of Service:	F
Analysis Period (min):	15
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 6: Victoria Road & Access 2



HCM 6th Signalized Intersection Summary  
6: Victoria Road & Access 2

2036 AM Total  
220 Arkell Road TIS

	↖	↗	↙	↘	↑	↓
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↙	↘	↑	↓
Traffic Volume (veh/h)	96	58	53	1405	957	133
Future Volume (veh/h)	96	58	53	1405	957	133
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1811	1781	1900
Adj Flow Rate, veh/h	104	63	58	1527	1040	145
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	6	8	0
Cap, veh/h	260	231	215	1225	1205	1089
Arrive On Green	0.14	0.14	0.68	0.68	0.68	0.68
Sat Flow, veh/h	1810	1610	480	1811	1781	1610
Grp Volume(v), veh/h	104	63	58	1527	1040	145
Grp Sat Flow(s),veh/h/ln	1810	1610	480	1811	1781	1610
Q Serve(g_s), s	3.5	2.3	7.1	45.0	30.2	2.1
Cycle Q Clear(g_c), s	3.5	2.3	37.3	45.0	30.2	2.1
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	260	231	215	1225	1205	1089
V/C Ratio(X)	0.40	0.27	0.27	1.25	0.86	0.13
Avail Cap(c_a), veh/h	489	436	215	1225	1205	1089
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	25.4	22.9	10.8	8.4	3.8
Incr Delay (d2), s/veh	1.0	0.6	3.1	118.0	8.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.4	0.4	40.2	2.8	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	26.9	26.0	26.0	128.8	16.7	4.1
LnGrp LOS	C	C	C	F	B	A
Approach Vol, veh/h	167			1585	1185	
Approach Delay, s/veh	26.6			125.1	15.1	
Approach LOS	C			F	B	
Timer - Assigned Phs	2			4		6
Phs Duration (G+Y+Rc), s	51.0			15.5		51.0
Change Period (Y+Rc), s	6.0			6.0		6.0
Max Green Setting (Gmax), s	45.0			18.0		45.0
Max Q Clear Time (g_c+I1), s	47.0			5.5		32.2
Green Ext Time (p_c), s	0.0			0.5		7.8

Intersection Summary

HCM 6th Ctrl Delay	75.1
HCM 6th LOS	E



Lanes, Volumes, Timings  
7: Victoria Road & Decorso Drive

2036 AM Total  
220 Arkell Road TIS

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↕	↕	↔
Traffic Volume (vph)	185	52	17	1484	1038	60
Future Volume (vph)	185	52	17	1484	1038	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0	0.0	30.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.993	
Fit Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1850	0
Fit Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	1863	1850	0
Link Speed (k/h)	50			50	70	
Link Distance (m)	325.8			308.2	342.0	
Travel Time (s)	23.5			22.2	17.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	201	57	18	1613	1128	65
Shared Lane Traffic (%)						
Lane Group Flow (vph)	201	57	18	1613	1193	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	95.0%
Analysis Period (min)	15
	ICU Level of Service F

HCM 6th TWSC  
7: Victoria Road & Decorso Drive

2036 AM Total  
220 Arkell Road TIS

Intersection						
Int Delay, s/veh	307.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↕	↕	↔
Traffic Vol, veh/h	185	52	17	1484	1038	60
Future Vol, veh/h	185	52	17	1484	1038	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	20	0	30	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	201	57	18	1613	1128	65

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	2810	1161	1193	0	- 0
Stage 1	1161	-	-	-	-
Stage 2	1649	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	~ 20	238	585	-	-
Stage 1	298	-	-	-	-
Stage 2	~ 172	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	~ 19	238	585	-	-
Mov Cap-2 Maneuver	~ 19	-	-	-	-
Stage 1	289	-	-	-	-
Stage 2	~ 172	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, \$	3679.7	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	585	-	19	238	-	-
HCM Lane V/C Ratio	0.032	-	10.584	0.237	-	-
HCM Control Delay (s)	11.4	-	\$ 4707	24.8	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	0.1	-	25.7	0.9	-	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Lanes, Volumes, Timings  
1: Summerfield Drive & Arkell Road

2036 PM Total  
220 Arkell Road TIS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔		↔	↔	
Traffic Volume (vph)	3	477	140	42	423	28	73	0	43	17	0	2
Future Volume (vph)	3	477	140	42	423	28	73	0	43	17	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	60.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5		7.5			7.5			7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.966			0.991			0.950			0.986	
Flt Protected	0.950			0.950				0.969			0.957	
Satd. Flow (prot)	1770	1778	0	1612	1813	0	0	1730	0	0	1758	0
Flt Permitted	0.950			0.950				0.969			0.957	
Satd. Flow (perm)	1770	1778	0	1612	1813	0	0	1730	0	0	1758	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		290.6			206.6			213.5			136.6	
Travel Time (s)		20.9			14.9			15.4			9.8	
Confl. Peds. (#/hr)			5	5					1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	3%	4%	12%	4%	2%	0%	2%	3%	2%	2%	2%
Adj. Flow (vph)	3	502	147	44	445	29	77	0	45	18	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	649	0	44	474	0	0	122	0	0	20	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	48.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM 6th TWSC  
1: Summerfield Drive & Arkell Road

2036 PM Total  
220 Arkell Road TIS

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔		↔	↔	
Traffic Vol, veh/h	3	477	140	42	423	28	73	0	43	17	0	2
Future Vol, veh/h	3	477	140	42	423	28	73	0	43	17	0	2
Conflicting Peds, #/hr	0	0	5	5	0	0	0	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	15	-	-	60	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	3	4	12	4	2	0	2	3	2	2	2
Mvmt Flow	3	502	147	44	445	29	77	0	45	18	0	2

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	474	0	0	654
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.12	-	-	4.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.308
Pot Cap-1 Maneuver	1088	-	-	887
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1088	-	-	883
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	37.6	29.8
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	228	1088	-	-	883	-	-	165
HCM Lane V/C Ratio	0.536	0.003	-	-	0.05	-	-	0.121
HCM Control Delay (s)	37.6	8.3	-	-	9.3	-	-	29.8
HCM Lane LOS	E	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	2.8	0	-	-	0.2	-	-	0.4

Lanes, Volumes, Timings  
2: Zecca Drive/Amos Drive & Arkell Road

2036 PM Total  
220 Arkell Road TIS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	30	463	39	9	447	31	17	0	5	13	2	21
Future Volume (vph)	30	463	39	9	447	31	17	0	5	13	2	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Fit		0.990			0.991			0.971			0.922	
Fit Protected		0.997			0.999			0.962			0.982	
Satd. Flow (prot)	0	1859	0	0	1864	0	0	1775	0	0	1720	0
Fit Permitted		0.997			0.999			0.962			0.982	
Satd. Flow (perm)	0	1859	0	0	1864	0	0	1775	0	0	1720	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		206.6			261.6			219.2			154.5	
Travel Time (s)		14.9			18.8			15.8			11.1	
Confl. Peds. (#/hr)			9	9			7		7	7		7
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	32	493	41	10	476	33	18	0	5	14	2	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	566	0	0	519	0	0	23	0	0	38	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	55.2%
ICU Level of Service	B
Analysis Period (min)	15

HCM 6th TWSC  
2: Zecca Drive/Amos Drive & Arkell Road

2036 PM Total  
220 Arkell Road TIS

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	463	39	9	447	31	17	0	5	13	2	21
Future Vol, veh/h	30	463	39	9	447	31	17	0	5	13	2	21
Conflicting Peds, #/hr	0	0	9	9	0	0	7	0	7	7	0	7
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	32	493	41	10	476	33	18	0	5	14	2	22


Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	509	0	0	543
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.1	-	-	4.1
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2
Pot Cap-1 Maneuver	1066	-	-	1036
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1066	-	-	1028
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.2	25.6	18.6
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	198	1066	-	-	1028	-	-	302
HCM Lane V/C Ratio	0.118	0.03	-	-	0.009	-	-	0.127
HCM Control Delay (s)	25.6	8.5	0	-	8.5	0	-	18.6
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-	-	0.4

Lanes, Volumes, Timings  
3: Colonial Drive & Arkell Road

2036 PM Total  
220 Arkell Road TIS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	29	325	96	38	389	138	79	0	106	81	0	18
Future Volume (vph)	29	325	96	38	389	138	79	0	106	81	0	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	60.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5		7.5			7.5			7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.966			0.961			0.923			0.975	
Flt Protected	0.950			0.950				0.979			0.961	
Satd. Flow (prot)	1770	1770	0	1641	1765	0	0	1603	0	0	1745	0
Flt Permitted	0.950			0.950				0.979			0.961	
Satd. Flow (perm)	1770	1770	0	1641	1765	0	0	1603	0	0	1745	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		261.6			193.8			209.6			91.7	
Travel Time (s)		18.8			14.0			15.1			6.6	
Confl. Peds. (#/hr)			8	8								
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	2%	3%	6%	10%	4%	2%	10%	2%	5%	2%	2%	2%
Adj. Flow (vph)	33	374	110	44	447	159	91	0	122	93	0	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	484	0	44	606	0	0	213	0	0	114	0
Sign Control		Free			Free			Stop			Stop	

**Intersection Summary**

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	48.7%
ICU Level of Service A	
Analysis Period (min)	15

HCM 6th TWSC  
3: Colonial Drive & Arkell Road

2036 PM Total  
220 Arkell Road TIS

**Intersection**

Int Delay, s/veh	14.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔					↔	↔
Traffic Vol, veh/h	29	325	96	38	389	138	79	0	106	81	0	18
Future Vol, veh/h	29	325	96	38	389	138	79	0	106	81	0	18
Conflicting Peds, #/hr	0	0	8	8	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	60	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	3	6	10	4	2	10	2	5	2	2	2
Mvmt Flow	33	374	110	44	447	159	91	0	122	93	0	21

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	606	0	0	492
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.12	-	-	4.2
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.29
Pot Cap-1 Maneuver	972	-	-	1031
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	972	-	-	1024
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

**Approach**

HCM Control Delay, s	0.6		0.6		52.2		81.5
HCM LOS					F		F

**Minor Lane/Major Mvmt**

	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	274	972	-	-	1024	-	-	149
HCM Lane V/C Ratio	0.776	0.034	-	-	0.043	-	-	0.764
HCM Control Delay (s)	52.2	8.8	-	-	8.7	-	-	81.5
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	5.9	0.1	-	-	0.1	-	-	4.7

Lanes, Volumes, Timings  
4: Residential Entrance/Access 1 & Arkell Road

2036 PM Total  
220 Arkell Road TIS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↕	↔	↔	↕	↔	↔	↖	↗
Traffic Volume (vph)	8	524	6	1	553	7	1	0	1	8	0	9
Future Volume (vph)	8	524	6	1	553	7	1	0	1	8	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.998			0.932				0.850
Flt Protected	0.950							0.976		0.950		
Satd. Flow (prot)	1805	1842	0	0	1824	0	0	1728	0	1805	0	1615
Flt Permitted	0.950							0.976		0.950		
Satd. Flow (perm)	1805	1842	0	0	1824	0	0	1728	0	1805	0	1615
Link Speed (k/h)		50			50			50		50		
Link Distance (m)		193.8			144.3			68.0		96.7		
Travel Time (s)		14.0			10.4			4.9		7.0		
Confl. Peds. (#/hr)			11	11					1	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	3%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	8	546	6	1	576	7	1	0	1	8	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	552	0	0	584	0	0	2	0	8	0	9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Area Type:	Other	
Control Type:	Unsignalized	
Intersection Capacity Utilization	46.6%	ICU Level of Service A
Analysis Period (min)	15	

HCM 6th TWSC  
4: Residential Entrance/Access 1 & Arkell Road

2036 PM Total  
220 Arkell Road TIS

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↕	↔	↔	↕	↔	↔	↖	↗
Traffic Vol, veh/h	8	524	6	1	553	7	1	0	1	8	0	9
Future Vol, veh/h	8	524	6	1	553	7	1	0	1	8	0	9
Conflicting Peds, #/hr	0	0	11	11	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	3	0	0	4	0	0	0	0	0	0	0
Mvmt Flow	8	546	6	1	576	7	1	0	1	8	0	9

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	583	0	0	563
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.1	-	-	4.1
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2
Pot Cap-1 Maneuver	1001	-	-	1019
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1001	-	-	1010
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	19.2	18.9
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	255	1001	-	-	1010	-	-	175	518
HCM Lane V/C Ratio	0.008	0.008	-	-	0.001	-	-	0.048	0.018
HCM Control Delay (s)	19.2	8.6	-	-	8.6	0	-	26.6	12.1
HCM Lane LOS	C	A	-	-	A	A	-	D	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1	0.1

Lanes, Volumes, Timings  
5: Victoria Road & Arkell Road

2036 PM Total  
220 Arkell Road TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	[Diagrams]												
Traffic Volume (vph)	246	154	98	100	173	95	111	800	150	63	652	258	
Future Volume (vph)	246	154	98	100	173	95	111	800	150	63	652	258	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	40.0		0.0	20.0		0.0	90.0		0.0	50.0		0.0	
Storage Lanes	1		0	1		0	1		0	1		0	
Taper Length (m)	7.5			7.5			7.5			7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor		0.99		1.00			1.00				0.99		
Frt	0.942		0.947				0.976				0.957		
Flt Protected	0.950		0.950				0.950				0.950		
Satd. Flow (prot)	1719	1743	0	1787	1764	0	1805	1783	0	1656	1707	0	
Flt Permitted	0.345		0.488				0.141				0.141		
Satd. Flow (perm)	624	1743	0	917	1764	0	268	1783	0	246	1707	0	
Right Turn on Red	Yes			Yes				Yes				Yes	
Satd. Flow (RTOR)	38		33				13				27		
Link Speed (k/h)	50		60				70				70		
Link Distance (m)	144.3		357.4				823.5				155.4		
Travel Time (s)	10.4		21.4				42.4				8.0		
Conf. Peds. (#/hr)	1		1				1				1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Heavy Vehicles (%)	5%	3%	0%	1%	2%	2%	0%	4%	4%	9%	5%	8%	
Adj. Flow (vph)	273	171	109	111	192	106	123	889	167	70	724	287	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	273	280	0	111	298	0	123	1056	0	70	1011	0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA		
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases	4			8			2			6			
Detector Phase	7	4		3	8		5	2		1	6		
Switch Phase													
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	10.0		7.0	10.0		
Minimum Split (s)	10.0	26.0		10.0	26.0		10.0	34.0		10.0	34.0		
Total Split (s)	10.0	26.0		10.0	26.0		10.0	34.0		10.0	34.0		
Total Split (%)	12.5%	32.5%		12.5%	32.5%		12.5%	42.5%		12.5%	42.5%		
Maximum Green (s)	7.0	20.0		7.0	20.0		7.0	28.0		7.0	28.0		
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0		
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0		0.0	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)	3.0	6.0		3.0	6.0		3.0	6.0		3.0	6.0		
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		
Recall Mode	None	None		None	None		None	None		None	None		
Walk Time (s)		7.0			7.0			13.0			13.0		
Flash Dont Walk (s)		13.0			13.0			15.0			15.0		
Pedestrian Calls (#/hr)		0			0			0			0		
Act Efft Green (s)	26.7	18.3		26.0	15.9		36.7	28.3		36.7	28.3		
Actuated g/C Ratio	0.36	0.25		0.35	0.21		0.50	0.38		0.50	0.38		
v/c Ratio	0.83	0.61		0.27	0.74		0.44	1.53		0.27	1.51		

Lanes, Volumes, Timings  
5: Victoria Road & Arkell Road

2036 PM Total  
220 Arkell Road TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Control Delay	42.2	29.2		17.1	36.2		15.0	270.1		12.3	261.0		
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0		
Total Delay	42.2	29.2		17.1	36.2		15.0	270.1		12.3	261.0		
LOS	D	C		B	D		B	F		B	F		
Approach Delay	35.6		31.0				243.5				244.9		
Approach LOS	D		C				F				F		
Queue Length 50th (m)	29.6	34.0		10.8	37.8		8.7	~237.0		4.8	~223.7		
Queue Length 95th (m)	#65.4	59.5		21.0	64.3		18.5	#327.9		11.7	#312.7		
Internal Link Dist (m)	120.3		333.4				799.5				131.4		
Turn Bay Length (m)	40.0		20.0				90.0				50.0		
Base Capacity (vph)	329	503		405	505		279	689		256	669		
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	0.83	0.56		0.27	0.59		0.44	1.53		0.27	1.51		

Intersection Summary

Area Type: Other  
 Cycle Length: 80  
 Actuated Cycle Length: 74.1  
 Natural Cycle: 140  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.53  
 Intersection Signal Delay: 181.3  
 Intersection Capacity Utilization 102.2%  
 Analysis Period (min) 15  
 Intersection LOS: F  
 ICU Level of Service G  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 5: Victoria Road & Arkell Road



HCM 6th Signalized Intersection Summary  
5: Victoria Road & Arkell Road

2036 PM Total  
220 Arkell Road TIS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	246	154	98	100	173	95	111	800	150	63	652	258
Future Volume (veh/h)	246	154	98	100	173	95	111	800	150	63	652	258
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1826	1856	1900	1885	1870	1870	1900	1841	1841	1767	1826	1781
Adj Flow Rate, veh/h	273	171	109	111	192	106	123	889	167	70	724	287
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	5	3	0	1	2	2	0	4	4	9	5	8
Cap, veh/h	303	225	144	316	230	127	253	587	110	217	466	185
Arrive On Green	0.09	0.21	0.21	0.08	0.20	0.20	0.09	0.39	0.39	0.07	0.38	0.38
Sat Flow, veh/h	1739	1058	674	1795	1131	625	1810	1506	283	1682	1243	493
Grp Volume(v), veh/h	273	0	280	111	0	298	123	0	1056	70	0	1011
Grp Sat Flow(s), veh/h/ln	1739	0	1732	1795	0	1756	1810	0	1789	1682	0	1736
Q Serve(g_s), s	7.0	0.0	11.3	3.5	0.0	12.2	2.9	0.0	29.1	1.8	0.0	28.0
Cycle Q Clear(g_c), s	7.0	0.0	11.3	3.5	0.0	12.2	2.9	0.0	29.1	1.8	0.0	28.0
Prop In Lane	1.00		0.39	1.00		0.36	1.00		0.16	1.00		0.28
Lane Grp Cap(c), veh/h	303	0	369	316	0	358	253	0	697	217	0	651
V/C Ratio(X)	0.90	0.00	0.76	0.35	0.00	0.83	0.49	0.00	1.51	0.32	0.00	1.55
Avail Cap(c_a), veh/h	303	0	464	333	0	470	266	0	697	254	0	651
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.9	0.0	27.6	21.0	0.0	28.5	16.8	0.0	22.8	17.2	0.0	23.3
Incr Delay (d2), s/veh	28.3	0.0	5.5	0.7	0.0	9.5	1.4	0.0	238.9	0.8	0.0	256.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	3.4	0.8	0.0	3.8	0.4	0.0	50.9	0.3	0.0	50.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.2	0.0	33.1	21.7	0.0	38.0	18.3	0.0	261.7	18.0	0.0	279.5
LnGrp LOS	D	A	C	C	A	D	B	A	F	B	A	F
Approach Vol, veh/h	553			409			1179			1081		
Approach Delay, s/veh	43.5			33.6			236.3			262.6		
Approach LOS	D			C			F			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.4	35.1	9.3	21.9	9.5	34.0	10.0	21.2				
Change Period (Y+Rc), s	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0				
Max Green Setting (Gmax), s	7.0	28.0	7.0	20.0	7.0	28.0	7.0	20.0				
Max Q Clear Time (g_c+I1), s	3.8	31.1	5.5	13.3	4.9	30.0	9.0	14.2				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.0	0.1	0.0	0.0	1.0				

Intersection Summary			
HCM 6th Ctrl Delay	186.3		
HCM 6th LOS	F		

Lanes, Volumes, Timings  
6: Victoria Road & Access 2

2036 PM Total  
220 Arkell Road TIS

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	50	23	20	1120	952	43
Future Volume (vph)	50	23	20	1120	952	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	30.0			60.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.850					0.850
Fit Protected	0.950		0.950			
Satd. Flow (prot)	1805	1615	1805	1792	1845	1615
Fit Permitted	0.950		0.205			
Satd. Flow (perm)	1805	1615	390	1792	1845	1615
Right Turn on Red	Yes				Yes	
Satd. Flow (RTOR)	25				46	
Link Speed (k/h)	50		70		70	
Link Distance (m)	97.9		155.4		308.2	
Travel Time (s)	7.0		8.0		15.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	6%	3%	0%
Adj. Flow (vph)	54	25	22	1217	1035	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	25	22	1217	1035	47
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4		2		6	
Permitted Phases	4		2		6	
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	24.0	24.0	56.0	56.0	56.0	56.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	18.0	18.0	50.0	50.0	50.0	50.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	10.1	10.1	63.4	63.4	63.4	63.4
Actuated g/C Ratio	0.13	0.13	0.83	0.83	0.83	0.83
v/c Ratio	0.23	0.11	0.07	0.82	0.67	0.03
Control Delay	32.7	13.3	3.9	14.7	8.7	1.3
Queue Delay	0.0	0.0	0.0	2.5	0.0	0.0

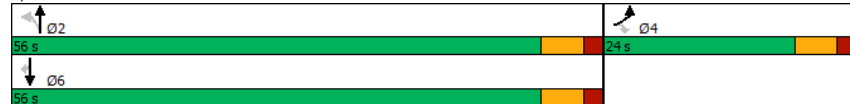
Lanes, Volumes, Timings  
6: Victoria Road & Access 2

2036 PM Total  
220 Arkell Road TIS

	↖	↗	↙	↘	↑	↓
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Delay	32.7	13.3	3.9	17.2	8.7	1.3
LOS	C	B	A	B	A	A
Approach Delay	26.6			17.0	8.4	
Approach LOS	C			B	A	
Queue Length 50th (m)	8.8	0.0	0.8	135.1	84.1	0.0
Queue Length 95th (m)	16.8	6.5	3.0	#254.2	144.3	2.5
Internal Link Dist (m)	73.9			131.4	284.2	
Turn Bay Length (m)			30.0			60.0
Base Capacity (vph)	429	403	325	1492	1536	1353
Starvation Cap Reductn	0	0	0	166	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.06	0.07	0.92	0.67	0.03

Intersection Summary	
Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	76.1
Natural Cycle:	90
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.82
Intersection Signal Delay:	13.4
Intersection LOS:	B
Intersection Capacity Utilization:	77.3%
ICU Level of Service:	D
Analysis Period (min):	15
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Splits and Phases: 6: Victoria Road & Access 2



HCM 6th Signalized Intersection Summary  
6: Victoria Road & Access 2

2036 PM Total  
220 Arkell Road TIS

	↖	↗	↙	↘	↑	↓
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↙	↘	↑	↓
Traffic Volume (veh/h)	50	23	20	1120	952	43
Future Volume (veh/h)	50	23	20	1120	952	43
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1811	1856	1900
Adj Flow Rate, veh/h	54	25	22	1217	1035	47
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	6	3	0
Cap, veh/h	203	181	292	1297	1328	1153
Arrive On Green	0.11	0.11	0.72	0.72	0.72	0.72
Sat Flow, veh/h	1810	1610	530	1811	1856	1610
Grp Volume(v), veh/h	54	25	22	1217	1035	47
Grp Sat Flow(s),veh/h/ln	1810	1610	530	1811	1856	1610
Q Serve(g_s), s	1.9	1.0	1.9	40.6	25.0	0.6
Cycle Q Clear(g_c), s	1.9	1.0	27.0	40.6	25.0	0.6
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	203	181	292	1297	1328	1153
V/C Ratio(X)	0.27	0.14	0.08	0.94	0.78	0.04
Avail Cap(c_a), veh/h	466	415	292	1297	1328	1153
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.4	28.0	15.0	8.6	6.4	2.9
Incr Delay (d2), s/veh	0.7	0.3	0.5	14.1	4.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.3	0.1	5.1	1.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	29.1	28.3	15.5	22.7	10.9	3.0
LnGrp LOS	C	C	B	C	B	A
Approach Vol, veh/h	79			1239	1082	
Approach Delay, s/veh	28.8			22.5	10.6	
Approach LOS	C			C	B	
Timer - Assigned Phs	2			4		6
Phs Duration (G+Y+Rc), s	56.0			13.8		56.0
Change Period (Y+Rc), s	6.0			6.0		6.0
Max Green Setting (Gmax), s	50.0			18.0		50.0
Max Q Clear Time (g_c+I1), s	42.6			3.9		27.0
Green Ext Time (p_c), s	5.7			0.2		10.9

Intersection Summary	
HCM 6th Ctrl Delay	17.4
HCM 6th LOS	B



Lanes, Volumes, Timings  
7: Victoria Road & Decorso Drive

2036 PM Total  
220 Arkell Road TIS

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↕	↕	↔
Traffic Volume (vph)	105	38	64	1106	957	176
Future Volume (vph)	105	38	64	1106	957	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0	0.0	30.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.979	
Fit Protected	0.950		0.950			
Satd. Flow (prot)	1805	1615	1805	1792	1814	0
Fit Permitted	0.950		0.950			
Satd. Flow (perm)	1805	1615	1805	1792	1814	0
Link Speed (k/h)	50			50	70	
Link Distance (m)	325.8			308.2	342.0	
Travel Time (s)	23.5			22.2	17.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	6%	3%	0%
Adj. Flow (vph)	114	41	70	1202	1040	191
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	41	70	1202	1231	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	73.5%
ICU Level of Service	D
Analysis Period (min)	15

HCM 6th TWSC  
7: Victoria Road & Decorso Drive

2036 PM Total  
220 Arkell Road TIS

Intersection						
Int Delay, s/veh	69.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↕	↕	↔
Traffic Vol, veh/h	105	38	64	1106	957	176
Future Vol, veh/h	105	38	64	1106	957	176
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	20	0	30	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	6	3	0
Mvmt Flow	114	41	70	1202	1040	191

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2478	1136	1231
Stage 1	1136	-	-
Stage 2	1342	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	~ 33	248	573
Stage 1	309	-	-
Stage 2	246	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	~ 29	248	573
Mov Cap-2 Maneuver	~ 29	-	-
Stage 1	271	-	-
Stage 2	246	-	-

Approach	EB	NB	SB
HCM Control Delay, \$ 1180.5		0.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	573	-	29	248	-	-
HCM Lane V/C Ratio	0.121	-	3.936	0.167	-	-
HCM Control Delay (s)	12.1	-	\$ 1599.6	22.4	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	0.4	-	13.8	0.6	-	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined \*: All major volume in platoon

## Appendix C

### OTM Signal Warrants



# Signal Justification Calculation for Forecast Volumes (OTM Book 12 - Justification 7)



Horizon Year: 2036 Total Traffic Conditions  
 Region/City/Township: City of Guelph

Major Street: Arkell Road  
 Minor Street: Colonial Drive

North/South?: N

Number of Approach Lanes: 1  
 Tee Intersection?: N  
 Flow Conditions: Restricted

Warrant Results		
150% Satisfied	No	Justification for new intersections with forecast traffic
120% Satisfied	No	Justification for existing intersections with forecast traffic

PM Forecast Only? N

Time Period	Major Street Arkell Road						Minor Street Colonial Drive						Peds Crossing Main Road
	Eastbound			Westbound			Northbound			Southbound			
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
AM Peak Hour	11	560	75	71	358	42	173	0	176	131	0	32	0
PM Peak Hour	29	325	96	38	389	138	79	0	106	81	0	18	0
Average Hourly Volume	10	221	43	27	187	45	63	0	71	53	0	13	0

Warrant	AHV
1A - All	732
1B - Minor	199
2A - Major	533
2B - Cross	116

### Warrant 1 - Minimum Vehicular Volume

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
	All Approaches	480	720	600	900	
% Fulfilled						101.7%

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
	Minor Street Approaches	120	170	120	170	
% Fulfilled						117.1%

### Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
	Major Street Approaches	480	720	600	900	
% Fulfilled						74.0%

2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
	Traffic Crossing Major Street	50	75	50	75	
% Fulfilled						154.7%

# Signal Justification Calculation for Forecast Volumes (OTM Book 12 - Justification 7)



Horizon Year: 2036 Total Traffic Conditions  
 Region/City/Township: City of Guelph

Major Street: Arkell Road  
 Minor Street: Summerfield Drive

North/South?: N

Number of Approach Lanes: 1  
 Tee Intersection?: N  
 Flow Conditions: Restricted

Warrant Results		
150% Satisfied	No	Justification for new intersections with forecast traffic
120% Satisfied	No	Justification for existing intersections with forecast traffic

PM Forecast Only? N

Time Period	Major Street Arkell Road						Minor Street Summerfield Drive						Peds Crossing Main Road
	Eastbound			Westbound			Northbound			Southbound			
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
AM Peak Hour	1	367	72	48	465	10	137	0	79	30	0	3	0
PM Peak Hour	3	477	140	42	423	28	73	0	43	17	0	2	0
Average Hourly Volume	1	211	53	23	222	10	53	0	31	12	0	1	0

Warrant	AHV
1A - All	615
1B - Minor	96
2A - Major	519
2B - Cross	64

### Warrant 1 - Minimum Vehicular Volume

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
	All Approaches	480	720	600	900	
% Fulfilled						85.4%

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
	Minor Street Approaches	120	170	120	170	
% Fulfilled						56.5%

### Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
	Major Street Approaches	480	720	600	900	
% Fulfilled						72.1%

2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
	Traffic Crossing Major Street	50	75	50	75	
% Fulfilled						85.7%