

01 May 2023
Project: 210199

Charles Li
GSD Development & Management Inc.
c/o Jenn Gaudet
MHBC Planning

**RE: 1166-1204 GORDON STREET, GUELPH
TRANSPORTATION IMPACT STUDY ADDENDUM - COMMENT RESPONSE**

In January 2022, **Paradigm Transportation Solutions Limited** (Paradigm) completed the Transportation Impact Study (TIS) for the proposed residential development located at 1166-1204 Gordon Street in the City of Guelph.

City of Guelph staff have since provided comments on the January 2022 TIS in a letter dated 12 September 2022. This letter provides clarifications/responses to the review comments, as outlined below.

Updated Site Plan

The January 2022 TIS was based on a previous Site Plan comprising 134 apartment units and 22 townhouse units.

The Site Plan for the proposed development has since been changed and it accommodates 122 apartment units and 21 townhouse units. No changes have been made to the access arrangement. **Figure 1** (attached) illustrates the updated Site Plan. **Table 1** (attached) summarizes the updated trip generation based on the revised Site Plan and ITE trip generation rates¹.

Comment Response

Traffic: Staff have reviewed “1166-1204 Gordon Street Guelph Transportation Impact Study”, dated January 2022. Our comments are offered below. Staff are generally in support of this Official Plan and Zoning By-law Amendments application. However, the Transportation Impact Study must be resubmitted to include omissions and geometric improvements on Gordon Street.

¹ Institute of Transportation Engineers, *Trip Generation Manual*, 11th ed., (Washington, DC: ITE, 2021).

Appendices: Please include all missing appendices.

- ▶ Response: The final January 2022 TIS with appendices attached was sent to City staff via email on 30 November 2022. Hard copies of the January 2022 TIS with appendices are submitted separately.

Geometric Improvements: The study must acknowledge the future addition of a northbound queue jump / exclusive right-turn lane at the Gordon Street and Arkell Road intersection; and the termination of Valley Road at Gordon Street as per Urban Design Concept Plan for Gordon Street Intensification Corridor (Page 20).

- ▶ Response: The Urban Design Concept Plans for the Gordon Street Intensification Corridor² illustrates the closure of Valley Road and southerly extension of Landsdown Drive with a connection to the easterly extension of Edinburgh Road South. **Figure 2** (attached) illustrates the updated site generated traffic volumes based on the updated Site Plan in **Figure 1**, and with trips previously assigned to Valley Road now reassigned to the easterly extension of Edinburgh Road South. As in the January 2022 TIS, townhouse trips have been assigned to the site driveways to be conservative.

The 2035 background traffic volumes remain the same as in the January 2022 TIS, with Valley Road traffic already re-assigned. **Figure 3** (attached) illustrates the 2035 total traffic volumes, including updated site generated traffic volumes and 2035 background traffic volumes.

The 2035 total traffic conditions have been analyzed using the same methodology as in the January 2022 TIS, with the addition of a northbound right-turn lane at Gordon Street and Arkell Road. A bus queue jump/by-pass lane cannot be modeled in Synchro. The signal timings at Arkell Road and at Edinburgh Road have been updated to match the Gordon Street EA³.

Table 2 and **Table 3** (attached) summarize the results of the 2035 total traffic operations. The results indicate that the study area intersections are forecast to operate with acceptable levels of service, except for the following critical movements:

Gordon Street and Harts Lane

- The eastbound and westbound approaches are forecast to operate with LOS F during the AM and PM peak hours.

Gordon Street and Landsdown Drive

- The eastbound approach is forecast to operate with LOS F during the AM and PM peak hours; and
- The westbound approach is forecast to operate with LOS F during the PM peak hour.

² City of Guelph, *Urban Design Concept Plans for the Gordon Street Intensification Corridor*, April 2018

³ IBI Group, *Gordon Street between Edinburgh Road and Lowes Road, Class Environmental Assessment Appendix C – Traffic Operations and Safety Analysis Report*, July 2020.



Gordon Street and Edinburgh Road South

- The eastbound right-turn movement is forecast to operate with LOS F and a v/c ratio greater than 0.90 during the PM peak hour;
- The northbound left-turn movement is forecast to operate with LOS E and a v/c ratio greater than 0.90 during the PM peak hour, and 95th percentile queues exceeding the available storage of 65 metres during the AM and PM peak hours; and
- The southbound shared through/right-turn movement is forecast to operate with LOS F and a v/c ratio greater than 0.85 during the PM peak hour.

Gordon Street and Arkell Road

- The westbound left-turn movement is forecast to operate with LOS F and a v/c ratio greater than 0.90 and 95th percentile queues exceeding the available storage of 55 metres during the AM and PM peak hours;
- The westbound shared through/right-turn movement is forecast to operate with LOS C and a v/c ratio greater than 0.85 during the AM peak hour;
- The northbound through movement is forecast to operate with LOS D to E and a v/c ratio greater than 0.85 during the AM and PM peak hours;
- The northbound right-turn movement is forecast to operate with 95th percentile queues exceeding the available storage of 35 metres during the PM peak hour; and
- The southbound left-turn movement is forecast to operate with LOS F and a v/c ratio greater than 0.90 during the PM peak hour, and 95th percentile queues exceeding the available storage of 65 metres during the AM and PM peak hours.

Appendix A contains the Synchro 11 reports.

On-street parking: Please be advised that on-street parking is permitted on the west side of Landsdown Drive along the frontage of the proposed development. The proposed driveway accesses (townhouse) onto Landsdown Drive will eliminate the existing available time restricted on-street parking. For a legal on-street parking space, a minimum of 7.0m space has to be provided between the proposed driveways.

- ▶ Response: The on-street parking along the west side of Landsdown Drive will be removed. Accommodating the 7-metre standard parallel parking space would result in reducing the number of townhouse units which is in compliance with the Zoning By-Law lot and garage width requirements.

TDM comments: Guelph Cycling Network study recommends protected cycling infrastructure on Gordon Street from Waterloo Road, to Clair Road. This will significantly enhance the level of service for cyclists to this site. As such, can the TIS enhance Section 6.2 to address this mode in a more fulsome manner? For instance, higher quality end of trip facilities for visitors arriving by bike are recommended (i.e., sheltered visitor bike racks which are dispersed among various building entrances). Please clarify whether Section 6.5 applies to resident parking, visitor parking or both.



- ▶ Response: The City's Site Plan Guidelines⁴ require 1 bicycle parking space per unit for dwelling units without an exclusive use garage plus 2 visitor spaces per 20 units. As mentioned in the January 2022 TIS, long-term bicycle parking should be located in a safe, secure, and sheltered area, such as the underground parking garage. Further, visitor (short-term) parking should be close to building entrances, located in a well-lit area, and firmly secured to the ground/concrete pad. Sheltered or enclosed short-term bicycle parking provides the best shelter; however, short-term bicycle parking could be provided under an overhang or awning. Wayfinding signage should be provided on-site to help residents and visitors locate the bicycle parking. A bike fix-it station could be considered near the secure bicycle parking which provide tools to residents to make basic bicycle repairs.

Although the City of Guelph does not provide EV parking requirements, other municipalities such as the City of Kitchener and City of Mississauga require EV compatible spaces as a function of the total residential parking requirement.

Staff Recommendation: Engineering staff recommends that the plans and/or reports be updated and resubmitted for final review. Engineering will not be able to approve the application until comments are addressed.

- ▶ Response: The above response/clarification included in this addendum addresses city staff concerns.

We trust that the above response addresses City staff comments. Please do not hesitate to contact us if we can be of further assistance.

Yours very truly,

PARADIGM TRANSPORTATION SOLUTIONS LIMITED



Rajan Philips
M.SC, P.Eng.
Senior Transportation Consultant

⁴ City of Guelph, *Site Plan Procedures and Guidelines*, (September 2015).



Attachments



TABLE 1: UPDATED TRIP GENERATION

Land Use	Number of Units	AM Peak Hour			PM Peak Hour				
		Rate	In	Out	Total	Rate	In	Out	Total
215 - Single-Family Attached Housing	21	0.48	3	7	10	0.57	7	5	12
221 - Multifamily Housing (Mid-Rise)	122	Eq	10	32	42	Eq	29	19	48
Total Trip Generation			13	39	52		36	24	60

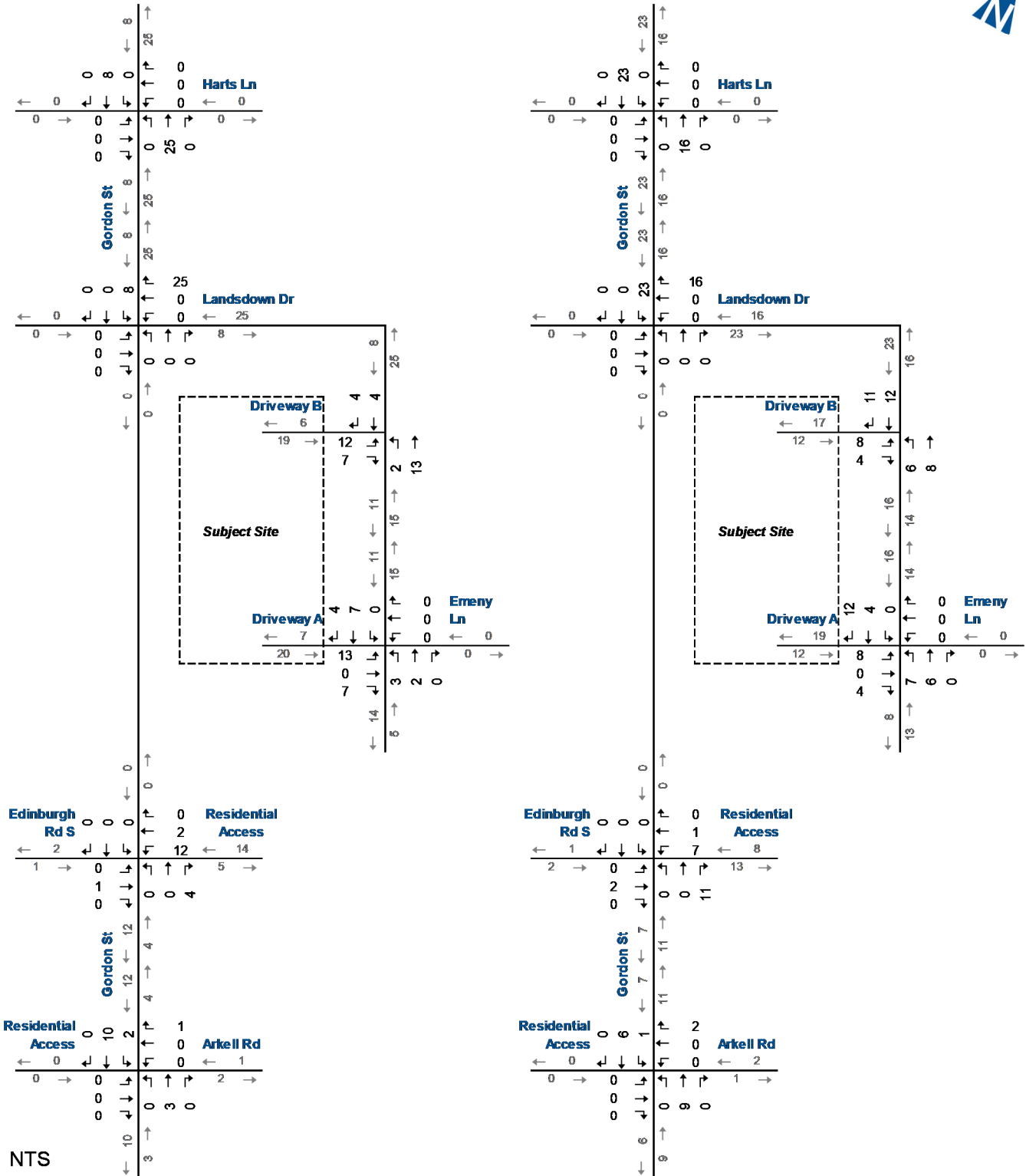
LUC 221 - AM: $T = 0.44(X) - 11.61$ | PM: $T = 0.39(X) + 0.34$





AM Peak Hour

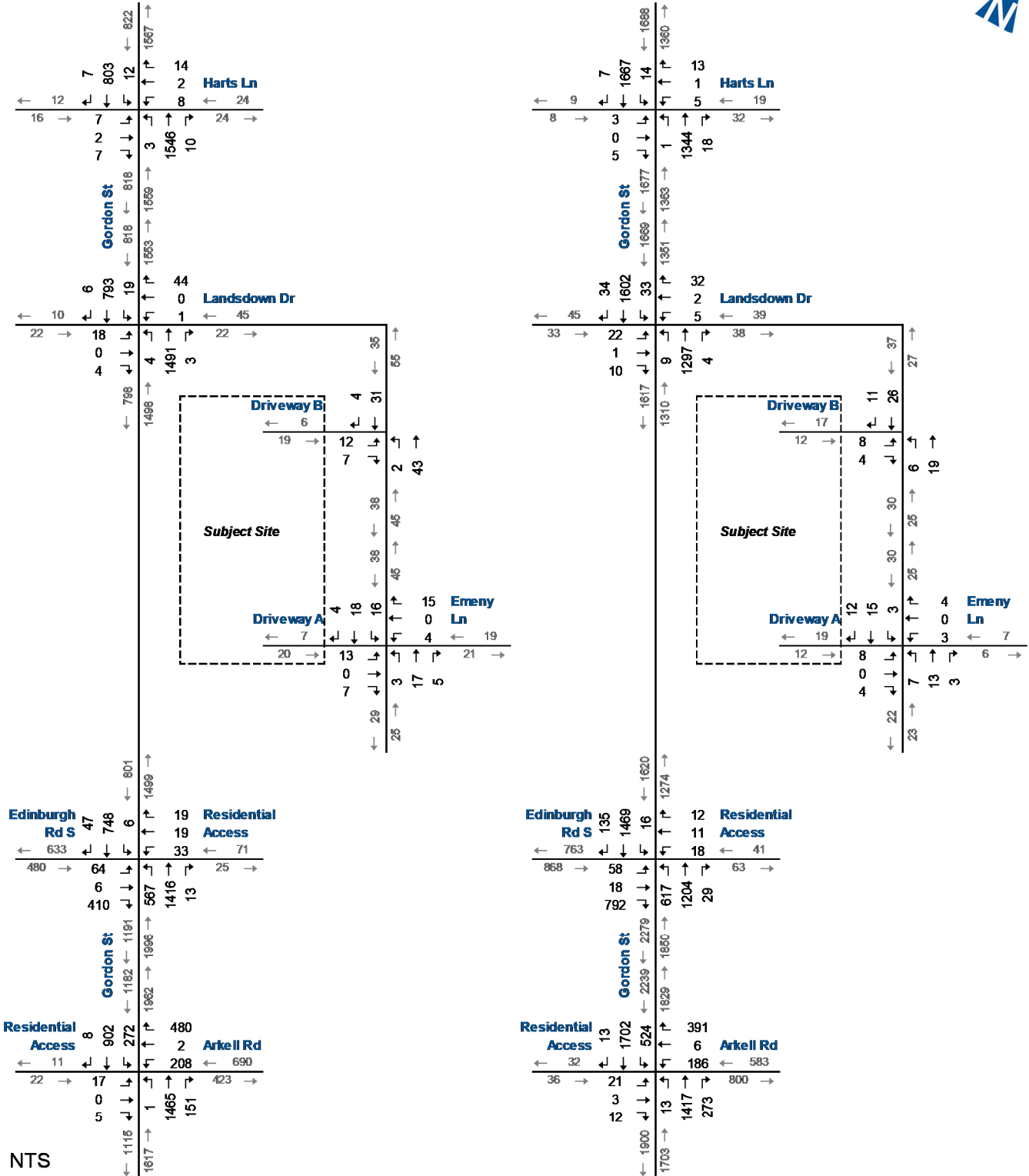
PM Peak Hour



Site Generated Traffic Volumes

AM Peak Hour

PM Peak Hour



NTS



2035 Total Traffic Volumes

TABLE 2: 2035 TOTAL TRAFFIC OPERATIONS – 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	Gordon Street & Harts Lane West/Harts Lane East	TWSC	LOS Delay V/C Q Stor. Avail.	< < < < <	F 81 0.27 8 -	> > > > >	F 81	< < < < <	F 134 0.51 14 -	> > > > >	F 134	A 10 0.00 0 30 30	A 0 0.00 0 -	> > > > >	A 0	B 15 0.04 1 25 24	A 0 0.00 0 -	> > > > >	A 0		
	Gordon Street & Landsdown Drive	TWSC	LOS Delay V/C Q Stor. Avail.	< < < < <	F 120 0.45 13 -	> > > > >	F 120	< < < < <	C 24 0.21 6 -	> > > > >	C 24	A 10 0.01 0 20 20	A 0 0.00 0 -	> > > > >	A 0	C 18 0.07 2 30 28	A 0 0.00 0 -	> > > > >	A 0		
	Gordon Street & Edinburgh Road South	TCS	LOS Delay V/C Q Stor. Avail.	< < < < <	E 70 0.62 32 -	C 21 0.59 88 -	> > > > >	C 29	< < < < <	D 48 0.44 28 -	> > > > >	D 48	C 24 0.89 123 65 -58	A 1 0.60 11 -	> > > > >	A 8	C 21 0.05 4 15 11	C 26 0.57 101 -	> > > > >	C 26	B 16
	Gordon Street & Arkell Road	TCS	LOS Delay V/C Q Stor. Avail.	E 59 0.31 12 15 3	A 0 0.01 0 -	> > > > >	D 46	F 116 1.02 105 55 -50	C 31 0.90 93 -	> > > > >	E 56	B 17 0.00 1 20 19	D 37 0.92 262 -	B 12 0.21 29 35 6	> > > > >	C 35	D 39 0.84 67 65 -2	A 7 0.41 51 -	> > > > >	B 14	C 32
	Landsdown Drive & Driveway A/Emeny Lane	TWSC	LOS Delay V/C Q	< < < <	A 9 0.02 1	> > > >	A 9	< < < <	A 9 0.02 1	> > > >	A 9	< < < <	A 7 0.00 0	> > > >	A 1	< < < <	A 7 0.01 0	> > > >	A 3		
	Driveway B & Landsdown Drive	TWSC	LOS Delay V/C Q	A 9 0.02 1	> > > >	A 9	> > > >	A 9	> > > >	> > > >	> > > >	> > > >	A 7 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 3: 2035 TOTAL TRAFFIC OPERATIONS – 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	Gordon Street & Harts Lane West/Harts Lane East	TWSC	LOS Delay V/C Q Stor. Avail.	< < < < <	F 212 0.35 8 -> ->	> > > > >	F 212	< < < < <	F 174 0.53 14 -> ->	> > > > >	F 174	C 16 0.00 0 30 30	A 0 0.00 0 -> ->	> > > > >	A 0	B 13 0.03 1 25 24	A 0 0.00 0 -> ->	> > > > >	A 0		
	Gordon Street & Landsdown Drive	TWSC	LOS Delay V/C Q Stor. Avail.	< < < < <	F 1701 3.26 41 -> ->	> > > > >	F 1701	< < < < <	F 184 0.79 25 -> ->	> > > > >	F 184	C 18 0.03 1 20 19	A 0 0.00 0 -> ->	> > > > >	A 0	B 13 0.07 2 30 28	A 0 0.00 0 -> ->	> > > > >	A 0		
	Gordon Street & Edinburgh Road South	TCS	LOS Delay V/C Q Stor. Avail.	< < < < <	E 68 0.61 34 -> ->	F 134 1.20 323 -> ->	F 128	< < < < <	D 39 0.26 17 -> ->	> > > > >	D 39	E 61 1.02 181 65 -116	A 1 0.50 6 -> ->	> > > > >	C 21	C 22 0.10 7 15 8	F 133 1.21 308 -> ->	> > > > >	F 132	F 83	
	Gordon Street & Arkell Road	TCS	LOS Delay V/C Q Stor. Avail.	E 62 0.37 14 15 1	C 22 0.06 7 -> ->	> > > > >	D 46	F 98 0.94 92 55 -37	B 13 0.74 36 -> ->	> > > > >	D 40	C 26 0.16 7 20 13	E 76 1.06 253 -> ->	B 17 0.44 53 35 -18	> > > > >	E 66	F 84 1.12 83 65 -18	B 12 0.76 112 -> ->	> > > > >	C 29	D 44
	Landsdown Drive & Driveway A/Emeny Lane	TWSC	LOS Delay V/C Q	< < < <	A 9 0.01 0	> > > >	A 9	< < < <	A 9 0.01 0	> > > >	A 9	< < < <	A 7 0.01 0	> > > >	A 2	< < < <	A 7 0.00 0	> > > >	A 1		
	Driveway B & Landsdown Drive	TWSC	LOS Delay V/C Q	A 9 0.01 0	> > > >	> > > >	A 9	> > > >	> > > >	> > > >	> > > >	> > > >	A 7 0.00 0	> > > >	A 2	> > > >	A 0 0.00 0	> > > >	A 0		

MOE - Measure of Effectiveness
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 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

Appendix A

2035 Total Traffic Conditions




Lanes, Volumes, Timings

1: Gordon Street & Harts Lane West/Harts Lane East

2035 Total AM

Gordonview, Guelph TIS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Volume (vph)	7	2	7	8	2	14	3	1546	10	12	803	7
Future Volume (vph)	7	2	7	8	2	14	3	1546	10	12	803	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	25.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			50.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.940			0.922			0.999			0.999	
Flt Protected		0.978			0.983		0.950		0.950			
Satd. Flow (prot)	0	1747	0	0	1655	0	1805	3397	0	1805	3341	0
Flt Permitted		0.978			0.983		0.950		0.950			
Satd. Flow (perm)	0	1747	0	0	1655	0	1805	3397	0	1805	3341	0
Link Speed (k/h)		50			50		60		60			
Link Distance (m)		115.1			115.5		121.4		133.8			
Travel Time (s)		8.3			8.3		7.3		8.0			
Confl. Peds. (#/hr)	2		5	5		2	12		8	8		12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	7%	0%	6%	30%	0%	8%	0%
Adj. Flow (vph)	8	2	8	9	2	15	3	1680	11	13	873	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	0	0	26	0	3	1691	0	13	881	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	54.6%
ICU Level of Service A	
Analysis Period (min)	15

HCM 6th TWSC

1: Gordon Street & Harts Lane West/Harts Lane East

2035 Total AM

Gordonview, Guelph TIS

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	7	2	7	8	2	14	3	1546	10	12	803	7
Future Vol, veh/h	7	2	7	8	2	14	3	1546	10	12	803	7
Conflicting Peds, #/hr	2	0	5	5	0	2	12	0	8	8	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	30	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	7	0	6	30	0	8
Mvmt Flow	8	2	8	9	2	15	3	1680	11	13	873	8
Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	1764	2620	458	2169	2619	856	893	0	0	1699	0	0
Stage 1	915	915	-	1700	1700	-	-	-	-	-	-	-
Stage 2	849	1705	-	469	919	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	7.04	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.37	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	55	24	555	27	24	291	768	-	-	380	-	-
Stage 1	298	354	-	98	149	-	-	-	-	-	-	-
Stage 2	326	148	-	549	353	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	46	23	547	24	23	289	760	-	-	377	-	-
Mov Cap-2 Maneuver	46	23	-	24	23	-	-	-	-	-	-	-
Stage 1	294	338	-	97	147	-	-	-	-	-	-	-
Stage 2	303	146	-	517	337	-	-	-	-	-	-	-
Approach	EB	WB	NB	SB								
HCM Control Delay, s	81		134		0					0.2		
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	760	-	-	64	51	377	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.272	0.512	0.035	-	-				
HCM Control Delay (s)	9.8	-	-	81	134	14.9	-	-				
HCM Lane LOS	A	-	-	F	F	B	-	-				
HCM 95th %tile Q(veh)	0	-	-	1	1.9	0.1	-	-				

Lanes, Volumes, Timings
2: Gordon Street & Landsdown Drive

2035 Total AM
Gordonview, Guelph TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (vph)	18	0	4	1	0	44	4	1491	3	19	793	6
Future Volume (vph)	18	0	4	1	0	44	4	1491	3	19	793	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	20.0		0.0	30.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			55.0			35.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.977			0.868							0.999
Fit Protected		0.960			0.999		0.950			0.950		
Satd. Flow (prot)	0	1782	0	0	1366	0	1805	3374	0	1421	3372	0
Fit Permitted		0.960			0.999		0.950			0.950		
Satd. Flow (perm)	0	1782	0	0	1366	0	1805	3374	0	1421	3372	0
Link Speed (k/h)		50			50		60			60		
Link Distance (m)		82.5			89.0		349.9			121.4		
Travel Time (s)		5.9			6.4		21.0			7.3		
Confl. Peds. (#/hr)			5	5			13		7	7		13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	21%	7%	0%	27%	7%	0%	0%
Adj. Flow (vph)	20	0	4	1	0	48	4	1621	3	21	862	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	24	0	0	49	0	4	1624	0	21	869	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		25		15	25		15	25		15	25	15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	56.8%
ICU Level of Service	B
Analysis Period (min)	15

HCM 6th TWSC
2: Gordon Street & Landsdown Drive

2035 Total AM
Gordonview, Guelph TIS

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	18	0	4	1	0	44	4	1491	3	19	793	6
Future Vol, veh/h	18	0	4	1	0	44	4	1491	3	19	793	6
Conflicting Peds, #/hr	0	0	5	5	0	0	13	0	7	7	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	20	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	21	0	7	0	27	7	0
Mvmt Flow	20	0	4	1	0	48	4	1621	3	21	862	7

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	1740	2560	453	2116
Stage 1	921	921	-	1638
Stage 2	819	1639	-	478
Critical Hdwy	7.5	6.5	6.9	7.5
Critical Hdwy Stg 1	6.5	5.5	-	6.5
Critical Hdwy Stg 2	6.5	5.5	-	6.5
Follow-up Hdwy	3.5	4	3.3	3.5
Pot Cap-1 Maneuver	57	27	559	30
Stage 1	295	352	-	107
Stage 2	340	160	-	543
Platoon blocked, %				
Mov Cap-1 Maneuver	44	25	551	28
Mov Cap-2 Maneuver	44	25	-	28
Stage 1	290	323	-	106
Stage 2	280	158	-	498

Approach	EB	WB	NB	SB
HCM Control Delay, s	119.9	24.5	0	0.4
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	766	-	-	53	233	294	-	-
HCM Lane V/C Ratio	0.006	-	-	0.451	0.21	0.07	-	-
HCM Control Delay (s)	9.7	-	-	119.9	24.5	18.2	-	-
HCM Lane LOS	A	-	-	F	C	C	-	-
HCM 95th %tile Q(veh)	0	-	-	1.7	0.8	0.2	-	-

Lanes, Volumes, Timings
4: Gordon Street & Edinburgh Road South

2035 Total AM
Gordonview, Guelph TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕		↕	↕		↕	↕	
Traffic Volume (vph)	64	6	410	33	19	19	567	1416	13	6	748	47
Future Volume (vph)	64	6	410	33	19	19	567	1416	13	6	748	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	65.0		0.0	15.0		0.0
Storage Lanes	1		1	0		0	1		0	1		0
Taper Length (m)	100.0		7.5				50.0			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.95			0.98						0.991	
Frt		0.850		0.964			0.999				0.991	
Fit Protected		0.957		0.977		0.950		0.950				
Satd. Flow (prot)	0	1563	1524	0	1753	0	1656	3281	0	1805	3265	0
Fit Permitted		0.709		0.815		0.221		0.164				
Satd. Flow (perm)	0	1100	1524	0	1462	0	385	3281	0	312	3265	0
Right Turn on Red		Yes		Yes		Yes		Yes		Yes		Yes
Satd. Flow (RTOR)			90		13			2			7	
Link Speed (k/h)		50		50		60		60		60		60
Link Distance (m)		207.4		97.0		407.7		349.9				
Travel Time (s)		14.9		7.0		24.5		21.0				
Confl. Peds. (#/hr)	38				38							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	18%	0%	6%	0%	0%	0%	9%	10%	0%	0%	10%	3%
Adj. Flow (vph)	70	7	446	36	21	21	616	1539	14	7	813	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	77	446	0	78	0	616	1553	0	7	864	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0		0.0		3.6		3.6		3.6		3.6
Link Offset(m)		0.0		0.0		0.0		0.0		0.0		0.0
Crosswalk Width(m)		4.8		4.8		4.8		4.8		4.8		4.8
Two way Left Turn Lane							Yes					
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
4: Gordon Street & Edinburgh Road South

2035 Total AM
Gordonview, Guelph TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+pt	NA	pm+pt	NA	Perm	NA	
Protected Phases		8	5		8		5	2			6	
Permitted Phases	8		8	8			2			6		
Detector Phase	8	8	5	8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0		6.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0	9.0	27.0	27.0		9.0	38.0		38.0	38.0	
Total Split (s)	27.0	27.0	35.0	27.0	27.0		35.0	93.0		45.0	45.0	
Total Split (%)	22.5%	22.5%	29.2%	22.5%	22.5%		29.2%	77.5%		37.5%	37.5%	
Maximum Green (s)	21.0	21.0	32.0	21.0	21.0		32.0	87.0		39.0	39.0	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	0.0	2.0	2.0		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.0		6.0		3.0	6.0		6.0	6.0	
Lead/Lag			Lead				Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		18.0			18.0	18.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0			14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0			0	0	
Act Effct Green (s)		13.6	55.8		13.6		97.4	94.4		55.2	55.2	
Actuated g/C Ratio		0.11	0.46		0.11		0.81	0.79		0.46	0.46	
v/c Ratio		0.62	0.59		0.44		0.89	0.60		0.05	0.57	
Control Delay		70.4	21.4		47.5		23.8	1.3		21.2	26.3	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		70.4	21.4		47.5		23.8	1.3		21.2	26.3	
LOS		E	C		D		C	A		C	C	
Approach Delay		28.6			47.5		7.7			26.2		
Approach LOS		C			D		A			C		
Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	120											
Offset:	52 (43%), Referenced to phase 2:NBL and 6:SBTL, Start of Green											
Natural Cycle:	90											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.89											
Intersection Signal Delay:	16.0						Intersection LOS: B					
Intersection Capacity Utilization:	82.7%						ICU Level of Service E					
Analysis Period (min):	15											
Splits and Phases:	4: Gordon Street & Edinburgh Road South											

Queues
4: Gordon Street & Edinburgh Road South

2035 Total AM
Gordonview, Guelph TIS

	→	↘	←	↙	↑	↗	↓
Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	77	446	78	616	1553	7	864
v/c Ratio	0.62	0.59	0.44	0.89	0.60	0.05	0.57
Control Delay	70.4	21.4	47.5	23.8	1.3	21.2	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.4	21.4	47.5	23.8	1.3	21.2	26.3
Queue Length 50th (m)	17.6	56.8	14.4	30.8	8.2	0.9	80.2
Queue Length 95th (m)	31.8	87.7	28.1	m#122.6	m10.9	4.0	100.8
Internal Link Dist (m)	183.4		73.0		383.7		325.9
Turn Bay Length (m)				65.0		15.0	
Base Capacity (vph)	192	757	266	696	2580	143	1504
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.59	0.29	0.89	0.60	0.05	0.57

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
5: Gordon Street & Arkel Road

2035 Total AM
Gordonview, Guelph TIS

	↖	→	↘	↙	←	↗	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖		↖	↖		↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	17	0	5	208	2	480	1	1465	151	272	902	8
Future Volume (vph)	17	0	5	208	2	480	1	1465	151	272	902	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	55.0		0.0	20.0		35.0	65.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5		7.5			7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.98	0.98		1.00	0.91		1.00		0.98		1.00	
Frt		0.850			0.851				0.850		0.999	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1703	1325	0	1597	1335	0	1805	3282	1442	1671	3307	0
Fit Permitted	0.190			0.754			0.290			0.060		
Satd. Flow (perm)	334	1325	0	1263	1335	0	550	3282	1409	106	3307	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		182			420				58			2
Link Speed (k/h)		50			50				60			60
Link Distance (m)		88.1			231.0				148.1			407.7
Travel Time (s)		6.3			16.6				8.9			24.5
Confl. Peds. (#/hr)	48		2	2		48	5		2	2		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	0%	20%	13%	0%	10%	0%	10%	12%	8%	9%	13%
Adj. Flow (vph)	18	0	5	226	2	522	1	1592	164	296	980	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	5	0	226	524	0	1	1592	164	296	989	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane							Yes				Yes	
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
5: Gordon Street & Arkell Road

2035 Total AM
Gordonview, Guelph TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		45.0	45.0	45.0	8.0	45.0	
Total Split (s)	27.0	27.0		27.0	27.0		58.0	58.0	58.0	35.0	93.0	
Total Split (%)	22.5%	22.5%		22.5%	22.5%		48.3%	48.3%	48.3%	29.2%	77.5%	
Maximum Green (s)	21.0	21.0		21.0	21.0		52.0	52.0	52.0	32.0	87.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	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	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	3.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		25.0	25.0	25.0		25.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0		0	
Act Effct Green (s)	21.0	21.0		21.0	21.0		63.2	63.2	63.2	90.0	87.0	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.53	0.53	0.53	0.75	0.72	
v/c Ratio	0.31	0.01		1.02	0.90		0.00	0.92	0.21	0.84	0.41	
Control Delay	59.1	0.0		115.7	31.0		17.0	37.3	11.8	38.6	6.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	59.1	0.0		115.7	31.0		17.0	37.3	11.8	38.6	6.6	
LOS	E	A		F	C		B	D	B	D	A	
Approach Delay		46.2			56.5			34.9			14.0	
Approach LOS		D			E			C			B	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.02
 Intersection Signal Delay: 32.2
 Intersection LOS: C
 Intersection Capacity Utilization 102.6%
 ICU Level of Service G
 Analysis Period (min) 15

Splits and Phases: 5: Gordon Street & Arkell Road



Queues
5: Gordon Street & Arkell Road

2035 Total AM
Gordonview, Guelph TIS

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	18	5	226	524	1	1592	164	296	989
v/c Ratio	0.31	0.01	1.02	0.90	0.00	0.92	0.21	0.84	0.41
Control Delay	59.1	0.0	115.7	31.0	17.0	37.3	11.8	38.6	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.1	0.0	115.7	31.0	17.0	37.3	11.8	38.6	6.6
Queue Length 50th (m)	3.7	0.0	~56.6	24.9	0.1	175.0	12.3	42.7	57.5
Queue Length 95th (m)	11.6	0.0	#105.1	#92.7	1.2	#262.4	28.9	67.0	50.7
Internal Link Dist (m)		64.1		207.0		124.1			383.7
Turn Bay Length (m)	15.0		55.0		20.0		35.0		65.0
Base Capacity (vph)	58	382	221	580	289	1727	769	496	2398
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.01	1.02	0.90	0.00	0.92	0.21	0.60	0.41

Intersection Summary

~ 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.

Lanes, Volumes, Timings
6: Landsdown Drive & Driveway A/Emery Lane

2035 Total AM
Gordonview, Guelph TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	13	0	7	4	0	15	3	17	5	16	18	4
Future Volume (vph)	13	0	7	4	0	15	3	17	5	16	18	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.951			0.892			0.974			0.987	
Fit Protected		0.969			0.990			0.994			0.980	
Satd. Flow (prot)	0	1751	0	0	1678	0	0	1839	0	0	1838	0
Fit Permitted		0.969			0.990			0.994			0.980	
Satd. Flow (perm)	0	1751	0	0	1678	0	0	1839	0	0	1838	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		53.4			60.3			56.9			90.1	
Travel Time (s)		3.8			4.3			4.1			6.5	
Confl. Peds. (#/hr)	1		9	9		1						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	14	0	8	4	0	16	3	18	5	17	20	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	22	0	0	20	0	0	26	0	0	41	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	17.9%					ICU Level of Service A						
Analysis Period (min)	15											

HCM 6th TWSC
6: Landsdown Drive & Driveway A/Emery Lane

2035 Total AM
Gordonview, Guelph TIS

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	0	7	4	0	15	3	17	5	16	18	4
Future Vol, veh/h	13	0	7	4	0	15	3	17	5	16	18	4
Conflicting Peds, #/hr	1	0	9	9	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	14	0	8	4	0	16	3	18	5	17	20	4
Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	92	85	31	96	85	22	24	0	0	23	0	0
Stage 1	56	56	-	27	27	-	-	-	-	-	-	-
Stage 2	36	29	-	69	58	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	897	809	1049	891	809	1061	1604	-	-	1605	-	-
Stage 1	961	852	-	996	877	-	-	-	-	-	-	-
Stage 2	985	875	-	946	851	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	874	798	1041	869	798	1060	1604	-	-	1605	-	-
Mov Cap-2 Maneuver	874	798	-	869	798	-	-	-	-	-	-	-
Stage 1	959	843	-	994	875	-	-	-	-	-	-	-
Stage 2	967	873	-	922	842	-	-	-	-	-	-	-
Approach	EB	WB	NB	SB								
HCM Control Delay, s	9	8.6	0.9	3.1								
HCM LOS	A	A										
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1604	-	-	926	1013	1605	-	-				
HCM Lane V/C Ratio	0.002	-	-	0.023	0.02	0.011	-	-				
HCM Control Delay (s)	7.2	0	-	9	8.6	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

Lanes, Volumes, Timings
7: Driveway B & Landsdown Drive

2035 Total AM
Gordonview, Guelph TIS

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↕	↕	
Traffic Volume (vph)	12	7	2	43	31	4
Future Volume (vph)	12	7	2	43	31	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.949				0.986	
Fit Protected	0.970			0.998		
Satd. Flow (prot)	1749	0	0	1896	1873	0
Fit Permitted	0.970			0.998		
Satd. Flow (perm)	1749	0	0	1896	1873	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	50.5			90.1	95.8	
Travel Time (s)	3.6			6.5	6.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	13	8	2	47	34	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	0	0	49	38	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.9%
ICU Level of Service A	
Analysis Period (min)	15

HCM 6th TWSC
7: Driveway B & Landsdown Drive

2035 Total AM
Gordonview, Guelph TIS

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↕	↕	
Traffic Vol, veh/h	12	7	2	43	31	4
Future Vol, veh/h	12	7	2	43	31	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
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	0	0	0
Mvmt Flow	13	8	2	47	34	4

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	87	36	38
Stage 1	36	-	-
Stage 2	51	-	-
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	919	1042	1585
Stage 1	992	-	-
Stage 2	977	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	918	1042	1585
Mov Cap-2 Maneuver	918	-	-
Stage 1	991	-	-
Stage 2	977	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	1585	-	960	-
HCM Lane V/C Ratio	0.001	-	0.022	-
HCM Control Delay (s)	7.3	0	8.8	-
HCM Lane LOS	A	A	A	-
HCM 95th %tile Q(veh)	0	-	0.1	-

Lanes, Volumes, Timings
1: Gordon Street & Harts Lane West/Harts Lane East

2035 Total PM
Gordonview, Guelph TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Volume (vph)	3	0	5	5	1	13	1	1344	18	14	1667	7
Future Volume (vph)	3	0	5	5	1	13	1	1344	18	14	1667	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0	0.0	0.0	30.0	0.0	25.0	0.0	25.0	0.0	0.0
Storage Lanes	0	0	0	0	0	1	0	1	0	1	0	0
Taper Length (m)	7.5		7.5			40.0		50.0				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.916			0.905			0.998			0.999	
Flt Protected		0.982			0.988		0.950		0.950			
Satd. Flow (prot)	0	1709	0	0	1699	0	1805	3533	0	1805	3536	0
Flt Permitted		0.982			0.988		0.950		0.950			
Satd. Flow (perm)	0	1709	0	0	1699	0	1805	3533	0	1805	3536	0
Link Speed (k/h)		50			50		60		60			
Link Distance (m)	115.1			115.5			121.4		133.8			
Travel Time (s)	8.3			8.3			7.3		8.0			
Confl. Peds. (#/hr)	2		2	2		2	40		3	3		40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	0%	0%
Adj. Flow (vph)	3	0	5	5	1	14	1	1461	20	15	1812	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	8	0	0	20	0	1	1481	0	15	1820	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	57.0%
ICU Level of Service	B
Analysis Period (min)	15

HCM 6th TWSC
1: Gordon Street & Harts Lane West/Harts Lane East

2035 Total PM
Gordonview, Guelph TIS

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	3	0	5	5	1	13	1	1344	18	14	1667	7
Future Vol, veh/h	3	0	5	5	1	13	1	1344	18	14	1667	7
Conflicting Peds, #/hr	2	0	2	2	0	2	40	0	3	3	0	40
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	30	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	2	0	0	2
Mvmt Flow	3	0	5	5	1	14	1	1461	20	15	1812	8

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	2621	3372	952	2414
Stage 1	1886	1886	-	1476
Stage 2	735	1486	-	938
Critical Hdwy	7.5	6.5	6.9	7.5
Critical Hdwy Stg 1	6.5	5.5	-	6.5
Critical Hdwy Stg 2	6.5	5.5	-	6.5
Follow-up Hdwy	3.5	4	3.3	3.5
Pot Cap-1 Maneuver	12	8	264	17
Stage 1	75	121	-	135
Stage 2	382	190	-	288
Platoon blocked, %				
Mov Cap-1 Maneuver	10	7	255	16
Mov Cap-2 Maneuver	10	7	-	16
Stage 1	72	113	-	134
Stage 2	363	189	-	272

Approach	EB	WB	NB	SB
HCM Control Delay, s	212.2	173.7	0	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	318	-	-	25	39	458	-
HCM Lane V/C Ratio	0.003	-	-	0.348	0.53	0.033	-
HCM Control Delay (s)	16.4	-	-	212.2	173.7	13.1	-
HCM Lane LOS	C	-	-	F	F	B	-
HCM 95th %tile Q(veh)	0	-	-	1.1	1.9	0.1	-

Lanes, Volumes, Timings
2: Gordon Street & Landsdown Drive

2035 Total PM
Gordonview, Guelph TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Volume (vph)	22	1	10	5	2	32	9	1297	4	33	1602	34
Future Volume (vph)	22	1	10	5	2	32	9	1297	4	33	1602	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0	0.0	0.0	20.0	0.0	20.0	0.0	30.0	0.0	0.0
Storage Lanes	0	0	0	0	0	1	0	1	0	1	0	0
Taper Length (m)	7.5			7.5			55.0			35.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.959			0.887						0.997	
Fit Protected		0.968			0.994		0.950			0.950		
Satd. Flow (prot)	0	1764	0	0	1675	0	1626	3505	0	1805	3530	0
Fit Permitted		0.968			0.994		0.950			0.950		
Satd. Flow (perm)	0	1764	0	0	1675	0	1626	3505	0	1805	3530	0
Link Speed (k/h)		50			50			60		60		
Link Distance (m)		82.5			89.0			349.9		121.4		
Travel Time (s)		5.9			6.4			21.0		7.3		
Confl. Peds. (#/hr)			8	8			40		3	3		40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	11%	3%	0%	0%	2%	0%
Adj. Flow (vph)	24	1	11	5	2	35	10	1410	4	36	1741	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	0	0	42	0	10	1414	0	36	1778	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6		3.6		
Link Offset(m)		0.0			0.0			0.0		0.0		
Crosswalk Width(m)		4.8			4.8			4.8		4.8		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free		Free		

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	60.6%
ICU Level of Service	B
Analysis Period (min)	15

HCM 6th TWSC
2: Gordon Street & Landsdown Drive

2035 Total PM
Gordonview, Guelph TIS

Intersection												
Int Delay, s/veh	21											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	22	1	10	5	2	32	9	1297	4	33	1602	34
Future Vol, veh/h	22	1	10	5	2	32	9	1297	4	33	1602	34
Conflicting Peds, #/hr	0	0	8	8	0	0	40	0	3	3	0	40
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	20	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	11	3	0	0	2	0
Mvmt Flow	24	1	11	5	2	35	10	1410	4	36	1741	37

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	2598	3309	937	2386
Stage 1	1872	1872	-	1435
Stage 2	726	1437	-	951
Critical Hdwy	7.5	6.5	6.9	7.5
Critical Hdwy Stg 1	6.5	5.5	-	6.5
Critical Hdwy Stg 2	6.5	5.5	-	6.5
Follow-up Hdwy	3.5	4	3.3	3.5
Pot Cap-1 Maneuver	~13	9	270	18
Stage 1	76	123	-	143
Stage 2	387	201	-	283
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	~8	8	259	14
Mov Cap-2 Maneuver	~8	8	-	14
Stage 1	71	110	-	138
Stage 2	336	193	-	247

Approach	EB	WB	NB	SB
HCM Control Delay, \$ 1700.6		184.2	0.1	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	288	-	-	11	54	486	-	-
HCM Lane V/C Ratio	0.034	-	-	3.261	0.785	0.074	-	-
HCM Control Delay (s)	17.9	-	-	\$ 1700.6	184.2	13	-	-
HCM Lane LOS	C	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	5.5	3.3	0.2	-	-

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

Lanes, Volumes, Timings
4: Gordon Street & Edinburgh Road South

2035 Total PM
Gordonview, Guelph TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕		↕	↕		↕	↕	
Traffic Volume (vph)	58	18	792	18	11	12	617	1204	29	16	1469	135
Future Volume (vph)	58	18	792	18	11	12	617	1204	29	16	1469	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0			0.0	65.0		0.0	15.0	0.0
Storage Lanes	1		1	0			0	1		0	1	0
Taper Length (m)	100.0			7.5				50.0			7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.96	0.95		0.96					0.99		0.99
Frt		0.850		0.961			0.996			0.987		
Fit Protected		0.963		0.978			0.950			0.950		
Satd. Flow (prot)	0	1621	1509	0	1748	0	1687	3305	0	1805	3312	0
Fit Permitted		0.752		0.821			0.074			0.204		
Satd. Flow (perm)	0	1210	1428	0	1443	0	131	3305	0	388	3312	0
Right Turn on Red		Yes		Yes			Yes		Yes		Yes	
Satd. Flow (RTOR)			27		13			5			10	
Link Speed (k/h)		50		50			60			60		
Link Distance (m)		207.4		93.9			407.7			349.9		
Travel Time (s)		14.9		6.8			24.5			21.0		
Conf. Peds. (#/hr)	36		25	25		36	35					35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	17%	0%	7%	0%	0%	0%	7%	9%	0%	0%	7%	5%
Adj. Flow (vph)	63	20	861	20	12	13	671	1309	32	17	1597	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	83	861	0	45	0	671	1341	0	17	1744	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0		0.0			3.6			3.6		
Link Offset(m)		0.0		0.0			0.0			0.0		
Crosswalk Width(m)		4.8		4.8			4.8			4.8		
Two way Left Turn Lane							Yes					
Headway 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
Turning Speed (k/h)	25		15	25			15	25		15	25	15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
4: Gordon Street & Edinburgh Road South

2035 Total PM
Gordonview, Guelph TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases		8	5		8		5	2		6		6
Permitted Phases	8		8	8			2			6		
Detector Phase	8	8	5	8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0		6.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0	9.0	27.0	27.0		9.0	38.0		38.0	38.0	
Total Split (s)	27.0	27.0	35.0	27.0	27.0		35.0	93.0		58.0	58.0	
Total Split (%)	22.5%	22.5%	29.2%	22.5%	22.5%		29.2%	77.5%		48.3%	48.3%	
Maximum Green (s)	21.0	21.0	32.0	21.0	21.0		32.0	87.0		52.0	52.0	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	0.0	2.0	2.0		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.0		6.0		3.0	6.0		6.0	6.0	
Lead/Lag			Lead				Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		18.0			18.0	18.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0			14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0			0	0	
Act Effct Green (s)		13.6	56.6		13.6		100.1	98.3		52.0	52.0	
Actuated g/C Ratio		0.11	0.47		0.11		0.83	0.82		0.43	0.43	
v/c Ratio		0.61	1.20		0.26		1.02	0.50		0.10	1.21	
Control Delay		68.2	133.6		39.1		61.0	0.7		22.3	133.3	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		68.2	133.6		39.1		61.0	0.7		22.3	133.3	
LOS		E	F		D		E	A		C	F	
Approach Delay		127.9			39.1		20.8			132.3		
Approach LOS		F			D		C			F		
Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	120											
Offset:	52 (43%), Referenced to phase 2:NBL and 6:SBTL, Start of Green											
Natural Cycle:	150											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.21											
Intersection Signal Delay:	83.4						Intersection LOS: F					
Intersection Capacity Utilization:	123.9%						ICU Level of Service H					
Analysis Period (min):	15											
Splits and Phases:	4: Gordon Street & Edinburgh Road South											

Queues
4: Gordon Street & Edinburgh Road South

2035 Total PM
Gordonview, Guelph TIS

	→	↘	←	↙	↑	↗	↓
Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	861	45	671	1341	17	1744
v/c Ratio	0.61	1.20	0.26	1.02	0.50	0.10	1.21
Control Delay	68.2	133.6	39.1	61.0	0.7	22.3	133.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.2	133.6	39.1	61.0	0.7	22.3	133.3
Queue Length 50th (m)	18.9	~246.4	6.9	~156.8	6.8	2.3	~264.5
Queue Length 95th (m)	33.8	#323.2	17.3 m#	180.7	m6.5	7.4	#307.5
Internal Link Dist (m)	183.4		69.9		383.7		325.9
Turn Bay Length (m)				65.0		15.0	
Base Capacity (vph)	211	716	263	655	2708	168	1440
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	1.20	0.17	1.02	0.50	0.10	1.21

Intersection Summary							
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.						
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.						
m	Volume for 95th percentile queue is metered by upstream signal.						

Lanes, Volumes, Timings
5: Gordon Street & Arkell Road

2035 Total PM
Gordonview, Guelph TIS

	↖	→	↘	↙	←	↗	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖		↖	↖		↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	21	3	12	186	6	391	13	1417	273	524	1702	13
Future Volume (vph)	21	3	12	186	6	391	13	1417	273	524	1702	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	55.0		0.0	20.0		35.0	65.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5		7.5			7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	0.98		0.99	0.94		1.00		0.97		1.00	
Fr		0.878			0.852				0.850		0.999	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1534	0	1597	1378	0	1671	3343	1468	1671	3371	0
Fit Permitted	0.192			0.747			0.119			0.073		
Satd. Flow (perm)	360	1534	0	1239	1378	0	209	3343	1430	128	3371	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			420				109			2
Link Speed (k/h)		50			50				60			60
Link Distance (m)		88.1			231.0				148.1			407.7
Travel Time (s)		6.3			16.6				8.9			24.5
Confl. Peds. (#/hr)	27		8	8		27	12		4	4		12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	8%	13%	0%	11%	8%	8%	10%	8%	7%	0%
Adj. Flow (vph)	23	3	13	202	7	425	14	1540	297	570	1850	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	16	0	202	432	0	14	1540	297	570	1864	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1		2
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings
5: Gordon Street & Arkell Road

2035 Total PM
Gordonview, Guelph TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4				8			2		1	6
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		45.0	45.0	45.0	8.0	45.0	
Total Split (s)	27.0	27.0		27.0	27.0		58.0	58.0	58.0	35.0	93.0	
Total Split (%)	22.5%	22.5%		22.5%	22.5%		48.3%	48.3%	48.3%	29.2%	77.5%	
Maximum Green (s)	21.0	21.0		21.0	21.0		52.0	52.0	52.0	32.0	87.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	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	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	3.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		25.0	25.0	25.0		25.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0		0	
Act Effct Green (s)	20.8	20.8		20.8	20.8		52.0	52.0	52.0	90.2	87.2	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.43	0.43	0.43	0.75	0.73	
v/c Ratio	0.37	0.06		0.94	0.74		0.16	1.06	0.44	1.12	0.76	
Control Delay	62.3	22.5		98.4	13.4		26.2	76.1	16.8	83.6	12.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	62.3	22.5		98.4	13.4		26.2	76.1	16.8	83.6	12.3	
LOS	E	C		F	B		C	E	B	F	B	
Approach Delay		46.0			40.5			66.2			29.0	
Approach LOS		D			D			E			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.12
 Intersection Signal Delay: 44.5
 Intersection LOS: D
 Intersection Capacity Utilization 108.5%
 ICU Level of Service G
 Analysis Period (min) 15

Splits and Phases: 5: Gordon Street & Arkell Road



Queues
5: Gordon Street & Arkell Road

2035 Total PM
Gordonview, Guelph TIS

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	23	16	202	432	14	1540	297	570	1864
v/c Ratio	0.37	0.06	0.94	0.74	0.16	1.06	0.44	1.12	0.76
Control Delay	62.3	22.5	98.4	13.4	26.2	76.1	16.8	83.6	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.3	22.5	98.4	13.4	26.2	76.1	16.8	83.6	12.3
Queue Length 50th (m)	4.8	0.6	47.4	2.4	2.0	~210.3	29.3	~138.1	195.7
Queue Length 95th (m)	13.9	6.8	#92.4	36.3	7.1	#252.8	52.7	m83.0	m112.3
Internal Link Dist (m)		64.1		207.0		124.1			383.7
Turn Bay Length (m)	15.0		55.0		20.0		35.0	65.0	
Base Capacity (vph)	63	279	216	587	90	1448	681	510	2450
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.06	0.94	0.74	0.16	1.06	0.44	1.12	0.76

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
6: Landsdown Drive & Driveway A/Emery Lane

2035 Total PM
Gordonview, Guelph TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	8	0	4	3	0	4	7	13	3	3	15	12
Future Volume (vph)	8	0	4	3	0	4	7	13	3	3	15	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.958			0.923			0.984			0.945	
Flt Protected		0.967			0.979			0.984			0.995	
Satd. Flow (prot)	0	1760	0	0	1717	0	0	1840	0	0	1787	0
Flt Permitted		0.967			0.979			0.984			0.995	
Satd. Flow (perm)	0	1760	0	0	1717	0	0	1840	0	0	1787	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		53.4			60.3			56.9			97.9	
Travel Time (s)		3.8			4.3			4.1			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	9	0	4	3	0	4	8	14	3	3	16	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	0	7	0	0	25	0	0	32	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
ICU Level of Service A	
Analysis Period (min)	15

HCM 6th TWSC
6: Landsdown Drive & Driveway A/Emery Lane

2035 Total PM
Gordonview, Guelph TIS

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	8	0	4	3	0	4	7	13	3	3	15	12
Future Vol, veh/h	8	0	4	3	0	4	7	13	3	3	15	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	9	0	4	3	0	4	8	14	3	3	16	13

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	63	62	23	63
Stage 1	29	29	-	32
Stage 2	34	33	-	31
Critical Hdwy	7.1	6.5	6.2	7.1
Critical Hdwy Stg 1	6.1	5.5	-	6.1
Critical Hdwy Stg 2	6.1	5.5	-	6.1
Follow-up Hdwy	3.5	4	3.3	3.5
Pot Cap-1 Maneuver	936	833	1060	936
Stage 1	993	875	-	990
Stage 2	987	872	-	991
Platoon blocked, %				
Mov Cap-1 Maneuver	928	827	1060	928
Mov Cap-2 Maneuver	928	827	-	928
Stage 1	988	873	-	985
Stage 2	978	868	-	985

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8		8.6	2.2
HCM LOS	A		A	0.7

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1597	-	-	968	1004	1613	-	-
HCM Lane V/C Ratio	0.005	-	-	0.013	0.008	0.002	-	-
HCM Control Delay (s)	7.3	0	-	8.8	8.6	7.2	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Lanes, Volumes, Timings
7: Driveway B & Landsdown Drive

2035 Total PM
Gordonview, Guelph TIS

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↕	↕	
Traffic Volume (vph)	8	4	6	19	26	11
Future Volume (vph)	8	4	6	19	26	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.958			0.959		
Fit Protected	0.967			0.988		
Satd. Flow (prot)	1760	0	0	1877	1822	0
Fit Permitted	0.967			0.988		
Satd. Flow (perm)	1760	0	0	1877	1822	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	52.0			97.9	88.1	
Travel Time (s)	3.7			7.0	6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	9	4	7	21	28	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	0	0	28	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.2%
ICU Level of Service A	
Analysis Period (min)	15

HCM 6th TWSC
7: Driveway B & Landsdown Drive

2035 Total PM
Gordonview, Guelph TIS

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↕	↕	
Traffic Vol, veh/h	8	4	6	19	26	11
Future Vol, veh/h	8	4	6	19	26	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
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	0	0	0
Mvmt Flow	9	4	7	21	28	12

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	69	34	40
Stage 1	34	-	-
Stage 2	35	-	-
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	941	1045	1583
Stage 1	994	-	-
Stage 2	993	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	937	1045	1583
Mov Cap-2 Maneuver	937	-	-
Stage 1	990	-	-
Stage 2	993	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	1.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	1583	-	970	-
HCM Lane V/C Ratio	0.004	-	0.013	-
HCM Control Delay (s)	7.3	0	8.8	-
HCM Lane LOS	A	A	A	-
HCM 95th %tile Q(veh)	0	-	0	-