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27 February 2024 Project: 230251

Trevor Hawkins MHBC 540 Bingemans Centre Drive Kitchener ON N2B 3X9

RE: 8075 HIGHWAY 7, GUELPH-ERAMOSA TRANSPORT ESTABLISHMENT – TRANSPORTATION IMPACT BRIEF

Paradigm Transportation Solutions Limited (Paradigm) has prepared this Transportation Impact Brief (TIB) for the proposed Transport Establishment located at 8075 Highway 7 in the Township of Guelph-Eramosa.

The subject property is located in the southwest quadrant of the intersection of Highway 7 and Wellington Road 29 (WR 29), 130 metres west of WR 29 and 120 metres south of Highway 7, as illustrated in the attached **Figure 1**.

The proposed Transport Establishment will provide a secure parking facility for trucks and trailers which will include trailers loaded with products as well as empty trailers. The purpose of parking trailers loaded with products is to provide a temporary but secure warehousing arrangement for clients until their final delivery.

The facility will have a single access on WR 29 and will have no direct access to Highway 7 and is expected to be operational in 2025.

The facility will have a usable area of 32.2 hectares and will operate 24 hours per day and seven days per week. As such, truck operations at the site are expected to involve low truck traffic volumes spread over a whole day without significant peaking.

Figure 2 (attached) illustrates the Concept Development Plan.

The proposed development is subject to the Ministry of Transportation Ontario (MTO) review and permit approvals. The MTO has indicated the requirement for a Transportation Impact Brief (TIB) to assess the impacts of the proposed facility.

This TIB has been prepared in consultation with MTO and includes estimates of development traffic generation; the analysis of intersection operations at Highway 7 and WR 29 under existing and future traffic conditions; as well as operational review of the proposed access on WR 29.

Existing traffic conditions correspond to the year 2024, and future traffic conditions are analysed for 2025 and 2030.

Appendix A includes pre-study correspondence with MTO.

Highway 7 & Wellington Road 29

The main roadways near the subject development considered in assessing the traffic impacts of the development are summarized below.

Highway 7 is a provincial highway with a two-lane cross section. The posted speed limit is 80 km/h, and the roadway is assumed to be oriented east-west.

Wellington Road (WR) 29 is a county road with a two-lane cross section. A rail line intersects the roadway 25 metres north of Highway 7. It is also noted that signage is posted on WR 29 south of Highway 7 stating that there is no exit for heavy truck traffic south of Highway 7. The posted speed limit is 80 km/h, and the roadway is assumed to be oriented north-south.

Traffic signals are provided at the intersection of Highway 7 and Wellington Road 29. The lane configuration and traffic control at the intersection are illustrated in **Figure 1**.

As shown in **Figure 1**, exclusive left-turn lanes are provided on all approaches, and an exclusive right-turn lane is provided on the westbound approach.

Trip Generation Estimates

Proxy Site

The trip generation estimates for the proposed facility are based on recent data from a proxy site, as the Institute of Transportation Engineers (ITE) Trip Generation Manual does not have land use information similar to the subject development.

The proxy site is located approximately 40 kilometres east of the subject site at 13726 Airport Road in Caledon. The proxy site has an area of 10.5 ha and operates as a truck and trailer parking facility 24 hours per day, seven days per week.

This proxy site was confirmed and deemed acceptable with the Ministry during pre-study consultation.

The data for the proxy site was obtained from the Traffic Brief for 12541 and 12577 Airport Road¹. The data were collected on 13-14 August 2020 during the morning (7:00 am - 9:00 am) and afternoon (4:00 pm - 6:00 pm) peak periods of the adjacent roadway volumes.

¹ Prepared by Nextrans Consulting Engineers, "Proposed Transport Truck / Trailer Parking Facility, 12541 & 12577 Airport Road, Town of Caledon Traffic Brief", 18 March 2022.



The proxy site traffic AM and PM peak hours are noted to occur from 7:45 AM to 8:45 AM, and from 4:00 PM to 5:00 PM.

Table 1 summarizes the derivation of trip generation rates for the proxy site.

As shown in **Table 1**, observed peak hour traffic volumes include both passenger cars and trucks, and the truck traffic volumes are expressed as Passenger Car Equivalent (PCE) volumes, using a conversion factor of 2^2 .

TABLE 1: PROXY SITE TRIP GENERATION

Site Location	Land		AM Pea	ak Hour	7	PM Peak Hour					
Site Location	Area	In	Out	Total	Rate	In	Out	Total	Rate		
13726 Airport Road, Caledon		5	2	7	0.67	6	с С	0	0.76		
(Passenger Cars)	10.50 ha	5	2	1	0.07	0	2	0	0.70		
13726 Airport Road, Caledon	10.50 ha	0	1		0.38	6	16	22	2.10		
(Trucks x2 in PCEs)	CEs)		4	4	0.30	0	10	22	2.10		
Total Trip Generation (PC	5	6	11	1.05	12	18	30	2.86			

The AM/PM peak hour trip generation rates of 1.05 and 2.86 (PCEs) were applied to the proposed truck and trailer parking facility in Guelph-Eramosa.

Table 2 summarizes the forecast number of net new trips generated by the proposed facility, with truck trips shown in PCE volumes.

TABLE 2:TRIP GENERATION

Trip Generation	Land Area		AM Pea	ak Hour	•	PM Peak Hour					
The Generation	Lanu Area	Rate	In	Out	Total	Rate	In	Out	Total		
Passenger Cars	32.22 ha	0.67	16	6	22	0.76	18	6	24		
Trucks x2 in PCEs	32.22 ha	0.38	0	12	12	2.10	19	49	68		
Total Trip Generat	16	18	34		37	55	92				

Trip Distribution

The trip distribution was determined based on existing distribution at the intersection of Highway 7 and WR 29 and the expected routing of vehicle trips. It is noted that the likely route for vehicles to/from the site will be through Highway 7. **Table 3** displays the breakdown of trip distributions used in this study.



² Canadian Capacity Guide, February 2008.

TABLE 3: SITE TRIP DISTRIBUTION

Distribution	Percentage
East via Highway 7	60%
West via Highway 7	40%
Total	100%

Figure 3 (attached) illustrates the AM and PM peak hour site-generated traffic volumes.

Traffic Operational Analysis

Base Year Traffic Conditions

MTO provided the turning movement count at the intersection of Highway 7 and WR 29, which was collected by the Ministry on 11 August 2022. The volumes were grown to a base year 2024 by applying a 2.0% per annum growth rate.

Figure 4 (attached) illustrates the base year (2024) AM (7:45 - 8:45) and PM (4:30 - 5:30) peak hour turning movements at the intersection of Highway 7 and WR 29.

Appendix B contains the detailed turning movement count and signal timing plan.

The level of service conditions at the intersection of Highway 7 and WR 29 have been assessed through intersection operational analysis using Synchro 11. The analysis has been completed in accordance with the requirements detailed by the MTO Traffic Impact Study (TIS) Guidelines³ and the Wellington County TIS Guidelines⁴.

Table 4 summarizes the results of the 2024 base year traffic operations. The results indicate that the study area intersections are operating at acceptable levels of service and with no problem movements during the AM and PM peak hours.

Appendix C contains the supporting detailed Synchro 11 reports.

⁴ Wellington County, *Road Action Master Plan* Appendix G: Traffic Impact Study Guidelines, 29 October 2021.



³ MTO, General Guidelines for Preparation of Traffic Impact Studies, February 2021.

TABLE 4: BASE YEAR (2024) TRAFFIC OPERATIONS

σ									[Directi	on/Mo	oveme	nt/App	oroac	h					
Period					Eastb	ound			West	ound			Northl	oound	ł	;	South	bound	1	
Analysis P	Intersection	Control Type	MOE	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Overall
AM Peak Hour	Wellington Road 29 & Highway 7	TCS	LOS Delay V/C Q Stor. Avail.	B 11 0.06 0 75 75	B 11 0.62 4 -	~ ~ ~ ~ ~ ~	B 11	B 14 0.10 0 55 55	A 9 0.45 2 -	A 7 0.05 0 55 55	A 9	B 18 0.24 1 75 74	B 16 0.38 1 -	~ ~ ~ ~ ~ ~	B 16	B 16 0.04 0 50 50	B 15 0.40 0 -	v v v v v	B 15	B 12
PM Peak Hour	Wellington Road 29 & Highway 7	TCS	LOS Delay V/C Q Stor. Avail.	B 18 0.12 2 75 73	B 17 0.77 7 -	~ ~ ~ ~ ~ ~	B 17	C 24 0.15 2 55 53	B 14 0.56 2 -	A 10 0.05 0 55 55	B 14	C 25 0.51 10 75 65	B 20 0.54 8 -	~ ~ ~ ~ ~ ~	C 22	C 24 0.17 3 50 47	B 18 0.35 4 -	v v v v v	B 19	B 18

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

h Percentile Queue Length (m) </> - Shared with through movement

Background Traffic Conditions

Similar to the base year traffic volumes, a growth rate of 2.0% per annum was applied to the existing roadway traffic volumes to estimate the 2025 and 2030 background traffic volumes. This growth rate was confirmed with the Ministry and the County during the pre-study consultation. It is noted that no other area developments were identified to be included in the estimation of background traffic volumes.

Figure 5 (attached) and **Figure 6 (attached)** respectively illustrate the 2025 and 2030 background traffic volumes.

The 2025 and 2030 background traffic volumes have been analyzed using the same methodology as under base year traffic conditions. Signal timings have not been optimized.

Table 5 summarizes the results of the 2025 and 2030 background traffic operations. The results indicate that the study area intersections are forecast to operate at acceptable levels of service and with no problem movements during the AM and PM peak hours.

Appendix D contains the supporting detailed Synchro 11 reports.



TABLE 5: 2025 AND 2030 BACKGROUND TRAFFIC OPERATIONS

77									[Directi	on/Mo	oveme	nt/Apr	oroact	h					
eriod					Eastb	ound			West	oound			North	oound	1		South	bound	I	
Analysis Period	Intersection	Control Type	MOE	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Overall
					202	25 Bac	ckgrou	nd Tr	affic C	onditi	ons									
ur.			LOS	В	В	٨	В	В	Α	Α	Α	В	В	>	В	В	В	٧	В	В
AM Peak Hour			Delay	11	11	>	11	14	9	7	10	18	16	>	16	16	15	>	15	12
ak	Wellington Road 29 &	TCS	V/C	0.06	0.64	>		0.11	0.46	0.05		0.25	0.39	>		0.04	0.41	>		
Pe	Highway 7	100	Q	0	4	>		0	2	0		1	1	>		0	0	>		
M			Stor.	75	-	>		55	-	55		75	-	>		50	-	>		
·			Avail.	75	-	>		55	-	55		74	-	>		50	-	>		
Ľ,			LOS	В	В	>	В	С	В	А	В	С	С	>	С	С	В	>	В	B
Но		Vellington Road 29 & TCS Highway 7	Delay	19	17	>	18	26	14	10	14	26	20	>	22	25	18	>	20	18
ak	Wellington Road 29 & Highway 7		V/C	0.12	0.78	>		0.16	0.56	0.05		0.52	0.55	>		0.17	0.36	>		
P	rigilway /		Q Stor.	2 75	8	>		3 55	3	0 55		12 75	10	>		3 50	5	>		
Md			Avail.	75 73	-	>		50 52	-	ວວ 55		75 63	-	>		50 47	-	> >		
			Avaii.	75	- 203	- 30 Bad	karou	1	- affic C	onditi	ons	05		-		47		-		
<u>.</u>			LOS	В	B	>	B	В	A	A	B	В	В	>	В	В	В	>	В	В
AM Peak Hour			Delay	12	12	>	12	16	10	7	10	19	16	>	17	17	16	>	16	13
¥ H	Wellington Road 29 &	TCS	V/C	0.07	0.69	>		0.13	0.50	0.05		0.28	0.41	>		0.04	0.43	>		
bea	Highway 7	ics	Q	0	4	>		0	2	0		1	1	>		0	1	>		
N.			Stor.	75	-	>		55	-	55		75	-	>		50	-	>		
A			Avail.	75	-	>		55	-	55		74	-	>		50	-	>		
5			LOS	С	С	^	С	С	В	В	В	С	С	>	С	С	С	٧	С	С
면			Delay	23	22	>	22	32	16	11	16	31	24	>	27	30	21	>	23	22
ak	Wellington Road 29 & TCS	V/C	0.14	0.82	>		0.21	0.59	0.06		0.60	0.58	>		0.21	0.38	>			
Pe	Highway 7		Q	3	19	>		5	6	0		24	25	>		6	14	>		
PM Peak Hour			Stor.	75	-	>		55	-	55		75	-	>		50	-	>		
	Maggura of Effectivenes		Avail.	72	-	>	roontilu	50	-	55		51	-	>	throug	44	-	>		

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)

</> - Shared with through movement

TCS - Traffic Control Signal

Total Traffic Conditions

Figure 7 (attached) and Figure 8 (attached) respectively illustrate the 2025 and 2030 total traffic volumes.

The 2025 and 2030 total traffic volumes have been analyzed using the same methodology as under existing and background traffic conditions. Signal timings have not been optimized.

Table 6 summarizes the results of the 2025 and 2030 total traffic operations. The results indicate that the intersection of WR 29 and Highway 7, and WR 29 and the Site Driveway are forecast to operate at acceptable levels of service during the AM and PM peak hours.

Appendix E contains the supporting detailed Synchro 11 reports.



TABLE 6: 2025 AND 2030 TOTAL TRAFFIC OPERATIONS

g												oveme								
eric					Eastb	ound			West	oound			Northk	ound		:	South	bound	1	
Analysis Period	Intersection	Control Type	MOE	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Overall
						202	5 Tota	l Trafi	fic Col	ndition	s									
AM Peak Hour	Wellington Road 29 & Highway 7	TCS	LOS Delay V/C Q Stor. Avail.	B 11 0.06 0 75 75	B 11 0.65 4 -	~ ~ ~ ~ ~ ~	B 11	B 15 0.14 0 55 55	A 9 0.46 2 - -	A 7 0.05 0 55 55	A 10	B 18 0.27 1 75 74	B 16 0.42 1 - -	> > > > > > > > > > > > > > > > > > > >	B 16	B 17 0.04 0 50 50	B 15 0.40 0 - -	~ ~ ~ ~ ~ ~	B 15	B 12
AM	Wellington Road 29 & Site Driveway	TWSC	LOS Delay V/C Q	B 12 0.04 1		~ ^ ^ ^	B 12					~ ~ ~ ~	A 0 0.00 0		A 0		A 0 0.00 0	^ ^ ^ ^	A 0	
PM Peak Hour	Wellington Road 29 & Highway 7	TCS	LOS Delay V/C Q Stor. Avail.	C 20 0.12 2 75 73	B 19 0.78 9 -	v v v v v	B 19	C 30 0.27 7 55 48	B 15 0.55 2 -	B 11 0.05 0 55 55	B 16	C 29 0.58 20 75 55	C 23 0.60 21 -	~ ~ ~ ~ ~ ~	C 25	C 29 0.19 5 50 45	C 20 0.35 10 -	~ ~ ~ ~ ~ ~	C 22	C 20
PMF	Wellington Road 29 & Site Driveway	TWSC	LOS Delay V/C Q	C 18 0.18 4		> > > > 203	C 18	l Traff	fic Cou	ndition	95	V V V V	A 0 0.00 0		A 0		A 0 0.00 0	> > > >	A 0	
			LOS	В	В	>	B	В	A	A	B	В	В	>	В	В	В	>	В	В
AM Peak Hour	Wellington Road 29 & Highway 7	TCS	Delay V/C Q Stor. Avail.	12 0.07 0 75 75	12 0.69 4 -	~ ^ ^ ^ ^	12	17 0.16 1 55 54	10 0.49 2 -	7 0.05 0 55 55	10	20 0.30 1 75 74	17 0.43 1 -	·	18	18 0.05 0 50 50	16 0.42 1 -	~ ^ ^ ^ ^	16	13
AME	Wellington Road 29 & Site Driveway	TWSC	LOS Delay V/C Q	B 13 0.04 1		~ ~ ~ ~	B 13					~ ~ ~ ~	A 0 0.00 0		A 0		A 0 0.00 0	~ ~ ~ ~	A 0	
PM Peak Hour	Wellington Road 29 & Highway 7	TCS	LOS Delay V/C Q Stor. Avail.	C 24 0.14 4 75 71	C 25 0.83 44 -	~ ~ ~ ~ ~ ~	C 25	D 38 0.34 11 55 44	B 17 0.58 18 - -	B 12 0.06 1 55 54	B 19	D 37 0.67 38 75 37	C 27 0.63 40 - -	> > > > > > > > > > > > > > > > > > >	C 31	C 35 0.23 8 50 42	C 23 0.37 20 -	~ ~ ~ ~ ~ ~	C 26	C 25
	Wellington Road 29 & Site Driveway	TWSC	LOS Delay V/C Q	С		~ ~ ~ ~	C 20					v v v v	A 0 0.00 0		A 0		A 0 0.00 0	~ ~ ~ ~	A 0	
LOS - Level of Service Stor.						- Existi - Avai	ng Sto lable :	e Queu orage (Storag	(m) e (m)	gth (m)		C - Two Share	-			l vement	t		

V/C - Volume to Capacity Ratio

TCS - Traffic Control Signal

Queue Analysis

In addition to the Synchro 11 analysis, queue length analyses for through and left-turn lanes were carried out at all movements of the Highway 7 and WR 29 intersection.

This method was completed using the MTO Traffic Signal Operating and Timing Policy⁵ Table 1 under Level of Service (LOS) A conditions and assuming a vehicle length of 7.5 metres.

In addition, queue length analysis for the westbound right-turn lane was carried out at the above intersection. This was completed using the methodology outlined in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads⁶. The right-turn queue length is calculated by multiplying the average number of vehicles stored per cycle by 2 for roadways with design speeds greater than 60 km/h.

These methods require the conversion of volumes to Passenger Car Equivalents (PCE) by multiplying the number of heavy vehicles by a conversion factor of 2⁷. It is noted that the truck trips generated by the development were also converted to PCEs, and therefore this analysis conservatively accounts for the site traffic.

Table 7a and **Table 7b** summarize the results of the queue length analysis under base year, background, and total traffic conditions. The results indicate that the northbound left-turn movement is forecast to operate with queues exceeding the existing storage of 75 metres under 2030 total traffic volumes during the PM peak hour.

It is noted that the projected queue lengths on Highway 7, for eastbound and westbound leftturns and for westbound right-turns under all traffic conditions, are within the available storage lengths.



⁵ Traffic Signal Operating and Timing Policy 2010-02, Ministry of Transportation Ontario, June 2016.

⁶ Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads, 2017.

⁷ Canadian Capacity Guide, February 2008.

TABLE 7A: THROUGH AND LEFT-TURN QUEUE ANALYSIS – HIGHWAY 7 AND
WELLINGTON ROAD 29

		# of	Cycle Le	ength (s)	Volum	es (vph)		Calc'd Length	Available			
Horizon	Lane	Lanes	AM	PM	AM	PM	m _u max	per Lane (m)	Length			
	EBL	1			27	40	1.1	22.5	75			
	EBTR	1			469	614	17.4	180.0	-			
	WBL	1			37	33	1.0	22.5	55			
2024	WBT	1	400	400	352	457	12.9	142.5	-			
Base Year	NBL	1	102	102	78	179	5.1	67.5	75			
	NBTR	1			144	282	8.0	97.5	-			
	SBL	1			12	46	1.3	22.5	50			
	SBTR	1			151	189	5.4	67.5	-			
	EBL	1			27	41	1.2	22.5	75			
	EBTR	1			478	626	17.7	187.5	-			
	WBL	1			38	34	1.1	22.5	55			
2025	WBT	1	102	102	359	467	13.2	142.5	-			
Background	NBL	1	102	102	80	183	5.2	67.5	75			
	NBTR	1			147	288	8.2	97.5	-			
	SBL	1			12	47	1.3	22.5	50			
	SBTR	1			154	194	5.5	75.0	-			
	EBL	1			27	41	1.2	22.5	75			
	EBTR	1			484	641	18.2	187.5	-			
	WBL	1			49	56	1.6	30.0	55			
2025 Total	WBT	1	102	102	359	467	13.2	142.5	-			
2025 10181	NBL	1	102		87	205	5.8	75.0	75			
	NBTR	1						159	321	9.1	105.0	-
	SBL	1			12	47	1.3	22.5	50			
	SBTR	1			154	194	5.5	75.0	-			
	EBL	1			31	45	1.3	22.5	75			
	EBTR	1			528	691	19.6	202.5	-			
	WBL	1			41	37	1.2	22.5	55			
2030	WBT	1	102	102	396	515	14.6	157.5	-			
Background	NBL	1	102	102	87	201	5.7	75.0	75			
	NBTR	1			163	318	9.0	105.0	-			
	SBL	1			14	52	1.5	30.0	50			
	SBTR	1			170	214	6.1	75.0	-			
	EBL	1			31	45	1.3	22.5	75			
	EBTR	1			534	706	20.0	210.0	-			
	WBL	1			52	59	1.7	30.0	55			
2030 Total	WBT	1	102	102	396	515	14.6	157.5	-			
	NBL	1	-	-	95	223	6.3	82.5	75*			
	NBTR	1			175	351	9.9	112.5	-			
	SBL	1			14	52	1.5	30.0	50			
	SBTR	1			170	214	6.1	75.0	-			

* Storage extends beyond length of solid line.



TABLE 7B:RIGHT-TURN QUEUE ANALYSIS – HIGHWAY 7 AND
WELLINGTON ROAD 29

Horizon	Maxamant	Cycle Le	ength (s)	Right Tur	n Volume	Average	e Arrival	Calc'd Le	ength (m)	Existing
Horizon	Movement	AM	PM	AM	PM	AM	PM	AM	PM	Storage
2024 Base Year	WBR	102	102	31	37	0.9	1	13.5	15.0	55
2025 Background	WBR	102	102	32	38	0.9	1.1	13.5	16.5	55
2025 Total	WBR	102	102	35	42	1	1.2	15.0	18.0	55
2030 Background	WBR	102	102	35	42	1	1.2	15.0	18.0	55
2030 Total	WBR	102	102	35	42	1	1.2	15.0	18.0	55

Sight Distance Assessment

Available sight distances for the proposed access point on WR 29 were measured using Google Maps and are compared with sight distance requirements identified in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads⁸ (GDGCR).

Stopping and Decision Sight Distance requirements were reviewed for a vehicular speed of 90 km/h, 10 km/h higher than the posted speed limit of 80 km/h.

Table 8 summarizes the sight distance measurements and requirements at the accessintersection on WR 29.

The left-turn from stop decision sight distance from the Site Driveway to WR 29, and the stopping sight distance for the northbound approach on WR 29 at the Site Driveway exceed the corresponding TAC requirements.

TABLE 8: SITE DRIVEWAY SIGHT DISTANCE ASSESSMENT

	Road		Decision Sigh	t Distance (m)		Stoppin	ng Sight
Intersection		Left-	ft-Turn Right-Turn		-Turn	Distan	ice (m)
	Speed	Required	Measured	Required	Measured	Required	Measured
Wellington Road 29 and Site Driveway	90 km/h	190	195	145	300+	160	165

Highway 7 and WR 29 Intersection

As required by MTO, an AutoTURN assessment has been completed for the intersection of Highway 7 and WR 29 using WB-20.5 as the design vehicle.

The assessment was carried out for the following turning movements:

- northbound left-turn;
- northbound right-turn;

⁸ Transportation Association of Canada, Geometric Design Guide for Canadian Roads, June 2017.



- westbound left-turn; and
- eastbound right-turn.

Appendix F contains the AutoTURN drawings.

The drawings indicate that the WB-20.5 design vehicle can make all of the above turns without encroaching into opposing traffic lanes. However, corner encroachments are noted given the existing curb locations and pavement widths.

Conclusions

Based on the analyses as outlined in this Brief, the existing intersection at Highway 7 and Wellington Road 29 is projected to operate with acceptable levels of service under future background and total traffic conditions. The proposed Site Driveway on Wellington Road 29 is also forecast to operate at acceptable levels of service under 2025 and 2030 total traffic conditions.

The left-turn from stop from the Site Driveway on Wellington Road 29 and the stopping sight distance from Wellington Road 29 approaching the Site Driveway satisfy sight distance requirements at 90 km/h, which is 10 km/h higher than the posted speed limit of 80 km/h.

We trust that this Letter Brief satisfies the requirement for assessing the traffic impacts of the proposed Transport Establishment at 8075 Highway 7, Guelph-Eramosa.

Please do not hesitate to contact us if you need additional information or input on this matter.

Yours very truly,

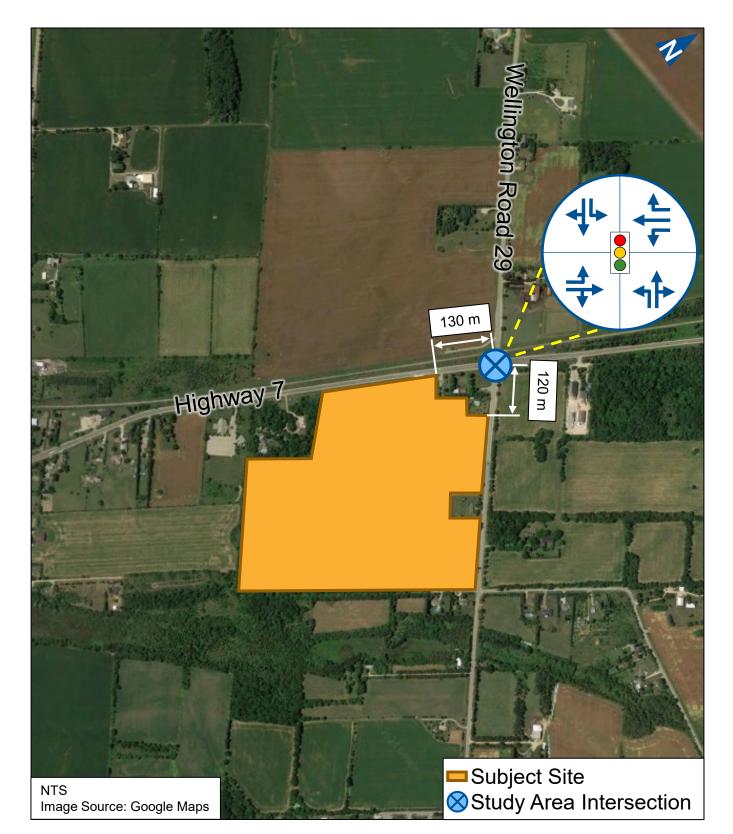
PARADIGM TRANSPORTATION SOLUTIONS LIMITED

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



Attachments

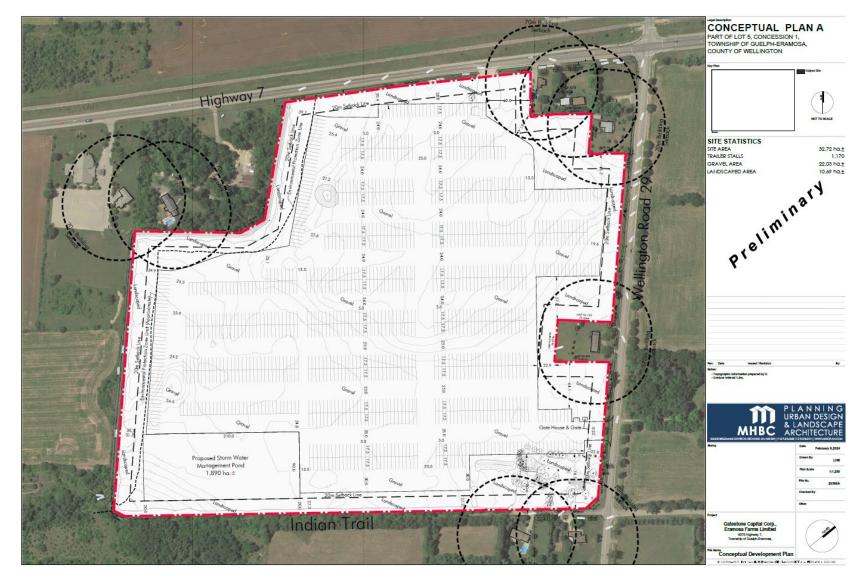






Location of Subject Site

8075 Highway 7, Guelph-Eramosa TIB 230251

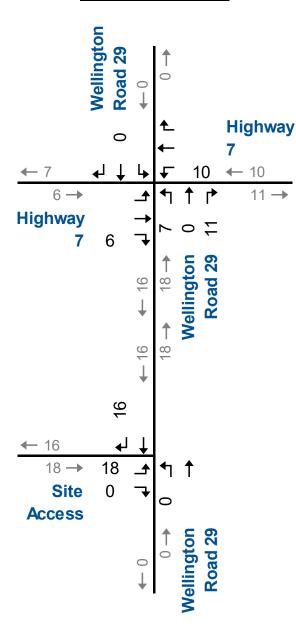




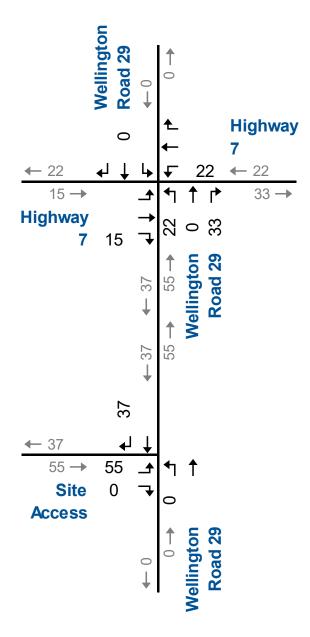
Concept Development Plan

8075 Highway 7, Guelph-Eramosa TIB 230251





PM Peak Hour

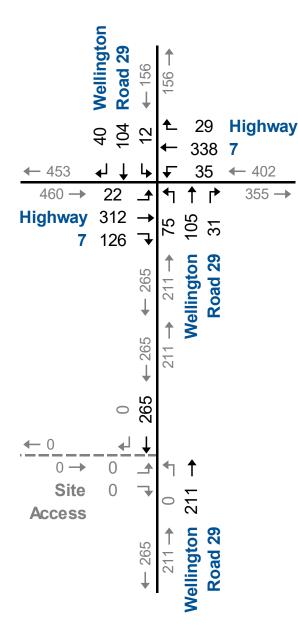




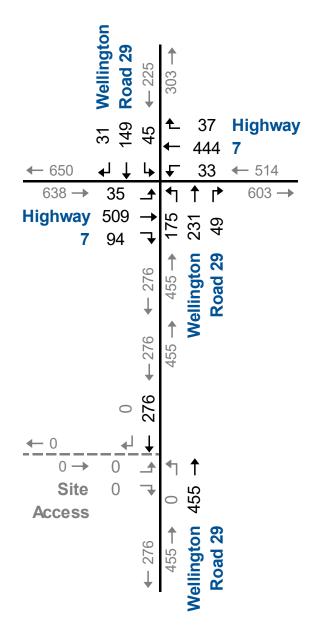
Site Generated Traffic Volumes

8075 Highway 7, Guelph-Eramosa TIB 230251





PM Peak Hour

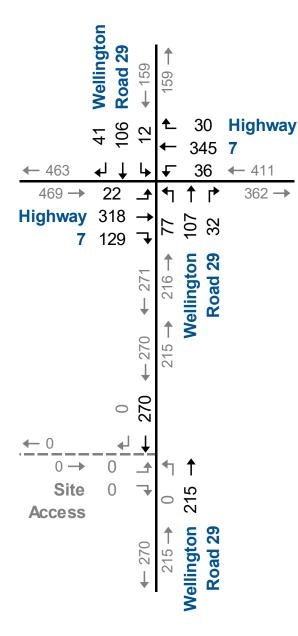




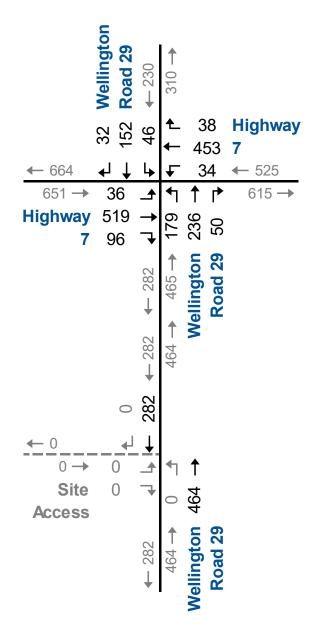
Base Year (2024) Traffic Volumes

8075 Highway 7, Guelph-Eramosa TIB 230251





PM Peak Hour

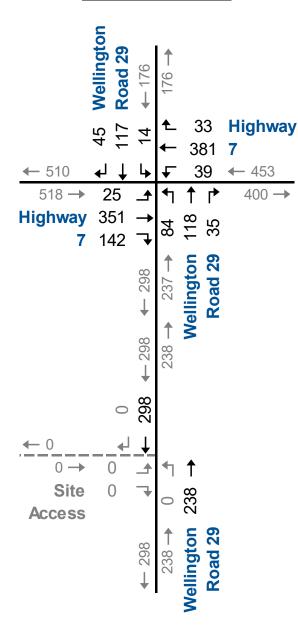




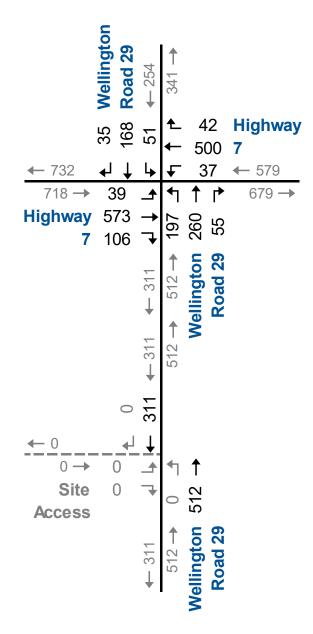
2025 Background Traffic Volumes

8075 Highway 7, Guelph-Eramosa TIB 230251





PM Peak Hour

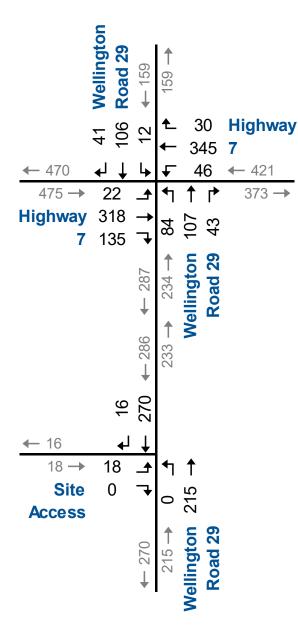




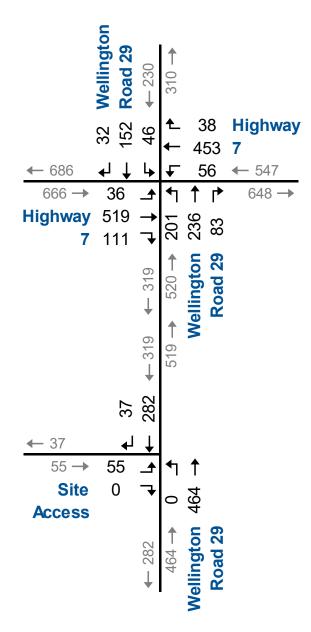
2030 Background Traffic Volumes

8075 Highway 7, Guelph-Eramosa TIB 230251





PM Peak Hour

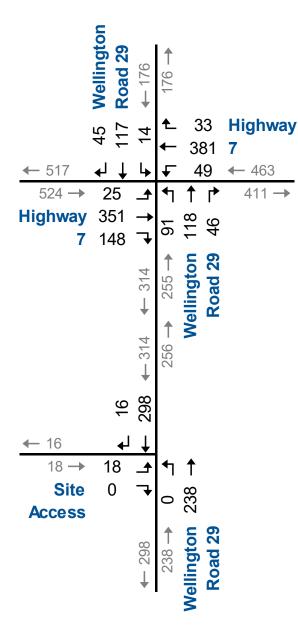




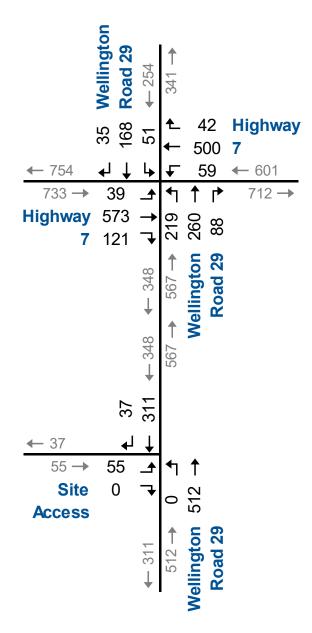
2025 Total Traffic Volumes

8075 Highway 7, Guelph-Eramosa TIB 230251





PM Peak Hour





2030 Total Traffic Volumes

8075 Highway 7, Guelph-Eramosa TIB 230251

Appendix A

Pre-Study Consultation



From:	Hodgins, Allan (MTO)
То:	Richard Parent
Cc:	Trevor Hawkins; Rajan Philips; Patrick Neal
Subject:	RE: (230251) 8075 Highway 7, Guelph-Eramosa TIB - Pre-Study Consultation
Date:	February 7, 2024 1:43:58 PM
Attachments:	image001.png
	image002.png
	image004.png
	<u>image005.png</u>
	<u>image003.png</u>
	Traffic-Brief-Caledon12.07.2021.pdf

Hi Richard,

MTO Traffic staff have review the information provided below and offer the following comments:

- MTO will not require the analysis to include Saturday operations, however please provide a statement in the TIB, similar to below with respect to the weekend (24/7) operation.
- MTO have reviewed the proxy site proposed and find it acceptable to include in this analysis.

Please let me know if there is anything else I can be of assistance with, in advance of submitting the TIB for MTO review.

Regards,

Allan Hodgins | Corridor Management Planner

The Ministry of Transportation of Ontario West Operations Branch | Corridor Management Section, West Ph. (226) 973-8580 | Fax (519) 873-4228 E-mail: <u>allan.hodgins@ontario.ca</u>

From: Richard Parent <RParent@abarchitect.ca>
Sent: February 1, 2024 8:51 AM
To: Hodgins, Allan (MTO) <Allan.Hodgins@ontario.ca>; Pegelo, Jessica (MTO)
<Jessica.Pegelo@ontario.ca>
Cc: Trevor Hawkins <thawkins@mhbcplan.com>; rphilips@ptsl.com; Patrick Neal <pneal@ptsl.com>
Subject: FW: (230251) 8075 Highway 7, Guelph-Eramosa TIB - Pre-Study Consultation

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Good morning Allan and Jessica.

Our transportation consultant is nearly completed the TIB. We note in your email below of Jan 4/24 the issue of Saturday operations and a proxy site. We would like to provide the following for your consideration:

Saturday Operations

This unique type of development operates 24 hours a day, 7 days a week. Since the trailer parking lot is accessible to clients anytime, they will to drop off/pick up their trailers based on their needs. There is not an AM, PM nor Saturday peak hour. There are no staff at the proposed site. The only traffic coming to/from the site are trailers being picked up or dropped off to the parking lot, based on the need from the customer. The trips generated by this type of development are very low, and very sporadic.

Here are the draft trip generation rates:

Subject Site: 8075 Highway 7, Guelph-Eramosa

Trip Generation	Land Area			AM Pea	ak Hour	•	PM Peak Hour					
mp Generation			Rate	In	Out	Total	Rate	In	Out	Total		
Passenger Cars	32.22	ba	0.67	16	6	22	0.76	18	6	24		
Trucks x2 in PCEs	32.22	ha	0.38	0	12	12	2.10	19	49	68		
Total Trip Generation				16	18	34		37	55	92		

We would opin that a Saturday assessment is not required, and request your consideration in this matter.

<u>Proxy Site</u>

Since this type of business need is very new, there are not many proxy sites to select from. We did find a proxy site located 50 kms easterly in Caledon. We have attached the TIS submitted in support of the development application as our proposed proxy site. The proposed operation is very similar to the proxy site in that customers are free to drop off or pick up their trailers based on their need, not on peak hour demand that you may find in a typical trucking operation where trucks leave in the Am peak hour, and return in the PM peak hour.

We respectfully request acceptance of the proposed proxy site.

Please do not hesitate to call me if you have any questions.

Richard 5197495013

Richard Parent Strategic Operations Officer

T 519.884.2711 x 231 101 Randall Drive, Unit B Waterloo, ON N2V 1C5 architecture | site planning | interiors www.abarchitect.ca COPYRIGHT NOTICE Copyright of this electronic document belongs to ABA Architects Inc. This electronic document may not be forwarded to others, transmitted, downloaded or reproduced in any format, whether print or electronic, without the express, written consent of the copyright owner. DISCLAIMER Use of this electronic document is at the User's own risk. The User shall indemnify and save harmless ABA Architects Inc, its Employees, agents and consultants from and against all claims, losses, demands, costs and expenses (including legal fees), damages or recoveries (including any amounts paid in settlement) arising by reason of, caused, or alleged to be caused, by the User's reliance on this electronic document.

From: Hodgins, Allan (MTO) <<u>Allan.Hodgins@ontario.ca</u>>
Sent: Thursday, January 4, 2024 4:17 PM
To: Patrick Neal <<u>pneal@ptsl.com</u>>; Pasquale Costanzo <<u>pasqualec@wellington.ca</u>>
Cc: Rajan Philips <<u>rphilips@ptsl.com</u>>; <u>thawkins@mhbcplan.com</u>
Subject: RE: (230251) 8075 Highway 7, Guelph-Eramosa TIB - Pre-Study Consultation

Hello Patrick,

MTO has review the pre-study scope of work and have the following comments:

- The TIB is to be prepared by a RAQS qualified consultant and follow our TIS policy/guidelines (attached).
- If the operation will be opened on Saturdays, the TIB should provide an analysis that includes Saturday as well as weekday AM and PM peak.
 - Since it is a not typical site, the TIB can provide justification if they are open Saturdays but feel it is not required.
- Attached are MTO counts from 2022, should you wish to collect new data it shall be completed by a RAQS approved company.
- Signal timings attached.
- 2% GR is acceptable
- Per the TIS guidelines/policy, proxy sites need to be discussed and approved by MTO in advance of the preparation of the TIS/TIB.
 - Please reach out to myself for MTO availability to schedule a follow discussion
- Any sightlines reviewed should include measurable sightlines and compared to TAC.
- Horizon years can include full build out/opening day and 5 years.
- Queuing analysis will be required.
- In addition to consideration of heavy/commercial vehicles as part of the capacity analysis, for developments in which truck trip generation and their effects in the study area are relevant, the following information shall be included as part of the TIB (from our guidelines):
 - Existing conditions related to truck traffic
 - Relationship between land use and truck traffic
 - Physical requirements
- Auto-turn for Highway 7 and Wellington Rd 29 intersection demonstrating that a WB 20.5 can make the turns should be included in the TIB.

Our Corridor Office has had some staffing resulting in area of responsibilities being shifted, please note Jessica Pegelo is no longer involved with planning related files within Wellington County.

Please reach out to myself for MTO availability to schedule a follow discussion should you or your require.

Regards,

Allan Hodgins | Corridor Management Planner

The Ministry of Transportation of Ontario West Operations Branch | Corridor Management Section, West Ph. (226) 973-8580 | Fax (519) 873-4228 E-mail: <u>allan.hodgins@ontario.ca</u>

From:	Kooistra, Tim
To:	Patrick Neal
Cc:	Philippe Campbell; Pegelo, Jessica, MTO; Rajan Philips; thawkins@mhbcplan.com
Subject:	Re: FW: (230251) 8075 Highway 7, Guelph-Eramosa TIB - Pre-Study Consultation
Date:	November 17, 2023 1:28:17 PM
Attachments:	image001.png
	image003.png

Good afternoon Patrick,

As you may be aware, Dillon Consulting Limited has been retained by the County of Wellington to review the proposed scope of work for transportation impact studies that may impact the County road network and associated intersections. As a result, this response is being provided on behalf of the County of Wellington for your consideration.

The scope you have identified is generally acceptable from the County's perspective. However, it's important to note that the following needs to be considered in the study:

- Any background developments that need to be explicitly considered in the study will need to be identified and confirmed by staff at Guelph Eramosa Township. Please ensure that you reach out to Planning staff to confirm this matter.
- Given the Highway 7 and Wellington Road 29 intersection is under the jurisdiction of the MTO, the MTO will need to provide you with the relevant signal timings for this study area intersection.

In the future, if a concept plan of the relevant proposed development is available to share, it would be appreciated if this drawing could be attached to your terms of reference.

Lastly, Wellington County has a Traffic Impact Study Guidelines document. This document can be found here: <u>https://www.wellington.ca/en/resident-</u><u>services/resources/Roads/RMAP/RMAPFinal/Appendix-G---Traffic-Impact-Study-Guidelines-2021Updated.pdf</u>

Thanks and have a great weekend!

Tim



On Thu, Nov 16, 2023 at 10:56 AM Pasquale Costanzo casqualec@wellington.ca wrote:

Hi Phil,

Could you look after this request with Tim at Dillon.

Thank you

Pasquale Costanzo, C.E.T., CMMII Infrastructure Specialist

Technical Services Supervisor

County of Wellington, Roads Division

T 519.837.2601 x 2250

E pasqualec@wellington.ca

From: Patrick Neal <pneal@ptsl.com>
Sent: Thursday, November 16, 2023 10:22 AM
To: Pegelo, Jessica (MTO) <Jessica.Pegelo@ontario.ca>; Pasquale Costanzo
<pasqualec@wellington.ca>
Cc: Rajan Philips <rphilips@ptsl.com>; thawkins@mhbcplan.com
Subject: (230251) 8075 Highway 7, Guelph-Eramosa TIB - Pre-Study Consultation

CAUTION: This email originated from outside the organization. Do not click links or open attachments unless you know the contents to be safe.

Hi Jessica and Pasquale,

We have been retained to complete the Transportation Impact Brief (TIB) for the development of a Transport Establishment for accommodating a truck depot and truck trailers, located at 8075 Highway 7 in Guelph-Eramosa, Wellington County.

The subject property is located at the southwest corner of the intersection of Highway 7 and Wellington Road 29. The proposed Transport Establishment will provide for trucks and trailers to be parked on site, along with a small office and gate house for the entrance.

The proposed development will provide for secure parking of empty and loaded

tractor trailers of different client companies. The facility will have a single access on Wellington Road 29, and will have no direct access to Highway 7. Truck operations at the site are expected to involve low truck traffic volumes spread over a whole day without significant peaking.

The Ministry of Transportation Ontario (MTO) has indicated that *the TIB should provide information outlining traffic generation and distribution to the site.*

We have prepared the following scope of work for the TIB for review/approval:

- Weekday AM and PM peak hours of analysis
- Study Area Intersections:
 - Highway 7 and Wellington Road 29 (signalized);
 - Access intersection on Wellington Road 29.
- We will collect new counts at Highway 7 and Wellington Road 29.

- Horizon Years (as required by MTO): (1) anticipated year of completion, (2) five years after completion, and (3) ten years after completion.

- Background Growth: 2.0% compounded per annum, **please confirm**.
- Background Developments: **Please confirm** and provide corresponding site statistics or TIS.

- Trip Generation: Peak Hour and Daily trip generation will be estimated based on information from the client and data from proxy facilities that might be available with the client.

- Trip Distribution: Existing traffic patterns on Highway 7.

- The geometry, sightlines, auxiliary lanes, and traffic control will be reviewed at (1) Highway 7 and Wellington Road 29 and (2) access intersection on Wellington Road 29.

- Signal timing information will be required if Synchro and queueing analyses are required.

Please let us know if you have any questions or comments.

Regards,

Patrick Neal, EIT

Transportation Consultant

ParadigmEmailLogo

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Paradigm Transportation Solutions Limited

5A-150 Pinebush Road, Cambridge ON N1R 8J8

p: 416.479.9684 x510

m: 416.688.7338

e: pneal@ptsl.com

w: <u>www.ptsl.com</u>

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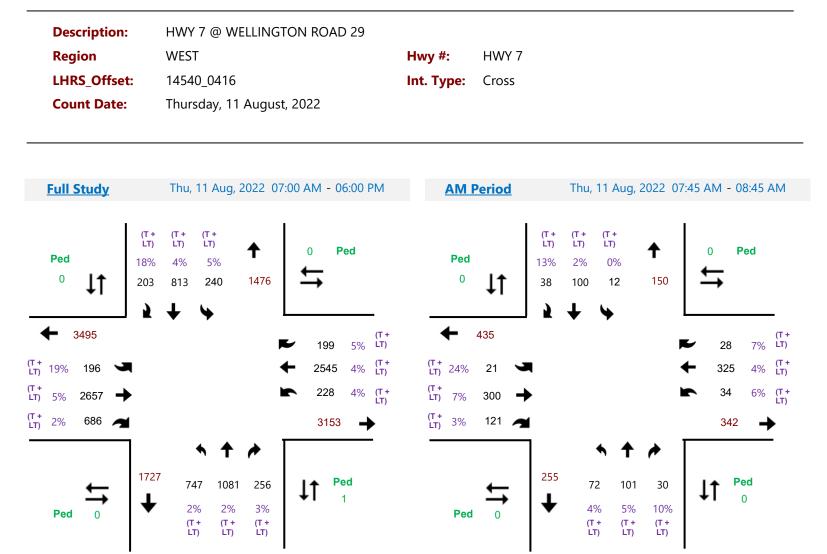
Appendix B

Existing Traffic Data





TES - Traffic Engineering System Turning Movement Total Count and Peak Summary Report





TES - Traffic Engineering System Turning Movement Total Count and Peak Summary Report

Description: Region LHRS_Offset: Count Date:	HWY 7 @ WELLINGTON ROAD 29 WEST 14540_0416 Thursday, 11 August, 2022	Hwy #: HWY 7 Int. Type: Cross	
MD Period	Thu, 11 Aug, 2022 11:45 AM - 12:45 PM	PM Period	Thu, 11 Aug, 2022 04:30 PM - 05:30 PM
Ped 21% 0 ↓↑ 24	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Ped (T+ LT) 0 ↓↑ 30 30	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
← 369	► 25 4% LT)	← 625	► 36 0% ^{(T +} LT)
(T + LT) 5% 21 ◀ (T + LT) 8% 299 ➡	 ← 293 6% ^{(T+}_{LT)} ▶ 24 4% (T+ 	$({}^{T+}_{LT})$ 15% 34 $({}^{T+}_{LT})$ 2% 489 \rightarrow	 427 3% ^{(T+} LT) 32 0% (<u>T</u>+
(T) 8% 299 → (T+ (T) 4% 57 ~	► 24 4% (T + LT) 354 ►	(T_{T}) 2% 489 \rightarrow (T_{T}) 1% 90 \checkmark	► 32 0% (T + LT) 579 ►
$\underset{\mathbf{Ped}}{\underbrace{\longleftrightarrow}} 0 \overset{172}{\underbrace{\bullet}}$	 ↑ ↑ 52 114 24 2% 2% 8% (T + (T + (T + LT) LT) ↓↑ Ped 0 	$\underset{\mathbf{Ped}}{\underbrace{\longleftrightarrow}} 0 \overset{265}{}$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$

INTERSECTION: R1NL Hwy 7 @ Wellington Rd 29 (Eden Mills) Page 1 (of 8 Last Database Change: 9/9/2019 5:41:52 PN Group Assignment: NONE N/S Street Name: Not Assigned Field Master Assignment: NONE E/W Street Name: Not Assigned System Reference Number: 140 Change Record Notes: Change By Date Change By Date Manual Plan 0 = Automatic 1-9 = Plan 1-9 14 = Free 15 = Flash Manual Offset 0 = Automatic 1 = Offset A 2 = Offset B <C/0+0+0> Drop Number 1 3 = Offset C Zone Number <C/0+0+1> 1 Area Number 1 <C/0+0+2> Exclusive Walk 0 <F/1+0+0> Area Address 124 <C/0+0+3> Manual Plan <C/0+A+1> Red Revert Exclusive FDW 0 <F/1+0+1> 5.0 All Red Start QuicNet Channel :8017:10.151.192 (QuicNet) Manual Offset <C/0+B+1> 5.0 <F/1+C+0> All Red Clear 0.0 <F/1+0+2> **Communication Addresses** Manual Selection Start / Revert Times **Exclusive Ped Phase** (Outputs specified in Assignable Outputs at E/127+A+E & F) Phase Е Column Numbers ----> 1 2 3 4 5 6 7 8 9 Α в С D F. Row Phase Names ----> Row 0 Ped Walk 0 0 RR-1 Delay 0 Permit 23 6 8 0 0 0 0 0 0 0 - - -- - -- - -- - -- - -1 Ped FDW 1 0 0 0 0 0 0 0 0 Phase 1 0 0 0 0 0.0 RR-1 Clear 0 Red Lock 2 2 Min Green 0 20 10 0 0 20 0 10 Phase 2 34 0 0 0 0.0 EV-A Delav 0 Yellow Lock 3 Type 3 Disconnect EV-A Clear Min Recall 3 0 0 0 0 0 0 0 0 Phase 3 0 0 0 0 0.0 0 2 6 4 4 Added per Vehicle 0.0 0.0 0.0 1.9 0.0 0.0 EV-B Delay 0 Ped Recall 1.9 0.0 0.0 Phase 4 0 0 0 0 5 4.0 0.0 0.0 3.0 EV-B Clear 0 5 Veh Extension 0.0 1.0 0.0 4.0 Phase 5 0 0 0 0 0.0 View Set Peds 6 6 Max Gap 0.0 4.0 1.0 0.0 0.0 4.0 0.0 3.0 Phase 6 34 0 0 0 0.0 EV-C Delav 0 Rest In Walk 7 7 Min Gap 0.0 4.0 1.0 0.0 0.0 4.0 0.0 3.0 Phase 7 0 0 0 0 0.0 EV-C Clear 0 Red Rest 8 8 Max Limit 0 50 35 0 50 0 35 0 0 0 0.0 EV-D Delay 0 Dual Entry 23 6 8 0 Phase 8 0 9 9 Max Limit 2 0 0 EV-D Clear 0 Max Recall 0 0 0 0 0 0 Α Adv. / Delay Walk Soft Recall Α 0 0 0 0 0 0 0 Max Initial RR-2 Delay 0 0 В Alternate Walk в Sequence To 0 0 0 0 0 0 0 0 RR-2 Clear 14 Max 2 С Cond Serv Check Alternate FDW View EV Delay С 0 0 0 0 0 0 0 0 - - -Cond. Service D D Reduce Every 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Alternate Initial View EV Clear - - -Man Cntrl Calls Ε Ε 0.0 5.9 5.9 5.9 5.9 View RR Delav Yellow Start Yellow Change 5.9 0.0 0.0 Alternate Extension - - -2 6 F First Phases F Red Clear 0.0 2.0 1.1 0.0 0.0 2.0 1.1 1.1 View RR Clear - - -3 8 <C+0+F=1> Preempt Timing

Alternate Timing <C+0+F=1>

Phase Functions <C+0+F=1>

Appendix C

Base Year Traffic Operational Reports



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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations	<u></u>	4	400	<u></u>	1	1	<u> </u>	4		្តា	4	
Traffic Volume (vph)	22	312	126	35	338	29	75	105	31	12	104	4(
Future Volume (vph)	22	312	126	35	338	29	75	105	31	12	104	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	75.0		0.0	55.0		55.0	75.0		0.0	50.0		0.0
Storage Lanes	1		0	1		1	1		0	1		(
Taper Length (m)	100.0	1.00	4.00	100.0	4.00	4.00	100.0	4.00	1.00	100.0	1.00	
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	0.050	0.957		0.050		0.850	0.050	0.966		0.050	0.959	
Flt Protected	0.950	1710		0.950	4007	1500	0.950	(300	<u>^</u>	0.950	1705	
Satd. Flow (prot)	1456	1718	0	1703	1827	1509	1736	1729	0	1805	1735	(
Flt Permitted	0.543	4740	6	0.483	4007	4500	0.658	4700	6	0.663	4705	
Satd. Flow (perm)	832	1718	0	866	1827	1509	1202	1729	0	1260	1735	(
Right Turn on Red			Yes			Yes		10	Yes			Ye
Satd. Flow (RTOR)		29				43		16			20	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		360.1			209.0			510.2			193.6	
Travel Time (s)		16.2			9.4			23.0			8.7	0.01
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 (%)	24%	7%	3%	6%	4%	7%	4%	5%	10%	0%	2%	13%
Adj. Flow (vph)	24	339	137	38	367	32	82	114	34	13	113	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	476	0	38	367	32	82	148	0	13	156	(
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	•	2		•	6	•	•	8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	2	2		6	6	6	8	8		4	4	
Switch Phase							10.0	10.0		40.0	10.0	
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	27.9	27.9		27.9	27.9	27.9	22.5	22.5		22.5	22.5	
Total Split (s)	60.0	60.0		60.0	60.0	60.0	42.0	42.0		42.0	42.0	
Total Split (%)	58.8%	58.8%		58.8%	58.8%	58.8%	41.2%	41.2%		41.2%	41.2%	
Maximum Green (s)	52.1	52.1		52.1	52.1	52.1	35.0	35.0		35.0	35.0	
Yellow Time (s)	5.9	5.9		5.9	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.1	1.1		1.1	1.1	
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)	7.9	7.9		7.9	7.9	7.9	7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?						1.0						
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	3.0	3.0		1.0	1.0	
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	
Act Effct Green (s)	24.7	24.7		24.7	24.7	24.7	11.2	11.2		11.2	11.2	
Actuated g/C Ratio	0.56	0.56		0.56	0.56	0.56	0.26	0.26		0.26	0.26	
v/c Ratio	0.05	0.49		0.08	0.36	0.04	0.27	0.33		0.04	0.34	
Control Delay	8.0	10.8		8.2	9.7	2.6	18.4	16.7		15.4	16.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	8.0	10.8		8.2	9.7	2.6	18.4	16.7		15.4	16.5	
LOS	A	В		A	A	A	В	В		В	В	
Approach Delay		10.6			9.1			17.3			16.4	

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Synchro 11 Report Page 1

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Approach LOS		В			А			В			В	
Queue Length 50th (m)	1.1	25.4		1.7	19.3	0.0	5.7	9.2		0.9	9.5	
Queue Length 95th (m)	4.5	54.7		6.2	40.6	2.8	16.9	24.5		4.5	25.2	
Internal Link Dist (m)		336.1			185.0			486.2			169.6	
Turn Bay Length (m)	75.0			55.0		55.0	75.0			50.0		
Base Capacity (vph)	823	1700		856	1807	1493	949	1369		995	1374	
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	0.03	0.28		0.04	0.20	0.02	0.09	0.11		0.01	0.11	
Intersection Summary												
Area Type:	Other											
Cycle Length: 102												
Actuated Cycle Length: 43	3.8											
Natural Cycle: 55												
Control Type: Semi Act-U	ncoord											
Maximum v/c Ratio: 0.49												
Intersection Signal Delay:					tersectior							
Intersection Capacity Utiliz	ation 64.0%			IC	U Level of	of Service	С					

Splits and Phases: 1: Wellington Road 29 & Highway 7

	₽_@4	
60 s	42 s	
∲ ø6	<∎ ¶ø8	
60 s	42 s	

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Synchro 11 Report Page 2

HCM 6th Signalized Intersection Summary
1: Wellington Road 29 & Highway 7

Base Year (2024) AM Peak Hour (230251) 8075 Highway 7, Guelph-Eramosa TIB

	۶	-	\mathbf{i}	∢	←	×	1	Ť	1	1	Ŧ	~
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ľ	¢Î		ľ	1	1	ľ	4Î		ľ	¢Î	
Traffic Volume (veh/h)	22	312	126	35	338	29	75	105	31	12	104	40
Future Volume (veh/h)	22	312	126	35	338	29	75	105	31	12	104	40
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	1544	1796	1856	1811	1841	1796	1841	1826	1752	1900	1870	1707
Adj Flow Rate, veh/h	24	339	137	38	367	32	82	114	34	13	113	43
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
Percent Heavy Veh, %	24	7	3	6	4	7	4	5	10	0	2	13
Cap, veh/h	411	543	219	367	821	679	338	299	89	349	286	109
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	814	1216	492	889	1841	1522	1211	1351	403	1259	1291	491
Grp Volume(v), veh/h	24	0	476	38	367	32	82	0	148	13	0	156
Grp Sat Flow(s), veh/h/ln	814	0	1708	889	1841	1522	1211	0	1753	1259	0	1782
Q Serve(q s), s	0.9	0.0	9.6	1.5	6.2	0.5	2.8	0.0	3.2	0.4	0.0	3.3
Cycle Q Clear(q c), s	7.1	0.0	9.6	11.1	6.2	0.5	6.1	0.0	3.2	3.6	0.0	3.3
Prop In Lane	1.00		0.29	1.00		1.00	1.00		0.23	1.00		0.28
Lane Grp Cap(c), veh/h	411	0	762	367	821	679	338	0	388	349	0	395
V/C Ratio(X)	0.06	0.00	0.62	0.10	0.45	0.05	0.24	0.00	0.38	0.04	0.00	0.40
Avail Cap(c a), veh/h	994	0	1985	1004	2139	1769	1016	0	1369	1053	0	1391
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.1	0.0	9.5	13.8	8.6	7.0	17.5	0.0	14.8	16.4	0.0	14.9
Incr Delay (d2), s/veh	0.1	0.0	1.2	0.2	0.5	0.0	0.4	0.0	0.6	0.0	0.0	0.2
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(95%),veh/ln	0.0	0.0	0.5	0.0	0.2	0.0	0.1	0.0	0.1	0.0	0.0	0.0
Unsig. Movement Delay, s/veh		0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.1	0.0	0.0	0.0
LnGrp Delay(d),s/veh	11.1	0.0	10.7	14.0	9.1	7.1	17.9	0.0	15.5	16.4	0.0	15.1
LnGrp LOS	B	A	B	B	A	A	B	A	B	B	A	B
Approach Vol, veh/h		500			437			230			169	
Approach Delay, s/veh		10.8			9.4			16.3			15.2	
Approach LOS		10.0 B			3.4 A			10.5 B			13.2 B	
					~	•					D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		27.9		16.9		27.9		16.9				
Change Period (Y+Rc), s		7.9		*7		7.9		*7				
Max Green Setting (Gmax), s		52.1		* 35		52.1		* 35				
Max Q Clear Time (g_c+I1), s		11.6		5.6		13.1		8.1				
Green Ext Time (p_c), s		6.4		0.4		4.9		1.4				
Intersection Summary												
HCM 6th Ctrl Delay			11.8									
HCM 6th LOS			В									
Notes												

Notes
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations	<u></u>	4	~ 1	<u></u>	↑		<u> </u>	<mark>با</mark>	10	្តា	4	•
Traffic Volume (vph)	35	509	94	33	444	37	175	231	49	45	149	3
Future Volume (vph)	35	509	94	33	444	37	175	231	49	45	149	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
Storage Length (m)	75.0		0.0	55.0		55.0	75.0		0.0	50.0		0.0
Storage Lanes	1		0	1		1	1		0	1		(
Taper Length (m)	100.0	1.00	4.00	100.0	4.00	4.00	100.0	1.00	4.00	100.0	1.00	
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	0.050	0.977		0.050		0.850	0.050	0.974		0.050	0.974	
Flt Protected	0.950	4000		0.950	10.15	1015	0.950	1005		0.950	1755	
Satd. Flow (prot)	1570	1823	0	1805	1845	1615	1770	1835	0	1770	1755	(
Flt Permitted	0.424	4000	6	0.271	1015	4045	0.634	4005	6	0.501	4755	
Satd. Flow (perm)	701	1823	0	515	1845	1615	1181	1835	0	933	1755	(
Right Turn on Red		10	Yes			Yes			Yes			Ye
Satd. Flow (RTOR)		13				43		11			11	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		360.1			209.0			510.2			193.6	
Travel Time (s)		16.2			9.4			23.0			8.7	
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 (%)	15%	2%	1%	0%	3%	0%	2%	1%	0%	2%	3%	17%
Adj. Flow (vph)	38	553	102	36	483	40	190	251	53	49	162	34
Shared Lane Traffic (%)	00	055	0	00	400	10	400	004	•	40	100	
Lane Group Flow (vph)	38	655	0	36	483	40	190	304	0	49	196	(
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	2	2		6	6	0	0	8		4	4	
Permitted Phases Detector Phase	2	2		6 6	6	6 6	8 8	8		4	4	
	2	2		0	0	0	8	8		4	4	
Switch Phase	00.0	00.0		00.0	00.0	00.0	10.0	10.0		40.0	10.0	
Minimum Initial (s)	20.0 27.9	20.0 27.9		20.0 27.9	20.0 27.9	20.0 27.9	10.0 22.5	22.5		10.0 22.5	22.5	
Minimum Split (s)	60.0	27.9 60.0		60.0	60.0	60.0	42.0	42.0		42.0	42.0	
Total Split (s)	58.8%	58.8%		58.8%	58.8%	58.8%	42.0	42.0		42.0	41.2%	
Total Split (%)	50.0%	50.0%		50.0%	52.1	52.1	41.2% 35.0	41.2% 35.0		35.0	41.2% 35.0	
Maximum Green (s) Yellow Time (s)	5.9	5.9		52.1	5.9	5.9	5.9	5.9		5.9	5.9	
	2.0	5.9 2.0		5.9 2.0	2.0	5.9 2.0	5.9 1.1	5.9 1.1			5.9 1.1	
All-Red Time (s) Lost Time Adjust (s)	2.0	2.0		2.0	2.0	2.0	0.0	0.0		1.1 0.0	0.0	
Total Lost Time (s)	7.9	7.9		7.9	7.9	7.9	7.0	7.0		7.0	7.0	
Lead/Lag	7.9	7.9		7.9	7.9	7.9	7.0	7.0		7.0	7.0	
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	3.0	3.0		1.0	1.0	
Recall Mode	4.0 Min	Min		4.0 Min	4.0 Min	4.0 Min	None	None		None	None	
Act Effct Green (s)	30.7	30.7		30.7	30.7	30.7	17.6	17.6		17.6	17.6	
Actuated g/C Ratio	0.48	0.48		0.48	0.48	0.48	0.27	0.27		0.27	0.27	
v/c Ratio	0.46	0.46		0.40	0.40	0.46	0.27	0.27		0.27	0.27	
Control Delay	11.3	20.0		12.2	15.0	3.6	30.5	26.3		22.5	22.2	
Queue Delay	0.0	20.0		0.0	0.0	0.0	30.5 0.0	20.3		22.5	0.0	
	11.3	20.0		12.2	15.0	3.6	30.5	26.3		22.5	22.2	
Total Delay LOS	11.3 B	20.0 C		12.2 B	15.0 B	3.0 A	30.5 C	26.3 C		22.5 C	22.2 C	
Approach Delay	В	19.5		В	в 14.0	A	U	27.9		U U	22.3	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	S
Approach LOS		В			В			С			С	
Queue Length 50th (m)	2.3	55.7		2.2	36.6	0.0	18.4	28.3		4.2	16.8	
Queue Length 95th (m)	9.1	129.2		9.1	85.0	4.7	52.4	72.7		16.0	46.7	
Internal Link Dist (m)		336.1			185.0			486.2			169.6	
Turn Bay Length (m)	75.0			55.0		55.0	75.0			50.0		
Base Capacity (vph)	583	1518		428	1534	1350	691	1079		546	1032	
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	0.07	0.43		0.08	0.31	0.03	0.27	0.28		0.09	0.19	
Intersection Summary												
Area Type:	Other											
Cycle Length: 102												
Actuated Cycle Length: 64	.3											
Natural Cycle: 60												
Control Type: Semi Act-Ur	ncoord											
Maximum v/c Ratio: 0.75												
Intersection Signal Delay:				In	tersectior	n LOS: C						
Intersection Capacity Utiliz	ation 74.2%			IC	U Level	of Service	D					

Splits and Phases: 1: Wellington Road 29 & Highway 7

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60 s	42 s
₹ Ø6	≜ 1 Ø8
60 s	42 s

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Brade State Brade State State <thstate< th=""></thstate<>		⊁	-	\mathbf{i}	1	-	•	1	t	1	1	Ļ	4
Lane Configurations Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	Movement	FBI	FBT	FBR	WBI	WBT	WBR	NBI	NBT	NBR	SBI	SBT	SBI
Traffic Volume (veh/h) 35 509 94 33 444 37 175 231 49 45 149 Tuture Volume (veh/h) 35 509 94 33 444 37 175 231 49 45 149 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 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 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 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 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 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00				2011								-	0.0
Future Volume (veh/h) 35 509 94 33 444 37 175 231 49 45 149 Initial Q(b), 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 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				94						49			3
Initial Q (Qb), 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 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0													3
Ped-Bike Adj(A_pbT) 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 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 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 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 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 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 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.01 1.00 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01												0	Ū
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 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 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 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 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 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 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 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0		-	v		-	v			· ·	-	-	v	1.0
Work Zone On Ápproach No No No No No No Adj Sat Flow, veh/hiln 1678 1870 1885 1900 1870 1885 1900 1870 1885 1900 1870 1885 1900 1870 1885 1900 1870 1885 1900 1870 1885 1900 1870 1885 1900 1870 1885 1900 1870 1885 1900 1870 1885 1900 1870 1885 1900 201 0.2 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.9			1.00			1.00			1.00			1.00	1.0
Adj Sat Flow, veh/h/in 1678 1870 1885 1900 1870 1885 1900 1870 1885 1900 1870 1885 1900 1870 1885 1900 1870 1885 1900 1870 1885 1900 1870 1856 1900 1870 1856 162 Percent Heavy Veh, % 15 2 1 0 3 0 2 1 0 3 0.2 1 0.2 33 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>No</td><td></td></td<>												No	
Adj Flow Rate, veh/h 38 553 102 36 483 40 190 251 53 49 162 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 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92		1678		1885	1900	1856	1900	1870		1900	1870		164
Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92													3
Percent Heavy Veh, % 15 2 1 0 3 0 2 1 0 2 3 Cap, veh/h 329 717 132 241 866 751 374 464 98 291 457 Arrive On Green 0.47 0.47 0.47 0.47 0.47 0.47 0.31 0.31 0.31 0.31 0.31 Sat How, veh/h 789 1536 223 790 1856 1610 1187 1509 319 1075 1487 Grp Volume(v), veh/h 38 0 655 36 483 40 190 0 304 49 0 Grp Sat How, she/h/lin 789 0 1819 790 1856 1610 1187 0 1828 1075 0 Q serve(g_s), s 2.4 0.0 19.8 2.6 12.4 0.9 9.8 0.0 9.1 2.6 0.0 Q serve(g_s), s 2.4 0.0 19.8 22.4 12.4 0.9 15.3 0.0 9.1 11.7 0.0 Prop In Lane 1.00 0.16 1.00 1.00 1.00 0.17 1.00 Lane Grp Cap(c), veh/h 329 0 849 241 866 751 374 0 562 291 0 V/C Ratio(X) 0.12 0.00 0.77 0.15 0.56 0.05 0.51 0.00 0.54 0.17 0.00 Avail Cap(c_a), veh/h 584 0 1437 496 1466 1272 639 0 970 531 0 HCM Platoon Ratio 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0													0.9
Cap, veh/h 329 717 132 241 866 751 374 464 98 291 457 Arrive On Green 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47												3	1
Arrive On Green 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31												457	9
Sat Flow, veh/h 789 1536 283 790 1856 1610 1187 1509 319 1075 1487 Grp Volume(v), veh/h 38 0 655 36 483 40 190 0 304 49 0 Grp Sat Flow(s), veh/h/ln 789 0 1819 790 1856 1610 1187 0 1828 1075 0 Q Serve(g, s), s 2.4 0.0 19.8 2.6 12.4 0.9 9.8 0.9.1 11.7 0.0 Cycle Q Clear(g, c), s 14.8 0.0 19.8 2.2.4 12.4 0.9 15.3 0.0 9.1 11.7 0.0 Cycle Q Clear(g, c), veh/h 329 0 849 241 866 751 374 0 562 291 0 0 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 1.00 1					0.47					0.31			0.3
Grp Sat Flow(s), veh/h/ln 789 0 1819 790 1856 1610 1187 0 1828 1075 0 Q Serve(g.s), s 2.4 0.0 19.8 2.6 12.4 0.9 9.8 0.0 9.1 2.6 0.0 Cycle Q Clear(g_c), s 14.8 0.0 19.8 22.4 12.4 0.9 15.3 0.0 9.1 11.7 0.0 Cycle Q Clear(g_c), s 14.8 0.0 19.8 22.4 12.4 0.9 15.3 0.0 9.1 11.7 0.0 Lane Grp Cap(c), veh/h 329 0 849 241 866 751 374 0 562 291 0 Avail Cap(c_a), veh/h 584 0 1437 496 1466 1272 639 0 970 531 0 HOM Platon 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 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00	Sat Flow, veh/h	789	1536	283	790	1856	1610	1187	1509	319	1075	1487	31
Grp Sat Flow(s), veh/h/ln 789 0 1819 790 1856 1610 1187 0 1828 1075 0 Q Serve(g.s), s 2.4 0.0 19.8 2.6 12.4 0.9 9.8 0.0 9.1 2.6 0.0 Cycle Q Clear(g_c), s 14.8 0.0 19.8 22.4 12.4 0.9 15.3 0.0 9.1 11.7 0.0 Cycle Q Clear(g_c), s 14.8 0.0 19.8 22.4 12.4 0.9 15.3 0.0 9.1 11.7 0.0 Lane Grp Cap(c), veh/h 329 0 849 241 866 751 374 0 562 291 0 Avail Cap(c_a), veh/h 584 0 1437 496 1466 1272 639 0 970 531 0 HOM Platon 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 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00	,								0			0	19
Q Šerve(g_s), s 2.4 0.0 19.8 2.6 12.4 0.9 9.8 0.0 9.1 2.6 0.0 Cycle Q Clear(g_c), s 14.8 0.0 19.8 22.4 12.4 0.9 15.3 0.0 9.1 11.7 0.0 Prop In Lane 1.00 0.16 1.00 1.00 1.00 0.17 1.00 Lane Grp Cap(c), veh/h 329 0 849 241 866 751 374 0 562 291 0 Auai Cap(c_a), veh/h 584 0 1437 496 1466 1272 639 0 970 531 0.0 Mysteam Filter(1) 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 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 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00									-			0	179
Cycle Q Clar(g_c), s 14.8 0.0 19.8 22.4 12.4 0.9 15.3 0.0 9.1 11.7 0.0 Prop In Lane 1.00 0.16 1.00 1.00 1.00 0.17 1.00 Lane Grp Cap(c), veh/h 329 0 849 241 866 751 374 0 562 291 0 V/C Ratic(X) 0.12 0.00 0.77 0.15 0.56 0.05 0.51 0.00 0.54 0.17 0.00 Avail Cap(c_a), veh/h 584 0 1437 496 1466 1272 639 0 970 531 0 Hold Nation 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 1.00 1.00 1.00 1.00 0.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00			-									-	5.
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Lane Grp Cap(c), veh/h 329 0 849 241 866 751 374 0 562 291 0 V/C Ratio(X) 0.12 0.00 0.77 0.15 0.56 0.05 0.51 0.00 0.54 0.17 0.00 Avail Cap(c_a), veh/h 584 0 1437 496 1466 1272 639 0 970 531 0 Avail Cap(c_a), veh/h 18.0 0.100 1.00 1.00 1.00 1.00 1.00 1.0													0.1
V/C Ratio(X) 0.12 0.00 0.77 0.15 0.56 0.05 0.51 0.00 0.54 0.17 0.00 Avail Cap(c. a), veh/h 584 0 1437 496 1466 1272 639 0 970 531 0 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 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 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 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 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 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00			0	849	241	866			0			0	55
Avail Cap(c_a), veh/h 584 0 1437 496 1466 1272 639 0 970 531 0 HCM Platon 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 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 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 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 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 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 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1		0.12	0.00	0.77	0.15	0.56	0.05	0.51		0.54	0.17	0.00	0.3
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 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 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 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 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 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 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 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.												0	95
Uniform Delay (d), s/veh 18.0 0.0 14.7 24.0 12.7 9.6 23.7 0.0 19.0 23.8 0.0 Incr Delay (d2), s/veh 0.2 0.0 2.2 0.4 0.8 0.0 1.1 0.0 0.8 0.1 0.0 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 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0<		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0
Incr Delay (d2), s/veh 0.2 0.0 2.2 0.4 0.8 0.0 1.1 0.0 0.8 0.1 0.0 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 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.0
Incr Delay (d2), s/veh 0.2 0.0 2.2 0.4 0.8 0.0 1.1 0.0 0.8 0.1 0.0 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 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 <	Uniform Delay (d), s/veh	18.0	0.0	14.7	24.0	12.7	9.6	23.7	0.0	19.0	23.8	0.0	17.
%ile BackOfQ(95%),veh/ln 0.2 0.0 0.9 0.3 0.3 0.0 1.4 0.0 1.1 0.4 0.0 Unsig. Movement Delay, s/veh .00 16.8 24.4 13.5 9.7 24.8 0.0 19.8 23.9 0.0 LnGrp Delay(d),s/veh 18.2 0.0 16.8 24.4 13.5 9.7 24.8 0.0 19.8 23.9 0.0 LnGrp Delay(d),s/veh 18.2 0.0 16.8 24.4 13.5 9.7 24.8 0.0 19.8 23.9 0.0 LnGrp Delay(d),s/veh 16.9 13.9 21.7 A B C A B C A Approach Vol, veh/h 693 559 494 245 A A D 19.1 A Approach LOS B B C B B C B B P D D D D D D D D D D D D D D D D D D D		0.2	0.0	2.2	0.4	0.8	0.0	1.1	0.0	0.8	0.1	0.0	0.
Unsig. Movement Delay, siveh LnGrp Delay(d), siveh 18.2 0.0 16.8 24.4 13.5 9.7 24.8 0.0 19.8 23.9 0.0 LnGrp LOS <u>B</u> A <u>B</u> <u>C</u> <u>B</u> <u>A</u> <u>C</u> <u>A</u> <u>B</u> <u>C</u> <u>A</u> Approach Vol, veh/h 693 559 494 245 Approach Delay, siveh 16.9 13.9 21.7 19.1 Approach LOS <u>B</u> <u>B</u> <u>C</u> <u>B</u> Timer - Assigned Phs <u>2</u> <u>4</u> <u>6</u> <u>8</u> Phs Duration (G+Y+RC), s 38.7 27.3 38.7 27.3 Change Period (Y+RC), s 7.9 *7 7.9 *7 Max Green Setting (Gmax), s 52.1 *35 52.1 *35 Max Q Clear Time (g_c+1), s 21.8 13.7 24.4 17.3 Green Ext Time (p_c), s 9.0 0.6 6.2 2.9 Intersection Summary	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.
LnGrp Delay(d),s/veh 18.2 0.0 16.8 24.4 13.5 9.7 24.8 0.0 19.8 23.9 0.0 LnGrp LOS B A B C B A C A B C A B C A B C A B C A B C A B C A B C A B C A B C A B C A B C A B C A B C B D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D	%ile BackOfQ(95%),veh/In	0.2	0.0	0.9	0.3	0.3	0.0	1.4	0.0	1.1	0.4	0.0	0.
LnGrp Delay(d),s/veh 18.2 0.0 16.8 24.4 13.5 9.7 24.8 0.0 19.8 23.9 0.0 LnGrp LOS B A B C B A C A B C A B C A B C A B C A B C A B C A B C A B C A B C A B C A B C A B C A B C B D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D	Unsig. Movement Delay, s/veh												
Approach Vol, veh/h 693 559 494 245 Approach Delay, siveh 16.9 13.9 21.7 19.1 Approach LOS B B C B Timer - Assigned Phs 2 4 6 8 Phs Duration (G+Y+RC), s 38.7 27.3 38.7 27.3 Kax Green Setting (Gmax), s 52.1 *35 52.1 *35 Max Q celear Time (g_c+I1), s 21.8 13.7 24.4 17.3 Green Ext Time (p_c), s 9.0 0.6 6.2 2.9		18.2	0.0	16.8	24.4	13.5	9.7	24.8	0.0	19.8	23.9	0.0	17.
Approach Delay, s/veh 16.9 13.9 21.7 19.1 Approach LOS B B C B Timer - Assigned Phs 2 4 6 8 Phs Duration (G+Y+Rc), s 38.7 27.3 38.7 27.3 Change Period (Y+Rc), s 7.9 * 7 7.9 * 7 Max Green Setting (Gmax), s 52.1 * 35 52.1 * 35 Max Q Clear Time (gc+11), s 21.8 13.7 24.4 17.3 Green Ext Time (p_c), s 9.0 0.6 6.2 2.9	LnGrp LOS	В	А	В	С	В	А	С	А	В	С	А	
Approach LOS B B C B Timer - Assigned Phs 2 4 6 8 Phs Duration (G+Y+Rc), s 38.7 27.3 38.7 27.3 Change Period (Y+Rc), s 7.9 * 7 7.9 * 7 Max Green Setting (Gmax), s 52.1 * 35 52.1 * 35 Max Q Clear Time (gc+1), s 21.8 13.7 24.4 17.3 Green Ext Time (gc, s) 9.0 0.6 6.2 2.9	Approach Vol, veh/h		693			559			494			245	
Timer - Assigned Phs 2 4 6 8 Phs Duration (G+Y+Rc), s 38.7 27.3 38.7 27.3 Change Period (Y+Rc), s 7.9 * 7 7.9 * 7 Max Green Setting (Gmax), s 52.1 * 35 52.1 * 35 Max Q Clear Time (g_c+11), s 21.8 13.7 24.4 17.3 Green Ext Time (p_c), s 9.0 0.6 6.2 2.9	Approach Delay, s/veh		16.9			13.9			21.7			19.1	
Phs Duration (G+Y+Rc), s 38.7 27.3 38.7 27.3 Change Period (Y+Rc), s 7.9 * 7 7.9 * 7 Max Green Setting (Gmax), s 52.1 * 35 52.1 * 35 Max Q Clear Time (g_c+1), s 21.8 13.7 24.4 17.3 Green Ext Time (g_c), s 9.0 0.6 6.2 2.9 ntersection Summary 5 5 5 5 5	Approach LOS		В			В			С			В	
Change Period (Y+Rc), s 7.9 * 7 7.9 * 7 Max Green Setting (Gmax), s 52.1 * 35 52.1 * 35 Max Q Clear Time (g_c+I1), s 21.8 13.7 24.4 17.3 Green Ext Time (p_c), s 9.0 0.6 6.2 2.9 ntersection Summary 5 5 5 5 5	Timer - Assigned Phs		2		4		6		8				
Max Green Setting (Gmax), s 52.1 * 35 52.1 * 35 Max Q Clear Time (g_c+11), s 21.8 13.7 24.4 17.3 Green Ext Time (p_c), s 9.0 0.6 6.2 2.9 Intersection Summary 1 1 1 1 1	Phs Duration (G+Y+Rc), s		38.7		27.3		38.7		27.3				
Max Q Clear Time (g_c+11), s 21.8 13.7 24.4 17.3 Green Ext Time (p_c), s 9.0 0.6 6.2 2.9 Intersection Summary 10.0 10.0 10.0 10.0	Change Period (Y+Rc), s		7.9		* 7		7.9		* 7				
Max Q Clear Time (g_c+11), s 21.8 13.7 24.4 17.3 Green Ext Time (p_c), s 9.0 0.6 6.2 2.9 Intersection Summary 10.0 10.0 10.0 10.0	Max Green Setting (Gmax), s		52.1		* 35		52.1		* 35				
Intersection Summary			21.8		13.7		24.4		17.3				
	Green Ext Time (p_c), s		9.0		0.6		6.2		2.9				
	ntersection Summary												
HCM 6th Ctrl Delay 17.5	HCM 6th Ctrl Delay			17.5									

Paradigm Transportation Solutions Limited

Appendix D

Background Traffic Operational Reports



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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations	<u></u>	4Î		ሻ	↑	1	ሻ	4Î		<u> </u>	4Î	
Traffic Volume (vph)	22	318	129	36	345	30	77	107	32	12	106	4
Future Volume (vph)	22	318	129	36	345	30	77	107	32	12	106	4
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
Storage Length (m)	75.0		0.0	55.0		55.0	75.0		0.0	50.0		0.
Storage Lanes	1		0	1		1	1		0	1		
Taper Length (m)	100.0			100.0			100.0			100.0		
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	1.0
Frt		0.957				0.850		0.965			0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1456	1718	0	1703	1827	1509	1736	1727	0	1805	1732	
Flt Permitted	0.539	1716		0.449	100-	1500	0.656	1205	,	0.661	1705	
Satd. Flow (perm)	826	1718	0	805	1827	1509	1198	1727	0	1256	1732	
Right Turn on Red			Yes			Yes		10	Yes			Ye
Satd. Flow (RTOR)		29				43		16			21	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		360.1			209.0			510.2			193.6	
Travel Time (s)		16.2			9.4			23.0			8.7	
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	0.9
Heavy Vehicles (%)	24%	7%	3%	6%	4%	7%	4%	5%	10%	0%	2%	13%
Adj. Flow (vph)	24	346	140	39	375	33	84	116	35	13	115	4
Shared Lane Traffic (%)	04	400	0	00	075	00	0.4	454	0	40	100	
Lane Group Flow (vph)	24	486	0	39	375	33	84	151	0	13	160	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	2	2		6	6	0	0	8		4	4	
Permitted Phases Detector Phase	2	2		6 6	6	6 6	8 8	8		4	4	
	2	2		0	0	0	8	8		4	4	
Switch Phase	20.0	20.0		20.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	22.5	22.5		22.5	22.5	
Minimum Split (s)	60.0	60.0		60.0	60.0	60.0	42.0	42.0		42.0	42.0	
Total Split (s) Total Split (%)	58.8%	58.8%		58.8%	58.8%	58.8%	42.0	42.0		42.0	41.2%	
Maximum Green (s)	50.0%	50.0%		52.1	52.1	52.1	41.2% 35.0	41.2% 35.0		35.0	41.2% 35.0	
Yellow Time (s)	5.9	5.9		52.1	5.9	52.1	5.9	5.9		5.9	5.9	
	2.0	5.9 2.0		5.9 2.0	2.0	5.9 2.0	5.9 1.1	5.9 1.1			5.9 1.1	
All-Red Time (s) Lost Time Adjust (s)	2.0	2.0		2.0	2.0	2.0	0.0	0.0		1.1	0.0	
Total Lost Time (s)	7.9	7.9		7.9	7.9	7.9	7.0	7.0		7.0	7.0	
Lead/Lag	7.9	7.9		7.9	7.9	7.9	7.0	7.0		7.0	7.0	
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	3.0	3.0		1.0	1.0	
Recall Mode	4.0 Min	Min		4.0 Min	4.0 Min	4.0 Min	None	None		None	None	
Act Effct Green (s)	21.6	21.6		21.6	21.6	21.6	10.9	10.9		10.9	10.9	
Actuated g/C Ratio	0.45	0.45		0.45	0.45	0.45	0.23	0.23		0.23	0.23	
v/c Ratio	0.45	0.45		0.45	0.45	0.45	0.23	0.23		0.23	0.23	
Control Delay	8.1	13.2		8.6	0.45	2.7	19.3	17.4		15.7	17.1	
Queue Delay	0.1	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	8.1	13.2		8.6	11.1	2.7	19.3	17.4		15.7	17.1	
LOS	8.1 A	13.2 B		8.6 A	11.1 B	2.7 A	19.3 B	17.4 B		15.7 B	17.1 B	
103	A	в 13.0		A	В 10.3	A	в	в 18.1		В	В 17.0	

Synchro 11 Report Page 1

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	S
Approach LOS		В			В			В			В	
Queue Length 50th (m)	1.1	26.2		1.7	19.9	0.0	5.8	9.4		0.9	9.7	
Queue Length 95th (m)	4.5	56.9		6.4	41.9	2.9	17.5	25.2		4.6	26.0	
Internal Link Dist (m)		336.1			185.0			486.2			169.6	
Turn Bay Length (m)	75.0			55.0		55.0	75.0			50.0		
Base Capacity (vph)	814	1694		793	1801	1488	887	1283		931	1288	
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	0.03	0.29		0.05	0.21	0.02	0.09	0.12		0.01	0.12	
Intersection Summary												
Area Type:	Other											
Cycle Length: 102												
Actuated Cycle Length: 47	.6											
Natural Cycle: 55												
Control Type: Semi Act-U	ncoord											
Maximum v/c Ratio: 0.61												
Intersection Signal Delay:					tersectior							
Intersection Capacity Utiliz	ation 64.8%			IC	U Level of	of Service	С					

Splits and Phases: 1: Wellington Road 29 & Highway 7

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60 s	42 s
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60 s	42 s

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HCM 6th Signalized 1: Wellington Road 2				ary					0	nd AM ay 7, Guel		
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	f,		٦	1	1	5	f,		۲	ĥ	
Traffic Volume (veh/h)	22	318	129	36	345	30	77	107	32	12	106	41
Future Volume (veh/h)	22	318	129	36	345	30	77	107	32	12	106	41
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	1544	1796	1856	1811	1841	1796	1841	1826	1752	1900	1870	1707
Adj Flow Rate, veh/h	24	346	140	39	375	33	84	116	35	13	115	45
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
Percent Heavy Veh, %	24	7	3	6	4	7	4	5	10	0	2	13
Cap, veh/h	406	542	219	359	821	679	335	298	90	347	284	111
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	807	1216	492	881	1841	1522	1207	1346	406	1256	1280	501
Grp Volume(v), veh/h	24	0	486	39	375	33	84	0	151	13	0	160
Grp Sat Flow(s),veh/h/ln	807	0	1708	881	1841	1522	1207	0	1753	1256	0	1780
Q Serve(q s), s	1.0	0.0	9.9	1.6	6.4	0.6	2.9	0.0	3.3	0.4	0.0	3.4
Cycle Q Clear(g_c), s	7.3	0.0	9.9	11.5	6.4	0.6	6.3	0.0	3.3	3.7	0.0	3.4
Prop In Lane	1.00		0.29	1.00		1.00	1.00		0.23	1.00		0.28
Lane Grp Cap(c), veh/h	406	0	762	359	821	679	335	0	388	347	0	395
V/C Ratio(X)	0.06	0.00	0.64	0.11	0.46	0.05	0.25	0.00	0.39	0.04	0.00	0.41
Avail Cap(c_a), veh/h	984	0	1984	990	2139	1769	1010	0	1368	1049	0	1390
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.2	0.0	9.6	14.1	8.6	7.0	17.6	0.0	14.9	16.4	0.0	14.9
Incr Delay (d2), s/veh	0.1	0.0	1.3	0.2	0.6	0.0	0.4	0.0	0.6	0.0	0.0	0.2
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(95%),veh/In	0.0	0.0	0.5	0.0	0.2	0.0	0.1	0.0	0.1	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.3	0.0	10.9	14.3	9.2	7.1	18.0	0.0	15.5	16.5	0.0	15.2
LnGrp LOS	В	A	В	В	A	A	В	A	В	В	A	<u> </u>
Approach Vol, veh/h		510			447			235			173	
Approach Delay, s/veh		10.9			9.5			16.4			15.3	
Approach LOS		В			А			В			В	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		27.9		16.9		27.9		16.9				
Change Period (Y+Rc), s		7.9		* 7		7.9		* 7				
Max Green Setting (Gmax), s		52.1		* 35		52.1		* 35				
Max Q Clear Time (g_c+I1), s		11.9		5.7		13.5		8.3				
Green Ext Time (p_c), s		6.6		0.4		5.0		1.4				
Intersection Summary												
HCM 6th Ctrl Delay			11.9									
HCM 6th LOS			В									
Notes												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations	<u></u>	4		<u></u>	1	1	<u></u>	4		្តា	4	
Traffic Volume (vph)	36	519	96	34	453	38	179	236	50	46	152	32
Future Volume (vph)	36	519	96	34	453	38	179	236	50	46	152	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	75.0		0.0	55.0		55.0	75.0		0.0	50.0		0.0
Storage Lanes	1		0	1		1	1		0	1		(
Taper Length (m)	100.0	1.00	4.00	100.0	4.00	4.00	100.0	4.00	1.00	100.0	1.00	
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	0.050	0.977		0.050		0.850	0.050	0.974		0.050	0.974	
Flt Protected	0.950	4000		0.950	1015	1015	0.950	1005	<u>^</u>	0.950	1755	
Satd. Flow (prot)	1570	1823	0	1805	1845	1615	1770	1835	0	1770	1755	(
Flt Permitted	0.415	4000	_	0.260	10.15	1015	0.632	4005	^	0.486	4===	
Satd. Flow (perm)	686	1823	0	494	1845	1615	1177	1835	0	905	1755	(
Right Turn on Red		10	Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				43		11			11	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		360.1			209.0			510.2			193.6	
Travel Time (s)		16.2			9.4			23.0			8.7	
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 (%)	15%	2%	1%	0%	3%	0%	2%	1%	0%	2%	3%	17%
Adj. Flow (vph)	39	564	104	37	492	41	195	257	54	50	165	38
Shared Lane Traffic (%)					400		105		<u>,</u>	=0		
Lane Group Flow (vph)	39	668	0	37	492	41	195	311	0	50	200	(
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	•	2		0	6	•	0	8			4	
Permitted Phases	2	0		6	0	6	8	0		4		
Detector Phase	2	2		6	6	6	8	8		4	4	
Switch Phase							40.0	10.0		40.0	10.0	
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	27.9	27.9		27.9	27.9	27.9	22.5	22.5		22.5	22.5	
Total Split (s)	60.0	60.0		60.0	60.0	60.0	42.0	42.0		42.0	42.0	
Total Split (%)	58.8%	58.8%		58.8%	58.8%	58.8%	41.2%	41.2%		41.2%	41.2%	
Maximum Green (s)	52.1	52.1		52.1	52.1	52.1	35.0	35.0		35.0	35.0	
Yellow Time (s)	5.9	5.9		5.9	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.1	1.1		1.1	1.1	
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)	7.9	7.9		7.9	7.9	7.9	7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?	4.0	4.0		4.0	4.0	4.0	3.0	3.0		1.0	1.0	
Vehicle Extension (s)												
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	
Act Effct Green (s)	31.6 0.48	31.6 0.48		31.6 0.48	31.6 0.48	31.6 0.48	18.1 0.28	18.1 0.28		18.1 0.28	18.1 0.28	
Actuated g/C Ratio				0.48				0.28				
v/c Ratio	0.12	0.76			0.56	0.05	0.60			0.20	0.41	
Control Delay	11.6	20.7		12.7	15.4	3.7	31.3	26.9		23.0	22.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	11.6	20.7		12.7	15.4	3.7	31.3	26.9		23.0	22.6	
LOS	В	С		В	В	A	С	С		С	C	
Approach Delay		20.2			14.4			28.6			22.7	

Synchro 11 Report Page 1

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Approach LOS		С			В			С			С	
Queue Length 50th (m)	2.4	58.8		2.3	38.3	0.0	19.5	29.9		4.4	17.7	
Queue Length 95th (m)	9.5	135.9		9.5	88.7	4.9	54.9	75.6		16.6	48.3	
Internal Link Dist (m)		336.1			185.0			486.2			169.6	
Turn Bay Length (m)	75.0			55.0		55.0	75.0			50.0		
Base Capacity (vph)	562	1496		404	1512	1331	676	1059		520	1013	
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	0.07	0.45		0.09	0.33	0.03	0.29	0.29		0.10	0.20	
Intersection Summary												
Area Type:	Other											
Cycle Length: 102												
Actuated Cycle Length: 65	5.8											
Natural Cycle: 60												
Control Type: Semi Act-U	ncoord											
Maximum v/c Ratio: 0.76												
Intersection Signal Delay:				In	tersectior	n LOS: C						
Intersection Capacity Utiliz	ation 75.2%			IC	U Level o	of Service	D					

Splits and Phases: 1: Wellington Road 29 & Highway 7

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60 s	42 s
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60 s	42 s

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
ane Configurations	۲	ţ,		۲	•	1	۲	ţ,		٦	ţ,	
Traffic Volume (veh/h)	36	519	96	34	453	38	179	236	50	46	152	32
Future Volume (veh/h)	36	519	96	34	453	38	179	236	50	46	152	3
nitial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	(
Ped-Bike Adj(A_pbT)	1.00	Ū	1.00	1.00	Ŭ	1.00	1.00	Ū	1.00	1.00	Ū	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
Nork Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1678	1870	1885	1900	1856	1900	1870	1885	1900	1870	1856	1648
Adj Flow Rate, veh/h	39	564	104	37	492	41	195	257	54	50	165	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
Percent Heavy Veh, %	15	2	1	0.02	3	0.02	2	1	0.02	2	3	17
Cap, veh/h	323	722	133	232	872	757	372	471	99	288	463	98
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	781	1536	283	781	1856	1610	1182	1511	317	1068	1484	315
Grp Volume(v), veh/h	39	0	668	37	492	41	195	0	311	50	0	200
Grp Sat Flow(s), veh/h/ln	781	0	1819	781	1856	1610	1182	0	1828	1068	0	1799
Q Serve(q s), s	2.6	0.0	21.0	2.8	13.0	0.9	10.4	0.0	9.6	2.8	0.0	5.9
Cycle Q Clear(g_c), s	15.6	0.0	21.0	23.8	13.0	0.9	16.3	0.0	9.6	12.4	0.0	5.9
Prop In Lane	1.00	0.0	0.16	1.00	10.0	1.00	1.00	0.0	0.17	1.00	0.0	0.17
ane Grp Cap(c), veh/h	323	0	855	232	872	757	372	0	570	288	0	561
//C Ratio(X)	0.12	0.00	0.78	0.16	0.56	0.05	0.52	0.00	0.55	0.17	0.00	0.36
Avail Cap(c_a), veh/h	553	0.00	1389	462	1417	1229	610	0.00	938	503	0.00	923
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
Jpstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Jniform Delay (d), s/veh	18.7	0.0	15.1	25.1	13.0	9.8	24.5	0.0	19.5	24.6	0.0	18.2
ncr Delay (d2), s/veh	0.2	0.0	2.3	0.5	0.8	0.0	1.1	0.0	0.8	0.1	0.0	0.1
nitial 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(95%),veh/ln	0.2	0.0	1.0	0.4	0.4	0.0	1.6	0.0	1.4	0.4	0.0	0.7
Jnsig. Movement Delay, s/veh		0.0	1.0	0.4	0.1	0.0	1.0	0.0	1.1	0.1	0.0	0.1
_nGrp Delay(d),s/veh	18.9	0.0	17.4	25.6	13.9	9.9	25.6	0.0	20.3	24.7	0.0	18.3
_nGrp LOS	B	A	В	C	B	A	C	A	C	C	A	E
Approach Vol. veh/h		707			570			506			250	
Approach Delay, s/veh		17.5			14.3			22.4			19.6	
Approach LOS		B			В			С			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		28.3		40.0		28.3				
Change Period (Y+Rc), s		7.9		* 7		7.9		* 7				
Max Green Setting (Gmax), s		52.1		* 35		52.1		* 35				
Max Q Clear Time (g_c+I1), s		23.0		14.4		25.8		18.3				
Green Ext Time (p_c), s		9.1		0.6		6.2		3.0				
ntersection Summary												
HCM 6th Ctrl Delay			18.1									
HCM 6th LOS			В									

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations		•			↑	1	ሻ	4Î			f,	
Traffic Volume (vph)	25	351	142	39	381	33	84	118	35	14	117	4
Future Volume (vph)	25	351	142	39	381	33	84	118	35	14	117	4
ldeal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
Storage Length (m)	75.0		0.0	55.0		55.0	75.0		0.0	50.0		0.0
Storage Lanes	1		0	1		1	1		0	1		(
Taper Length (m)	100.0			100.0			100.0			100.0		
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	1.0
Frt		0.957				0.850		0.966			0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1456	1718	0	1703	1827	1509	1736	1729	0	1805	1732	(
Flt Permitted	0.520			0.398			0.646			0.652		
Satd. Flow (perm)	797	1718	0	713	1827	1509	1180	1729	0	1239	1732	(
Right Turn on Red			Yes			Yes			Yes			Ye
Satd. Flow (RTOR)		29				43		16			21	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		360.1			209.0			510.2			193.6	
Travel Time (s)		16.2			9.4			23.0			8.7	
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 (%)	24%	7%	3%	6%	4%	7%	4%	5%	10%	0%	2%	13%
Adj. Flow (vph)	27	382	154	42	414	36	91	128	38	15	127	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	536	0	42	414	36	91	166	0	15	176	(
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	•	2		•	6	•	•	8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	2	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	27.9	27.9		27.9	27.9	27.9	22.5	22.5		22.5	22.5	
Total Split (s)	60.0	60.0		60.0	60.0	60.0	42.0	42.0		42.0	42.0	
Total Split (%)	58.8%	58.8%		58.8%	58.8%	58.8%	41.2%	41.2%		41.2%	41.2%	
Maximum Green (s)	52.1	52.1		52.1	52.1	52.1	35.0	35.0		35.0	35.0	
Yellow Time (s)	5.9	5.9		5.9	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.1	1.1		1.1	1.1	
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)	7.9	7.9		7.9	7.9	7.9	7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?						1.0						
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	3.0	3.0		1.0	1.0	
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	
Act Effct Green (s)	23.0	23.0		23.0	23.0	23.0	11.5	11.5		11.5	11.5	
Actuated g/C Ratio	0.46	0.46		0.46	0.46	0.46	0.23	0.23		0.23	0.23	
v/c Ratio	0.07	0.66		0.13	0.49	0.05	0.33	0.40		0.05	0.42	
Control Delay	8.2	14.5		8.9	11.7	2.8	21.0	18.8		16.9	18.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	8.2	14.5		8.9	11.7	2.8	21.0	18.8		16.9	18.7	
LOS	A	В		A	В	A	С	В		В	В	
Approach Delay		14.2			10.8			19.6			18.5	

Synchro 11 Report Page 1

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	ç
Approach LOS		В			В			В			В	
Queue Length 50th (m)	1.2	30.4		1.9	22.5	0.0	6.4	10.6		1.0	11.0	
Queue Length 95th (m)	5.1	68.4		7.2	49.2	3.3	20.4	30.1		5.4	31.2	
Internal Link Dist (m)		336.1			185.0			486.2			169.6	
Turn Bay Length (m)	75.0			55.0		55.0	75.0			50.0		
Base Capacity (vph)	770	1661		689	1766	1460	845	1244		888	1247	
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	0.04	0.32		0.06	0.23	0.02	0.11	0.13		0.02	0.14	
Intersection Summary												
Area Type:	Other											
Cycle Length: 102												
Actuated Cycle Length: 49	.6											
Natural Cycle: 55												
Control Type: Semi Act-Un	ncoord											
Maximum v/c Ratio: 0.66												
Intersection Signal Delay:					tersectior							
Intersection Capacity Utiliz	ation 67.9%			IC	U Level of	of Service	С					

Splits and Phases: 1: Wellington Road 29 & Highway 7

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60 s	42 s	
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60 s	42 s	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
ane Configurations	۲	ţ,		۲	1	1	۲	¢Î		٦	1	
Traffic Volume (veh/h)	25	351	142	39	381	33	84	118	35	14	117	45
-uture Volume (veh/h)	25	351	142	39	381	33	84	118	35	14	117	45
nitial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	v	1.00	1.00	v	1.00	1.00	v	1.00	1.00	Ŭ	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
Nork Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1544	1796	1856	1811	1841	1796	1841	1826	1752	1900	1870	1707
Adj Flow Rate, veh/h	27	382	154	42	414	36	91	128	38	15	127	49
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
Percent Heavy Veh, %	24	7	3	6	4	7	4	5	10	0	2	13
Cap, veh/h	382	552	222	324	834	690	327	312	93	339	296	114
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	777	1217	491	841	1841	1522	1189	1352	401	1239	1285	496
Grp Volume(v), veh/h	27	0	536	42	414	36	91	0	166	15	0	176
Grp Sat Flow(s), veh/h/ln	777	0	1708	841	1841	1522	1189	Ő	1754	1239	0	1781
Q Serve(g_s), s	1.2	0.0	11.8	2.0	7.5	0.6	3.3	0.0	3.8	0.5	0.0	4.0
Cycle Q Clear(g_c), s	8.7	0.0	11.8	13.8	7.5	0.6	7.3	0.0	3.8	4.3	0.0	4.0
Prop In Lane	1.00		0.29	1.00		1.00	1.00		0.23	1.00		0.28
ane Grp Cap(c), veh/h	382	0	774	324	834	690	327	0	404	339	0	411
//C Ratio(X)	0.07	0.00	0.69	0.13	0.50	0.05	0.28	0.00	0.41	0.04	0.00	0.43
Avail Cap(c a), veh/h	888	0	1887	872	2034	1682	935	0	1302	973	0	1322
ICM 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
Jpstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Jniform Delay (d), s/veh	12.1	0.0	10.3	15.7	9.1	7.2	18.6	0.0	15.4	17.2	0.0	15.5
ncr Delay (d2), s/veh	0.1	0.0	1.6	0.3	0.7	0.0	0.5	0.0	0.7	0.0	0.0	0.3
nitial 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(95%),veh/In	0.0	0.0	0.6	0.0	0.3	0.0	0.1	0.0	0.1	0.0	0.0	0.1
Jnsig. Movement Delay, s/veh												
_nGrp Delay(d),s/veh	12.3	0.0	11.9	16.0	9.7	7.3	19.1	0.0	16.1	17.3	0.0	15.7
InGrp LOS	В	А	В	В	А	А	В	А	В	В	A	E
Approach Vol, veh/h		563			492			257			191	
Approach Delay, s/veh		11.9			10.1			17.1			15.9	
Approach LOS		В			В			В			В	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		29.3		17.9		29.3		17.9				
Change Period (Y+Rc), s		7.9		* 7		7.9		* 7				
Max Green Setting (Gmax), s		52.1		* 35		52.1		* 35				
Max Q Clear Time (g_c+I1), s		13.8		6.3		15.8		9.3				
Green Ext Time (p_c), s		7.4		0.5		5.6		1.6				
ntersection Summary												
HCM 6th Ctrl Delay			12.7									
HCM 6th LOS			В									

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations	<u></u>	4	400	<u></u>	1	1	<u></u>	4		្តា	<mark>م</mark>	
Traffic Volume (vph)	39	573	106	37	500	42	197	260	55	51	168	35
Future Volume (vph)	39	573	106	37	500	42	197	260	55	51	168	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	75.0		0.0	55.0		55.0	75.0		0.0	50.0		0.0
Storage Lanes	1		0	1		1	1		0	1		(
Taper Length (m)	100.0	1.00	4.00	100.0	4.00	4.00	100.0	4.00	1.00	100.0	1.00	
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	0.050	0.977		0.050		0.850	0.050	0.974		0.050	0.974	
Flt Protected	0.950	1000		0.950	1015	1015	0.950	1005	<u>^</u>	0.950	1750	
Satd. Flow (prot)	1570	1823	0	1805	1845	1615	1770	1835	0	1770	1756	C
Flt Permitted	0.362	4000	_	0.200	10.15	1015	0.619	4005	^	0.427	4750	
Satd. Flow (perm)	598	1823	0	380	1845	1615	1153	1835	0	795	1756	(
Right Turn on Red		40	Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				46		11			11	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		360.1			209.0			510.2			193.6	
Travel Time (s)		16.2			9.4			23.0			8.7	
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 (%)	15%	2%	1%	0%	3%	0%	2%	1%	0%	2%	3%	17%
Adj. Flow (vph)	42	623	115	40	543	46	214	283	60	55	183	38
Shared Lane Traffic (%)	10	=00		10	= 10	10		0.40	<u>,</u>		004	
Lane Group Flow (vph)	42	738	0	40	543	46	214	343	0	55	221	(
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	•	2		0	6	•	0	8			4	
Permitted Phases	2	0		6	0	6	8	0		4		
Detector Phase	2	2		6	6	6	8	8		4	4	
Switch Phase							40.0	10.0		40.0	10.0	
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	27.9	27.9		27.9	27.9	27.9	22.5	22.5		22.5	22.5	
Total Split (s)	60.0	60.0		60.0	60.0	60.0	42.0	42.0		42.0	42.0	
Total Split (%)	58.8%	58.8%		58.8%	58.8%	58.8%	41.2%	41.2%		41.2%	41.2%	
Maximum Green (s)	52.1	52.1		52.1	52.1	52.1	35.0	35.0		35.0	35.0	
Yellow Time (s)	5.9	5.9		5.9	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.1	1.1		1.1	1.1	
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)	7.9	7.9		7.9	7.9	7.9	7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?	4.0	4.0		4.0	4.0	4.0	3.0	3.0		1.0	1.0	
Vehicle Extension (s)												
Recall Mode	Min	Min		Min	Min	Min	None 21.0	None		None	None	
Act Effct Green (s)	35.4 0.49	35.4 0.49		35.4 0.49	35.4 0.49	35.4 0.49	21.0 0.29	21.0 0.29		21.0 0.29	21.0 0.29	
Actuated g/C Ratio								0.29			0.29	
v/c Ratio	0.14	0.82		0.22	0.60	0.06	0.64			0.24		
Control Delay	13.1	25.5		15.7	17.5	4.0	34.1	28.9		25.1	24.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	13.1	25.5		15.7	17.5	4.0	34.1	28.9		25.1	24.1	
LOS	В	C		В	B	A	С	С		С	C	
Approach Delay		24.8			16.4			30.9			24.3	

Synchro 11 Report Page 1

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Approach LOS		С			В			С			С	
Queue Length 50th (m)	3.0	79.6		2.9	50.5	0.0	25.9	40.0		5.8	23.5	
Queue Length 95th (m)	11.1	171.8		11.8	108.5	5.6	60.3	84.0		18.1	52.9	
Internal Link Dist (m)		336.1			185.0			486.2			169.6	
Turn Bay Length (m)	75.0			55.0		55.0	75.0			50.0		
Base Capacity (vph)	448	1370		285	1383	1222	602	964		415	923	
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	0.09	0.54		0.14	0.39	0.04	0.36	0.36		0.13	0.24	
Intersection Summary												
Area Type:	Other											
Cycle Length: 102												
Actuated Cycle Length: 72.	6											
Natural Cycle: 60												
Control Type: Semi Act-Une	coord											
Maximum v/c Ratio: 0.82												
Intersection Signal Delay: 2				In	tersectior	n LOS: C						
Intersection Capacity Utiliza	ation 80.2%			IC	U Level o	of Service	D					

Splits and Phases: 1: Wellington Road 29 & Highway 7

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60 s		42 s	
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60 s		42 s	

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EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
8	1.			*						1.	
		106						55			35
											35
	0			0						0	0
	-			-			-			-	1.00
	1.00			1.00			1.00			1.00	1.00
										No	
1678		1885	1900		1900	1870		1900	1870	1856	1648
			40								38
0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
15	2	1	0	3	0.02	2	1	0	2	3	17
297	756	140	195	913	793	356	491	104	264	486	101
		0.49			0.49	0.33				0.33	0.33
742		283	732		1610	1160				1490	309
42			40		46					0	221
	-						-			-	1800
											7.7
											7.7
	0.0						0.0			0.0	0.17
	0			913			0			0	586
											0.38
											769
											1.00
											1.00
											21.2
0.3	0.0	4.4	0.7	0.9	0.0	1.6	0.0	0.9	0.1	0.0	0.1
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.4	0.0	2.5	0.7		0.0		0.0	3.3	0.8	0.0	1.9
1						-					
22.7	0.0	22.2	32.3	15.8	10.9	31.3	0.0	23.8	29.9	0.0	21.4
С	А	С	С	В	В	С	А	С	С	А	C
	780			629			557			276	
	22.2			16.5			26.7			23.1	
	С			В			С			С	
	2		4		6		8				
	48.2		33.7		48.2		33.7				
	7.9		* 7		7.9		* 7				
	52.1		* 35		52.1		* 35				
	30.4		18.6		34.4		24.0				
	9.1		0.6		5.9		2.7				
		21.8									
	EBL 39 39 0 1.00 100 100 1678 42 297 0.49 297 0.42 42 742 42 742 20.7 0.100 297 0.100 297 0.100 297 0.100 20.7 22.7	EBL EBT 1 1 39 573 39 573 0 0 1.00 1.00 1.00 1.00 1.01 1.00 1.02 1.00 1.03 1.00 1.04 2.22 15 2 297 756 0.49 0.49 0.42 0.3 0.20.7 0.0 1.00 1.00 1.00 1.00 1.00 0.00 0.04 0.00 1.00 1.00 1.00 0.00 0.014 0.00 0.02 0.03 0.0 0.0 0.1 0.00 0.22.7 0.0 C A 780 22.2 C C 22.2 C 22.2 C 22.2 C	EBL EBT EBR 1 1 39 573 106 39 573 106 0 0 0 0 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 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.47 623 115 0.22 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	EBL EBT EBR WBL 1 5 106 37 39 573 106 37 0 0 0 0 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 1.00 1.00 1.00 0 20 0.92 0.92 0.92 15 2 1 0 297 0.49 0.49 0.49 0.49 0.49 742 1556 283 732 42 0 738 40 742 0 738 742 1556 28.3 732 3.5 0.0 28.4 3.2 1.00 0.016 1.00 20.7 0.0 28.4 3.2 1.01 0.00 1.02 1.00 1.00 1.00 1.00 0.01 1.00 <td>EBL EBT EBR WBL WBT 1 - 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Paradigm Transportation Solutions Limited

Appendix E

Total Traffic Operational Reports



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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations	LDL Y	LDI \$	EDR	VVDL					INDIN			ODF
Traffic Volume (vph)	22	₽ 318	135	46	↑ 345	r 30	1 84	₽ 107	43	12	1 06	4
Future Volume (vph)	22	318	135	40	345	30	84	107	43	12	106	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	04 1900	1900	43	1900	1900	1900
Storage Length (m)	75.0	1900	0.0	55.0	1900	55.0	75.0	1900	0.0	50.0	1900	0.0
Storage Lanes	1 1		0.0	55.0		55.0 1	75.0		0.0	50.0		0.0
Taper Length (m)	100.0		0	100.0		1	100.0		0	100.0		(
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	1.00	0.955	1.00	1.00	1.00	0.850	1.00	0.957	1.00	1.00	0.958	1.00
Fit Protected	0.950	0.955		0.950		0.000	0.950	0.957		0.950	0.950	
Satd. Flow (prot)	1456	1715	0	1703	1827	1509	1736	1708	0	1805	1732	(
Flt Permitted	0.539	1713	0	0.441	1027	1009	0.656	1700	U	0.654	1752	(
Satd. Flow (perm)	826	1715	0	790	1827	1509	1198	1708	0	1243	1732	(
Right Turn on Red	020	1715	Yes	130	1021	Yes	1130	1700	Yes	1245	1752	Ye
Satd. Flow (RTOR)		31	103			43		22	163		21	10
Link Speed (k/h)		80			80	75		80			80	
Link Distance (m)		360.1			209.0			510.2			193.6	
Travel Time (s)		16.2			9.4			23.0			8.7	
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 (%)	24%	7%	3%	6%	4%	7%	4%	5%	10%	0%	2%	13%
Adj. Flow (vph)	24	346	147	50	375	33	91	116	47	13	115	4
Shared Lane Traffic (%)		0.0			0.0		0.			10		
Lane Group Flow (vph)	24	493	0	50	375	33	91	163	0	13	160	(
Turn Type	Perm	NA	Ű	Perm	NA	Perm	Perm	NA	Ŭ	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6	-	6	8			4		
Detector Phase	2	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	27.9	27.9		27.9	27.9	27.9	22.5	22.5		22.5	22.5	
Total Split (s)	60.0	60.0		60.0	60.0	60.0	42.0	42.0		42.0	42.0	
Total Split (%)	58.8%	58.8%		58.8%	58.8%	58.8%	41.2%	41.2%		41.2%	41.2%	
Maximum Green (s)	52.1	52.1		52.1	52.1	52.1	35.0	35.0		35.0	35.0	
Yellow Time (s)	5.9	5.9		5.9	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.1	1.1		1.1	1.1	
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)	7.9	7.9		7.9	7.9	7.9	7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	3.0	3.0		1.0	1.0	
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	
Act Effct Green (s)	21.9	21.9		21.9	21.9	21.9	11.1	11.1		11.1	11.1	
Actuated g/C Ratio	0.46	0.46		0.46	0.46	0.46	0.23	0.23		0.23	0.23	
v/c Ratio	0.06	0.62		0.14	0.45	0.05	0.33	0.40		0.05	0.38	
Control Delay	8.2	13.5		9.1	11.2	2.7	19.8	17.3		15.8	17.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	8.2	13.5		9.1	11.2	2.7	19.8	17.3		15.8	17.2	
LOS	A	В		A	В	A	В	В		В	В	
Approach Delay		13.2			10.4			18.2			17.1	

Synchro 11 Report Page 1

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SE
Approach LOS		В			В			В			В	
Queue Length 50th (m)	1.1	26.7		2.3	19.9	0.0	6.3	9.9		0.9	9.7	
Queue Length 95th (m)	4.6	59.4		8.0	42.8	3.0	19.0	26.9		4.6	26.4	
Internal Link Dist (m)		336.1			185.0			486.2			169.6	
Turn Bay Length (m)	75.0			55.0		55.0	75.0			50.0		
Base Capacity (vph)	810	1683		775	1792	1481	880	1261		913	1278	
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	0.03	0.29		0.06	0.21	0.02	0.10	0.13		0.01	0.13	
Intersection Summary												
Area Type:	Other											
Cycle Length: 102												
Actuated Cycle Length: 48	3.1											
Natural Cycle: 55												
Control Type: Semi Act-U	ncoord											
Maximum v/c Ratio: 0.62												
Intersection Signal Delay:					tersectior							
Intersection Capacity Utiliz	zation 73.1%			IC	U Level of	of Service	D					

Splits and Phases: 1: Wellington Road 29 & Highway 7

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60 s		42 s	
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60 s		42 s	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
ane Configurations	٦	f,		ň		1	5	4		٦	ĥ	
Traffic Volume (veh/h)	22	318	135	46	345	30	84	107	43	12	106	4
Future Volume (veh/h)	22	318	135	46	345	30	84	107	43	12	106	4
Initial Q (Qb), veh	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	-	1.0
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	1.0
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1544	1796	1856	1811	1841	1796	1841	1826	1752	1900	1870	170
Adj Flow Rate, veh/h	24	346	147	50	375	33	91	116	47	13	115	4
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	0.9
Percent Heavy Veh, %	24	7	3	6	4	7	4	5	10	0.52	2	1
Cap, veh/h	404	532	226	351	818	677	339	277	112	339	287	11
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.22	0.22	0.22	0.22	0.22	0.2
Sat Flow, veh/h	807	1196	508	875	1841	1522	1207	1235	501	1242	1280	50
Grp Volume(v), veh/h	24	0	493	50	375	33	91	0	163	13	0	16
	807	0	1705	875	1841	1522	1207	0	1736	1242	0	178
Grp Sat Flow(s), veh/h/ln	1.0	0.0	10.2	2.1	6.4	0.6	3.1	0.0	3.6	0.4	0.0	3.
Q Serve(g_s), s								0.0			0.0	3.
Cycle Q Clear(g_c), s	7.4 1.00	0.0	10.2 0.30	12.3	6.4	0.6 1.00	6.6 1.00	0.0	3.6 0.29	4.0 1.00	0.0	3. 0.2
Prop In Lane		٥		1.00	010			٥			٥	
Lane Grp Cap(c), veh/h	404	0	758 0.65	351 0.14	818	677	339	0 0.00	390	339	0 0.00	40
V/C Ratio(X)	0.06	0.00			0.46	0.05	0.27		0.42	0.04		0.4
Avail Cap(c_a), veh/h	980	0	1974	975	2131	1762	1006	0	1350	1026	0	138
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	1.0
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.0
Uniform Delay (d), s/veh	11.3	0.0	9.8	14.6	8.7	7.1	17.7	0.0	14.9	16.7	0.0	14.
Incr Delay (d2), s/veh	0.1	0.0	1.4	0.3	0.6	0.0	0.4	0.0	0.7	0.0	0.0	0.
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.
%ile BackOfQ(95%),veh/In	0.0	0.0	0.5	0.0	0.2	0.0	0.1	0.0	0.1	0.0	0.0	0.
Unsig. Movement Delay, s/vel												
LnGrp Delay(d),s/veh	11.4	0.0	11.1	14.8	9.3	7.1	18.1	0.0	15.7	16.7	0.0	15.
LnGrp LOS	В	Α	В	В	Α	A	В	Α	В	В	Α	l
Approach Vol, veh/h		517			458			254			173	
Approach Delay, s/veh		11.1			9.7			16.5			15.2	
Approach LOS		В			A			В			В	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		27.9		17.1		27.9		17.1				
Change Period (Y+Rc), s		7.9		* 7		7.9		* 7				
Max Green Setting (Gmax), s		52.1		* 35		52.1		* 35				
Max Q Clear Time (g_c+l1), s		12.2		6.0		14.3		8.6				
Green Ext Time (p_c), s		6.7		0.4		5.1		1.6				
Intersection Summary												
HCM 6th Ctrl Delay			12.2									
ICM 6th LOS			12.2 B									
			5									

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Synchro 11 Report Page 3

Lanes, Volumes, 2: Wellington Roa	•	ite Driv	/eway				2025 Total AM Peak Ho (230251) 8075 Highway 7, Guelph-Eramosa
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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	Y			ę	¢Î,		
Traffic Volume (vph)	18	0	0	215	270	16	
Future Volume (vph)	18	0	0	215	270	16	
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					0.993		
Flt Protected	0.950						
Satd. Flow (prot)	1770	0	0	1863	1850	0	
Flt Permitted	0.950						
Satd. Flow (perm)	1770	0	0	1863	1850	0	
Link Speed (k/h)	50			80	80		
Link Distance (m)	204.3			172.4	510.2		
Travel Time (s)	14.7			7.8	23.0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	20	0	0	234	293	17	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	20	0	0	234	310	0	
Sign Control	Stop			Free	Free		
Intersection Summary							
Area Type:	Other						
Control Type: Unsignalize							
Intersection Capacity Utili Analysis Period (min) 15	zation 25.2%			IC	U Level o	of Service A	

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HCM 6th TWSC 2: Wellington Road 29 & Site Driveway

2025 Total AM Peak Hour (230251) 8075 Highway 7, Guelph-Eramosa TIB

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			ۍ ۲	1	-
Traffic Vol, veh/h	18	0	0	215	270	16
Future Vol. veh/h	18	0	0	215	270	16
Conflicting Peds, #/hr	0	0	0	213	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- Stop	None	-	None	-	None
Storage Length	- 0	NUTIE -		NUTIE -	-	NUILE
Veh in Median Storage		-	-	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	20	0	0	234	293	17
	Minor2	1	Major1	N	Major2	
Conflicting Flow All	536	302	310	0	-	0
Stage 1	302	-	-	-	-	-
Stage 2	234	-	-	-	-	-
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	505	738		-	-	-
Stage 1	750	-		-		-
Stage 2	805	-	-	-	-	-
Platoon blocked. %	000	_	-	_	-	-
Mov Cap-1 Maneuver	505	738	1250	-	-	-
Mov Cap-1 Maneuver	505	130	1200			
Mov Cap-2 Maneuver				-	-	-
		-	-	-	-	-
Stage 1	750					_
Stage 1 Stage 2	750 805	-	-	-	-	
		-	-	-	-	
Stage 2		-	- NB	-	SB	-
Stage 2 Approach	805 EB	-	NB	-	SB	
Stage 2 Approach HCM Control Delay, s	805 EB 12.4	-		-		
Stage 2 Approach HCM Control Delay, s	805 EB	-	NB	-		-
Stage 2 Approach HCM Control Delay, s HCM LOS	805 EB 12.4 B		<u>NB</u> 0		0	
Stage 2 Approach HCM Control Delay, s HCM LOS Minor Lane/Major Mvm	805 EB 12.4 B	NBL	NB 0 NBT	EBLn1	0 SBT	SBR
Stage 2 Approach HCM Control Delay, s HCM LOS Minor Lane/Major Mvm Capacity (veh/h)	805 EB 12.4 B	NBL 1250	NB 0 NBT	<u>EBLn1</u> 505	0 SBT	SBR
Stage 2 Approach HCM Control Delay, s HCM LOS Minor Lane/Major Mvm Capacity (veh/h) HCM Lane V/C Ratio	805 EB 12.4 B	NBL 1250	NB 0 NBT	EBLn1 505 0.039	0 SBT	SBR
Stage 2 Approach HCM Control Delay, s HCM LOS Minor Lane/Major Mvm Capacity (veh/h) HCM Lane V/C Ratio HCM Control Delay (s)	805 EB 12.4 B	NBL 1250 - 0	<u>NB</u> 0 <u>NBT</u> - -	EBLn1 505 0.039 12.4	0 SBT - -	SBR - -
Stage 2 Approach HCM Control Delay, s HCM LOS Minor Lane/Major Mvm Capacity (veh/h) HCM Lane V/C Ratio	805 EB 12.4 B	NBL 1250	NB 0 NBT	EBLn1 505 0.039	0 SBT	SBR

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		-	•	•)	•	(*	-
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations	ሻ	ef 👘		ሻ	↑	1	ሻ	€Î →		ሻ	4î 🖌	
Traffic Volume (vph)	36	519	111	56	453	38	201	236	83	46	152	32
Future Volume (vph)	36	519	111	56	453	38	201	236	83	46	152	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	75.0		0.0	55.0		55.0	75.0		0.0	50.0		0.0
Storage Lanes	1		0	1		1	1		0	1		(
Taper Length (m)	100.0			100.0			100.0			100.0		
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		0.974				0.850		0.961			0.974	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1570	1817	0	1805	1845	1615	1770	1812	0	1770	1755	(
Flt Permitted	0.407			0.239			0.632			0.430		
Satd. Flow (perm)	672	1817	0	454	1845	1615	1177	1812	0	801	1755	(
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15				43		19			11	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		360.1			209.0			510.2			193.6	
Travel Time (s)		16.2			9.4			23.0			8.7	
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 (%)	15%	2%	1%	0%	3%	0%	2%	1%	0%	2%	3%	17%
Adj. Flow (vph)	39	564	121	61	492	41	218	257	90	50	165	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	685	0	61	492	41	218	347	0	50	200	(
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	2	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	27.9	27.9		27.9	27.9	27.9	22.5	22.5		22.5	22.5	
Total Split (s)	60.0	60.0		60.0	60.0	60.0	42.0	42.0		42.0	42.0	
Total Split (%)	58.8%	58.8%		58.8%	58.8%	58.8%	41.2%	41.2%		41.2%	41.2%	
Maximum Green (s)	52.1	52.1		52.1	52.1	52.1	35.0	35.0		35.0	35.0	
Yellow Time (s)	5.9	5.9		5.9	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.1	1.1		1.1	1.1	
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)	7.9	7.9		7.9	7.9	7.9	7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	3.0	3.0		1.0	1.0	
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	
Act Effct Green (s)	33.0	33.0		33.0	33.0	33.0	20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.48	0.48		0.48	0.48	0.48	0.29	0.29		0.29	0.29	
v/c Ratio	0.40	0.78		0.28	0.56	0.05	0.64	0.65		0.23	0.39	
Control Delay	12.6	22.9		16.5	16.4	3.9	32.8	27.6		23.6	22.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	12.6	22.9		16.5	16.4	3.9	32.8	27.6		23.6	22.4	
LOS	12.0 B	22.9 C		10.5 B	10.4 B	3.9 A	52.0 C	27.0 C		23.0 C	22.4 C	
Approach Delay	D	22.3		0	15.5	A	0	29.6		0	22.7	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SE
Approach LOS		С			В			С			С	
Queue Length 50th (m)	2.6	65.9		4.4	41.3	0.0	23.6	35.5		4.7	18.7	
Queue Length 95th (m)	10.2	151.8		16.5	95.2	5.1	61.1	83.8		16.8	47.9	
Internal Link Dist (m)		336.1			185.0			486.2			169.6	
Turn Bay Length (m)	75.0			55.0		55.0	75.0			50.0		
Base Capacity (vph)	529	1434		357	1453	1281	646	1004		439	969	
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	0.07	0.48		0.17	0.34	0.03	0.34	0.35		0.11	0.21	
Intersection Summary												
Area Type:	Other											
Cycle Length: 102												
Actuated Cycle Length: 69	9.1											
Natural Cycle: 60												
Control Type: Semi Act-U	ncoord											
Maximum v/c Ratio: 0.78												
Intersection Signal Delay:	22.4			In	tersectior	n LOS: C						
Intersection Capacity Utiliz	zation 90.6%			IC	U Level of	of Service	E					

Splits and Phases: 1: Wellington Road 29 & Highway 7

		Ø4	
60 s		42 s	
		≜ 1 Ø8	
60 s		42 s	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
ane Configurations	٦	4		٦	1	1	٦	4		٦	ĥ	
Traffic Volume (veh/h)	36	519	111	56	453	38	201	236	83	46	152	3
Future Volume (veh/h)	36	519	111	56	453	38	201	236	83	46	152	3
nitial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00	v	1.00	1.00	v	1.00	1.00	v	1.00	1.00	•	1.0
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	1.0
Nork Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1678	1870	1885	1900	1856	1900	1870	1885	1900	1870	1856	164
Adj Flow Rate, veh/h	39	564	121	61	492	41	218	257	90	50	165	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.9
Percent Heavy Veh, %	15	2	1	0.52	3	0.52	2	1	0.52	2	3	1
Cap, veh/h	327	725	155	226	901	782	373	430	150	259	478	10
Arrive On Green	0.49	0.49	0.49	0.49	0.49	0.49	0.32	0.32	0.32	0.32	0.32	0.3
Sat Flow, veh/h	781	1493	320	769	1856	1610	1182	1334	467	1034	1484	31
	39	0	685	61	492	41	218	0	347	50	0	20
Grp Volume(v), veh/h	781	0	1813	769	1856	1610	1182	0	1801	1034	0	179
Grp Sat Flow(s),veh/h/ln	2.8	0.0	24.2	5.5	14.4	1.0	13.4	0.0	12.5	3.3	0.0	
Q Serve(g_s), s												6.
Cycle Q Clear(g_c), s	17.2 1.00	0.0	24.2 0.18	29.7	14.4	1.0 1.00	19.9	0.0	12.5 0.26	15.8 1.00	0.0	6.
Prop In Lane		0	880	1.00 226	004	782	1.00 373	0	0.26 580		0	0.1
ane Grp Cap(c), veh/h	327	0			901			0		259	-	57
//C Ratio(X)	0.12	0.00	0.78	0.27	0.55	0.05	0.58	0.00	0.60	0.19	0.00	0.3
Avail Cap(c_a), veh/h	474	0	1219	370	1248	1083	527	0	814	393	0	81
ICM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0
Jpstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.0
Uniform Delay (d), s/veh	20.0	0.0	16.5	28.8	13.9	10.5	27.6	0.0	22.0	28.7	0.0	20.
ncr Delay (d2), s/veh	0.2	0.0	2.7	0.9	0.7	0.0	1.4	0.0	1.0	0.1	0.0	0.
nitial 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.
%ile BackOfQ(95%),veh/In	0.3	0.0	1.2	0.9	0.3	0.0	2.7	0.0	2.8	0.7	0.0	1.
Jnsig. Movement Delay, s/veh												
_nGrp Delay(d),s/veh	20.2	0.0	19.2	29.7	14.7	10.6	29.1	0.0	23.0	28.8	0.0	20.
_nGrp LOS	С	A	В	C	В	В	С	A	C	С	A	(
Approach Vol, veh/h		724			594			565			250	
Approach Delay, s/veh		19.3			15.9			25.4			21.9	
Approach LOS		В			В			С			С	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		45.5		31.9		45.5		31.9				
Change Period (Y+Rc), s		7.9		* 7		7.9		* 7				
Max Green Setting (Gmax), s		52.1		* 35		52.1		* 35				
Max Q Clear Time (g_c+l1), s		26.2		17.8		31.7		21.9				
Green Ext Time (p_c), s		9.0		0.6		5.9		3.0				
ntersection Summary												
HCM 6th Ctrl Delay			20.3									_
ICM 6th LOS			20.5 C									
			5									

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Synchro 11 Report Page 3

Lanes, Volumes, 2: Wellington Roa		ite Driv	/eway				2025 Total PM Peak Hou (230251) 8075 Highway 7, Guelph-Eramosa T
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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	Y			ę	eî		
Traffic Volume (vph)	55	0	0	464	282	37	
Future Volume (vph)	55	0	0	464	282	37	
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					0.984		
Flt Protected	0.950						
Satd. Flow (prot)	1770	0	0	1863	1833	0	
Flt Permitted	0.950						
Satd. Flow (perm)	1770	0	0	1863	1833	0	
Link Speed (k/h)	50			80	80		
Link Distance (m)	204.3			172.4	510.2		
Travel Time (s)	14.7			7.8	23.0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	60	0	0	504	307	40	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	60	0	0	504	347	0	
Sign Control	Stop			Free	Free		
Intersection Summary							
Area Type:	Other						
Control Type: Unsignalize							
Intersection Capacity Utili	zation 34.4%			IC	CU Level of	of Service A	

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HCM 6th TWSC 2: Wellington Road 29 & Site Driveway

2025 Total PM Peak Hour (230251) 8075 Highway 7, Guelph-Eramosa TIB

Intersection			_		_	
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			ۍ ا	1	
Traffic Vol, veh/h	55	0	0	464	282	37
Future Vol. veh/h	55	0	0	464	282	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-		-	
Storage Length	0	-	-	-	-	-
Veh in Median Storag	e.# 0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	60	0	0	504	307	40
WIVINGTIOW	00	v	v	504	001	-10
Major/Minor	Minor2		Major1		/lajor2	
Conflicting Flow All	831	327	347	0	-	0
Stage 1	327	-	-	-	-	-
Stage 2	504	-	-	-	-	-
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	340	714	1212	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	607	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	340	714	1212	-	-	-
Mov Cap-2 Maneuver	340			-		
Stage 1	731	-	_	_	_	-
Stage 2	607	-		-		_
Stage 2	007	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	17.8		0		0	
HCM LOS	С					
Minor Lane/Major Mvr	nt	NBL	NIDT	EBLn1	SBT	SBR
	m					-
Capacity (veh/h)		1212	-	340	-	-
HCM Lane V/C Ratio	`	-		0.176	-	-
HCM Control Delay (s)	0	-	17.8	-	-
HCM Lane LOS		Α		С	-	-
HCM 95th %tile Q(veh	1)	0	-	0.6	-	-

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations	LDL M	 }	EDR	VVDL					INDR		301 \$	JOD
Traffic Volume (vph)	25	351	148	49	381	33	91	118	46	14	117	45
Future Volume (vph)	25	351	148	49	381	33	91	118	46	14	117	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
Storage Length (m)	75.0	1300	0.0	55.0	1300	55.0	75.0	1300	0.0	50.0	1300	0.0
Storage Lanes	1		0.0	1		1	1 1		0.0	1		0.0
Taper Length (m)	100.0		U	100.0			100.0		U	100.0		
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	1.0
Frt	1.00	0.956	1.00	1.00	1.00	0.850	1.00	0.958	1.00	1.00	0.958	1.0
Fit Protected	0.950	0.550		0.950		0.000	0.950	0.000		0.950	0.000	
Satd. Flow (prot)	1456	1717	0	1703	1827	1509	1736	1711	0	1805	1732	(
Flt Permitted	0.518		0	0.390	1021	1505	0.646		0	0.645	1102	
Satd. Flow (perm)	794	1717	0	699	1827	1509	1180	1711	0	1226	1732	(
Right Turn on Red	154	17.17	Yes	000	1021	Yes	1100	17.11	Yes	1220	11.02	Ye
Satd. Flow (RTOR)		30	100			43		21	100		21	10
Link Speed (k/h)		80			80	10		80			80	
Link Distance (m)		360.1			209.0			510.2			193.6	
Travel Time (s)		16.2			9.4			23.0			8.7	
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	0.9
Heavy Vehicles (%)	24%	7%	3%	6%	4%	7%	4%	5%	10%	0%	2%	139
Adj. Flow (vph)	27	382	161	53	414	36	99	128	50	15	127	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	543	0	53	414	36	99	178	0	15	176	(
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	-	2		-	6	-	-	8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	2	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	27.9	27.9		27.9	27.9	27.9	22.5	22.5		22.5	22.5	
Total Split (s)	60.0	60.0		60.0	60.0	60.0	42.0	42.0		42.0	42.0	
Total Split (%)	58.8%	58.8%		58.8%	58.8%	58.8%	41.2%	41.2%		41.2%	41.2%	
Maximum Green (s)	52.1	52.1		52.1	52.1	52.1	35.0	35.0		35.0	35.0	
Yellow Time (s)	5.9	5.9		5.9	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.1	1.1		1.1	1.1	
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)	7.9	7.9		7.9	7.9	7.9	7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	3.0	3.0		1.0	1.0	
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	
Act Effct Green (s)	23.4	23.4		23.4	23.4	23.4	11.8	11.8		11.8	11.8	
Actuated g/C Ratio	0.46	0.46		0.46	0.46	0.46	0.23	0.23		0.23	0.23	
v/c Ratio	0.07	0.67		0.16	0.49	0.05	0.36	0.43		0.05	0.42	
Control Delay	8.4	14.8		9.6	11.8	2.8	21.6	18.9		17.1	18.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	8.4	14.8		9.6	11.8	2.8	21.6	18.9		17.1	18.7	
LOS	А	В		А	В	А	С	В		В	В	
Approach Delay		14.5			10.9			19.9			18.6	

Synchro 11 Report Page 1

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SB
Approach LOS		В			В			В			В	
Queue Length 50th (m)	1.2	31.6		2.4	22.9	0.0	7.1	11.4		1.0	11.2	
Queue Length 95th (m)	5.2	71.6		8.9	50.6	3.3	22.2	32.2		5.6	31.7	
Internal Link Dist (m)		336.1			185.0			486.2			169.6	
Turn Bay Length (m)	75.0			55.0		55.0	75.0			50.0		
Base Capacity (vph)	763	1652		672	1757	1453	835	1217		867	1232	
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	0.04	0.33		0.08	0.24	0.02	0.12	0.15		0.02	0.14	
Intersection Summary												
Area Type:	Other											
Cycle Length: 102												
Actuated Cycle Length: 50).4											
Natural Cycle: 55												
Control Type: Semi Act-U	ncoord											
Maximum v/c Ratio: 0.67												
Intersection Signal Delay:	14.8			In	tersectior	n LOS: B						
Intersection Capacity Utiliz	zation 76.3%			IC	U Level o	of Service	D					

Splits and Phases: 1: Wellington Road 29 & Highway 7

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
ane Configurations	ň	4Î		٦	1	1	ľ	f,		٦	4Î	
Traffic Volume (veh/h)	25	351	148	49	381	33	91	118	46	14	117	4
-uture Volume (veh/h)	25	351	148	49	381	33	91	118	46	14	117	4
nitial Q (Qb), veh	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		1.0
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	1.0
Nork Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1544	1796	1856	1811	1841	1796	1841	1826	1752	1900	1870	170
Adj Flow Rate, veh/h	27	382	161	53	414	36	99	128	50	15	127	4
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	0.9
Percent Heavy Veh, %	24	7	3	6	4	7	4	5	10	0.02	2	1
Cap, veh/h	383	554	233	322	850	703	327	295	115	328	303	11
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.24	0.24	0.24	0.24	0.24	0.2
Sat Flow, veh/h	777	1200	506	836	1841	1522	1189	1250	488	1225	1285	49
Grp Volume(v), veh/h	27	0	543	53	414	36	99	0	178	15	0	17
Grp Sat Flow(s), veh/h/ln	777	0	1705	836	1841	1522	1189	0	1738	1225	0	178
Q Serve(g_s), s	1.2	0.0	12.4	2.6	7.7	0.6	3.8	0.0	4.3	0.5	0.0	4.
Cycle Q Clear(q c), s	8.9	0.0	12.4	15.0	7.7	0.6	7.9	0.0	4.3	4.8	0.0	4.
Prop In Lane	1.00	0.0	0.30	1.00	1.1	1.00	1.00	0.0	0.28	4.0	0.0	4. 0.2
ane Grp Cap(c), veh/h	383	0	787	322	850	703	327	0	410	328	0	42
//C Ratio(X)	0.07	0.00	0.69	0.16	0.49	0.05	0.30	0.00	0.43	0.05	0.00	0.4
()	846	0.00	1802	819	1946	1609	891	0.00	1234	909	0.00	126
Avail Cap(c_a), veh/h	1.00	1.00	1.002	1.00	1.00	1.00	1.00	1.00	1234	1.00	1.00	1.0
HCM Platoon Ratio	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.0
Jpstream Filter(I)		0.00	10.5	16.4	9.2		19.3	0.00	16.0	18.1	0.00	1.0
Jniform Delay (d), s/veh	12.3 0.1	0.0	10.5	0.3	9.2	7.3 0.0	0.5	0.0	0.7	0.0	0.0	0.
ncr Delay (d2), s/veh												
nitial 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.
%ile BackOfQ(95%),veh/In	0.0	0.0	0.6	0.1	0.3	0.0	0.1	0.0	0.1	0.0	0.0	0.
Jnsig. Movement Delay, s/veh		0.0	40.0	40.0	0.0	7.4	40.0	0.0	40.0	40.4	0.0	40
_nGrp Delay(d),s/veh	12.4	0.0	12.0	16.8	9.8	7.4	19.8	0.0	16.8	18.1	0.0	16.
_nGrp LOS	В	A	В	В	A	A	В	A	В	В	A	
Approach Vol, veh/h		570			503			277			191	
Approach Delay, s/veh		12.0			10.4			17.9			16.4	
Approach LOS		В			В			В			В	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.7		18.6		30.7		18.6				
Change Period (Y+Rc), s		7.9		*7		7.9		* 7				
Max Green Setting (Gmax), s		52.1		* 35		52.1		* 35				
Max Q Clear Time (g_c+I1), s		14.4		6.8		17.0		9.9				
Green Ext Time (p c), s		7.5		0.5		5.7		1.7				
				0.0		0						
ntersection Summary												
ntersection Summary HCM 6th Ctrl Delay HCM 6th LOS			13.1 B									

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Synchro 11 Report Page 3

Lanes, Volumes, 2: Wellington Roa	•	ite Driv	/eway				2030 Total AM Peak Ho (230251) 8075 Highway 7, Guelph-Eramosa
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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	Y			ا	¢Î		
Traffic Volume (vph)	18	0	0	238	298	16	
Future Volume (vph)	18	0	0	238	298	16	
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					0.993		
Flt Protected	0.950						
Satd. Flow (prot)	1770	0	0	1863	1850	0	
Flt Permitted	0.950						
Satd. Flow (perm)	1770	0	0	1863	1850	0	
Link Speed (k/h)	50			80	80		
Link Distance (m)	204.3			172.4	510.2		
Travel Time (s)	14.7			7.8	23.0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	20	0	0	259	324	17	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	20	0	0	259	341	0	
Sign Control	Stop			Free	Free		
Intersection Summary							
Area Type:	Other						
Control Type: Unsignalize							
Intersection Capacity Utili Analysis Period (min) 15	zation 26.7%			IC	U Level o	of Service A	

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HCM 6th TWSC 2: Wellington Road 29 & Site Driveway

2030 Total AM Peak Hour (230251) 8075 Highway 7, Guelph-Eramosa TIB

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			<u>بورا</u>	4	
Traffic Vol, veh/h	18	0	0	238	298	16
Future Vol. veh/h	18	0	0	238	298	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- Stop	None	-	None	-	None
Storage Length	0	-	-	-	_	-
Veh in Median Storage		-	-	0	0	-
Grade, %	e, # 0 0	-	-	0	0	-
	-			-	-	
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	0	0	259	324	17
Major/Minor	Minor2		Major1	Ν	/lajor2	
Conflicting Flow All	592	333	341	0	-	0
Stage 1	333	-	-	-	-	-
Stage 2	259	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42					
Critical Hdwy Stg 2	5.42	-	-	-	-	
Follow-up Hdwy		3.318			-	-
Pot Cap-1 Maneuver	469	709	1218	-	-	-
Stage 1	726	103	- 1210			-
Stage 2	720	-	-	-	-	-
	/04	-	-	-		-
Platoon blocked, %	100		1010	-	-	-
Mov Cap-1 Maneuver	469	709	1218	-	-	-
Mov Cap-2 Maneuver	469	-	-	-	-	-
Stage 1	726	-	-	-	-	-
Stage 2	784	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	13		0		0	
HCM LOS	B		0		0	
	D					
Minor Lane/Major Mvn	ot	NBL	NRT	EBLn1	SBT	SBR
	III				-	-
Capacity (veh/h)		1218	-	469	-	-
HCM Lane V/C Ratio		-		0.042	-	-
HCM Control Delay (s))	0	-	13	-	-
HCM Lane LOS		Α	-	В	-	-
HCM 95th %tile Q(veh	ı)	0	-	0.1	-	-

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	EBL	EBT			MDT	MDD	NDI	•	NDD	SBL	• CDT	ODE
Lane Group			EBR	WBL	WBT	WBR	NBL	NBT	NBR		SBT	SBF
Lane Configurations	5 39	1 →	404	<u></u>	1	1	1	4	88	<u></u>	1	35
Traffic Volume (vph)	39	573	121	59	500	42	219	260 260		51	168	3
Future Volume (vph)		573	121	59	500	42	219		88	51	168	-
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
Storage Length (m)	75.0		0.0	55.0		55.0 1	75.0		0.0	50.0		0.0
Storage Lanes	1		0	1		1	1		0	1		
Taper Length (m)	100.0	4.00	4.00	100.0	4.00	4.00	100.0	4.00	4.00	100.0	4 00	4.00
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		0.974				0.850		0.962			0.974	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1570	1817	0	1805	1845	1615	1770	1814	0	1770	1756	
Flt Permitted	0.357			0.182			0.610			0.373		
Satd. Flow (perm)	590	1817	0	346	1845	1615	1136	1814	0	695	1756	(
Right Turn on Red			Yes			Yes			Yes			Ye
Satd. Flow (RTOR)		15				46		18			11	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		360.1			209.0			510.2			193.6	
Travel Time (s)		16.2			9.4			23.0			8.7	
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 (%)	15%	2%	1%	0%	3%	0%	2%	1%	0%	2%	3%	17%
Adj. Flow (vph)	42	623	132	64	543	46	238	283	96	55	183	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	755	0	64	543	46	238	379	0	55	221	(
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	2	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	27.9	27.9		27.9	27.9	27.9	22.5	22.5		22.5	22.5	
Total Split (s)	60.0	60.0		60.0	60.0	60.0	42.0	42.0		42.0	42.0	
Total Split (%)	58.8%	58.8%		58.8%	58.8%	58.8%	41.2%	41.2%		41.2%	41.2%	
Maximum Green (s)	52.1	52.1		52.1	52.1	52.1	35.0	35.0		35.0	35.0	
Yellow Time (s)	5.9	5.9		5.9	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.1	1.1		1.1	1.1	
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)	7.9	7.9		7.9	7.9	7.9	7.0	7.0		7.0	7.0	
Lead/Lag	7.0	1.0		1.0	1.0	1.0	7.0	1.0		1.0	1.0	
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	3.0	3.0		1.0	1.0	
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	
Act Effct Green (s)	37.7	37.7		37.7	37.7	37.7	23.1	23.1		23.1	23.1	
Actuated q/C Ratio	0.49	0.49		0.49	0.49	0.49	0.30	23.1		0.30	0.30	
	0.49	0.49		0.49	0.49	0.49	0.30	0.30		0.30	0.30	
v/c Ratio				21.7				30.8				
Control Delay	13.6	27.4			18.1	4.0	37.9			26.8	24.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	13.6	27.4		21.7	18.1	4.0	37.9	30.8		26.8	24.6	
LOS	В	С		С	В	A	D	С		С	С	
Approach Delay		26.7			17.4			33.5			25.0	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	S
Approach LOS		С			В			С			С	
Queue Length 50th (m)	3.2	90.4		5.6	55.1	0.0	31.9	48.1		6.3	25.3	
Queue Length 95th (m)	11.1	179.2		19.8	108.5	5.6	68.6	93.1		18.5	52.9	
Internal Link Dist (m)		336.1			185.0			486.2			169.6	
Turn Bay Length (m)	75.0			55.0		55.0	75.0			50.0		
Base Capacity (vph)	421	1300		246	1316	1165	560	904		342	872	
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	0.10	0.58		0.26	0.41	0.04	0.42	0.42		0.16	0.25	
Intersection Summary												
Area Type:	Other											
Cycle Length: 102												
Actuated Cycle Length: 77	7											
Natural Cycle: 60												
Control Type: Semi Act-U	ncoord											
Maximum v/c Ratio: 0.84												
Intersection Signal Delay:					tersectior							
Intersection Capacity Utiliz	zation 94.7%			IC	CU Level of	of Service	F					

Splits and Phases: 1: Wellington Road 29 & Highway 7

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60 s	42 s	
∲ ø6	1 Ø8	
60 s	42 s	

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Movement Lane Configurations Traffic Volume (veh/h) Future Volume (veh/h) Initial Q (Qb), veh Ped-Bike Adj(A_pbT) Parking Bus, Adj Work Zone On Approach Adj Sat Flow, veh/h/h Adj Flow Rate, veh/h Peracht Heavy Veh, % Cap, veh/h Arrive On Green Sat Flow, veh/h Grp Volume(v), veh/h	EBL 39 39 0 1.00 1.00 1678 42 0.92 15 300 0.50 742	EBT 573 573 0 1.00 No 1870 623 0.92 2 755	EBR 121 121 0 1.00 1.00 1.00 1.00 1885 132 0.92	WBL 59 59 0 1.00 1.00 1.00 1900 64	WBT 500 500 0 1.00 No 1856	WBR 42 42 0 1.00 1.00	NBL 219 219 0 1.00 1.00	NBT 260 260 0	NBR 88 88 0 1.00 1.00	SBL 51 51 0 1.00	SBT 168 168 0	SBF 35 35
Traffic Volume (veh/h) Future Volume (veh/h) Initial Q (Qb), veh Ped-Bike Adj(A_pbT) Parking Bus, Adj Work Zone On Approach Adj Sat Flow, veh/h/In Adj Flow Rate, veh/h Peak Hour Factor Percent Heavy Veh, % Cap, veh/h Arrive On Green Sat Flow, veh/h	39 39 0 1.00 1.00 1678 42 0.92 15 300 0.50	573 573 0 1.00 No 1870 623 0.92 2	121 0 1.00 1.00 1885 132	59 59 0 1.00 1.00 1900	500 500 0 1.00 No 1856	42 42 0 1.00 1.00	219 219 0 1.00	260 260 0	88 0 1.00	51 51 0 1.00	168 168	35
Traffic Volume (veh/h) Tuture Volume (veh/h) nitial Q (Qb), veh Ped-Bike Adj(A_pbT) Parking Bus, Adj Work Zone On Approach Adj Sat Flow, veh/h/In Adj Flow Rate, veh/h Peak Hour Factor Percent Heavy Veh, % Cap, veh/h Arrive On Green Sat Flow, veh/h	39 39 0 1.00 1.00 1678 42 0.92 15 300 0.50	573 573 0 1.00 No 1870 623 0.92 2	121 0 1.00 1.00 1885 132	59 59 0 1.00 1.00 1900	500 500 0 1.00 No 1856	42 42 0 1.00 1.00	219 219 0 1.00	260 260 0	88 0 1.00	51 51 0 1.00	168 168	3
Future Volume (veh/h) nitial Q (Qb), veh Ped-Bike Adj(A_pbT) Parking Bus, Adj Work Zone On Approach Adj Stal Flow, veh/h/In Adj Flow Rate, veh/h Percent Heavy Veh, % Cap, veh/h Arrive On Green Sat Flow, veh/h	39 0 1.00 1.00 1678 42 0.92 15 300 0.50	573 0 1.00 No 1870 623 0.92 2	121 0 1.00 1.00 1885 132	59 0 1.00 1.00 1.00	500 0 1.00 No 1856	42 0 1.00 1.00	219 0 1.00	260 0	88 0 1.00	51 0 1.00	168	3
nitial Q (Qb), veh Ped-Bike Adj(A_pbT) Parking Bus, Adj Work Zone On Approach Adj Sat Flow, veh/h/In Adj Flow Rate, veh/h Peacent Heavy Veh, % Cap, veh/h Artive On Green Sat Flow, veh/h	0 1.00 1.00 1678 42 0.92 15 300 0.50	0 1.00 No 1870 623 0.92 2	0 1.00 1.00 1885 132	0 1.00 1.00 1900	0 1.00 No 1856	0 1.00 1.00	0 1.00	0	0 1.00	0 1.00		
Ped-Bike Adj(A_pbT) Parking Bus, Adj Nork Zone On Approach Adj Sat Flow, veh/h/ln Adj Flow Rate, veh/h Peak Hour Factor Percent Heavy Veh, % Cap, veh/h Arrive On Green Sat Flow, veh/h	1.00 1.00 1678 42 0.92 15 300 0.50	1.00 No 1870 623 0.92 2	1.00 1.00 1885 132	1.00 1.00 1900	1.00 No 1856	1.00 1.00	1.00		1.00	1.00	Ū	
Parking Bus, Adj Nork Zone On Approach Adj Sat Flow, veh/h/ln Adj Flow Rate, veh/h Peak Hour Factor Percent Heavy Veh, % Cap, veh/h Arrive On Green Sat Flow, veh/h	1.00 1678 42 0.92 15 300 0.50	No 1870 623 0.92 2	1.00 1885 132	1.00 1900	No 1856	1.00		1.00				1.0
Nork Žone Ön Ápproach Adj Sat Flow, veh/h/In Adj Flow Rate, veh/h Peak Hour Factor Percent Heavy Veh, % 2ap, veh/h Arrive On Green Sat Flow, veh/h	1678 42 0.92 15 300 0.50	No 1870 623 0.92 2	1885 132	1900	No 1856		1.00			1.00	1.00	1.0
Adj Sat Flow, veh/h/ln Adj Flow Rate, veh/h Peak Hour Factor Percent Heavy Veh, % Cap, veh/h Arrive On Green Sat Flow, veh/h	42 0.92 15 300 0.50	1870 623 0.92 2	132		1856			No	1.00	1.00	No	1.0
Adj Flow Rate, veh/h Peak Hour Factor Percent Heavy Veh, % Cap, veh/h Arrive On Green Sat Flow, veh/h	42 0.92 15 300 0.50	623 0.92 2	132			1900	1870	1885	1900	1870	1856	164
Peak Hour Factor Percent Heavy Veh, % Cap, veh/h Arrive On Green Sat Flow, veh/h	0.92 15 300 0.50	0.92 2		04	543	46	238	283	96	55	183	3
Percent Heavy Veh, % Cap, veh/h Arrive On Green Sat Flow, veh/h	15 300 0.50	2	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.9
Cap, veh/h Arrive On Green Sat Flow, veh/h	300 0.50		1	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.9
Arrive On Green Sat Flow, veh/h	0.50	/ 33	160	187	936	812	357	450	153	235	498	10
Sat Flow, veh/h												
		0.50	0.50	0.50	0.50	0.50	0.33	0.33	0.33	0.33	0.33	0.3
Grn Volume(v) veh/h		1496	317	720	1856	1610	1160	1346	457	1004	1490	30
	42	0	755	64	543	46	238	0	379	55	0	22
Grp Sat Flow(s),veh/h/ln	742	0	1813	720	1856	1610	1160	0	1803	1004	0	180
ຊ Serve(g_s), s	3.9	0.0	32.6	7.6	18.9	1.3	18.1	0.0	16.3	4.5	0.0	8.
Cycle Q Clear(g_c), s	22.8	0.0	32.6	40.2	18.9	1.3	26.7	0.0	16.3	20.8	0.0	8.
Prop In Lane	1.00		0.17	1.00		1.00	1.00		0.25	1.00		0.1
Lane Grp Cap(c), veh/h	300	0	915	187	936	812	357	0	602	235	0	60
V/C Ratio(X)	0.14	0.00	0.83	0.34	0.58	0.06	0.67	0.00	0.63	0.23	0.00	0.3
Avail Cap(c_a), veh/h	345	0	1025	231	1049	910	410	0	685	281	0	68
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	1.0
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.0
Uniform Delay (d), s/veh	24.0	0.0	19.4	36.5	16.0	11.7	33.4	0.0	25.9	34.7	0.0	23.
Incr Delay (d2), s/veh	0.3	0.0	5.5	1.5	0.9	0.0	3.4	0.0	1.5	0.2	0.0	0.
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.
%ile BackOfQ(95%),veh/In	0.6	0.0	5.8	1.5	2.4	0.1	5.0	0.0	5.4	1.1	0.0	2.
Unsig. Movement Delay, s/vel		0.0	0.0	1.0	2.7	0.1	0.0	0.0	5.7	1.1	0.0	۷.
LnGrp Delay(d),s/veh	24.3	0.0	24.9	38.0	16.9	11.7	36.8	0.0	27.4	34.9	0.0	23.
_nGrp LOS	24.J C	0.0 A	24.3 C	00.0 D	10.5 B	B	00.0 D	0.0 A	27.4 C	04.9 C	A	20.
Approach Vol, veh/h	0	797	0	D	653	D	D	617	0	0	276	
		24.9			18.6						276	
Approach Delay, s/veh		24.9 C			10.0 B			31.0 C			25.7 C	
Approach LOS		U			В			U			U	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		54.4		37.8		54.4		37.8				
Change Period (Y+Rc), s		7.9		* 7		7.9		* 7				
Max Green Setting (Gmax), s		52.1		* 35		52.1		* 35				
Max Q Clear Time (g_c+l1), s		34.6		22.8		42.2		28.7				
Green Ext Time (p_c), s		8.2		0.6		4.3		2.1				
u = 7:												
Intersection Summary HCM 6th Ctrl Delay			24.8		_		_	_			_	
ICM 6th LOS			24.8 C									
			U									

Paradigm Transportation Solutions Limited

Synchro 11 Report Page 3

Lanes, Volumes, 2: Wellington Roa		ite Driv	/eway				2030 Total PM Peak Hou (230251) 8075 Highway 7, Guelph-Eramosa T
	٨	*	•	t	Ļ		
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	Y			ę	eî		
Traffic Volume (vph)	55	0	0	512	311	37	
Future Volume (vph)	55	0	0	512	311	37	
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					0.986		
Flt Protected	0.950						
Satd. Flow (prot)	1770	0	0	1863	1837	0	
Flt Permitted	0.950						
Satd. Flow (perm)	1770	0	0	1863	1837	0	
Link Speed (k/h)	50			80	80		
Link Distance (m)	204.3			172.4	510.2		
Travel Time (s)	14.7			7.8	23.0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	60	0	0	557	338	40	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	60	0	0	557	378	0	
Sign Control	Stop			Free	Free		
Intersection Summary							
Area Type:	Other						
Control Type: Unsignalize							
Intersection Capacity Utili	zation 36.9%			IC	CU Level of	of Service A	

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HCM 6th TWSC 2: Wellington Road 29 & Site Driveway

2030 Total PM Peak Hour (230251) 8075 Highway 7, Guelph-Eramosa TIB

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			ę.	1	
Traffic Vol, veh/h	55	0	0	512	311	37
Future Vol. veh/h	55	0	0	512	311	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-		-		-	
Storage Length	0	-		-		-
Veh in Median Storage		-	_	0	0	-
Grade. %	0, 7 0	-	-	0	0	_
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	92 2	92 2	92 2	92 2	92 2	92 2
Mymt Flow	60	2	2	557	338	40
IVIVITIE FIOW	60	0	U	55 <i>1</i>	338	40
Major/Minor	Minor2		Major1	Ν	Major2	
Conflicting Flow All	915	358	378	0	-	0
Stage 1	358	-	-	-	-	-
Stage 2	557	-	-	-		-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-		-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy		3.318	2 2 1 8			
Pot Cap-1 Maneuver	303	686	1180	-	-	-
Stage 1	707		-		-	-
Stage 2	574		-			-
Platoon blocked. %	574	-	-			-
Mov Cap-1 Maneuver	303	686	1180	-	-	-
	303	000	- 1180	-	-	-
Mov Cap-2 Maneuver		-	-	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	574	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	19.8		0		0	
HCM LOS	13.0 C		v		U	
	U					
Minor Lane/Major Mvn	nt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)		1180	-	303	-	-
HCM Lane V/C Ratio		-	-	0.197	-	-
HCM Control Delay (s))	0	-	19.8	-	-
HCM Lane LOS	,	А	-	С	-	-
HCM 95th %tile Q(veh	l)	0	-	0.7	-	-
	·/	· ·		0.1		

Paradigm Transportation Solutions Limited

Appendix F

AutoTURN Drawings



	A			MELLINGTON				100 kg	р 1
					COUNTY ROAD 30	APPROX. EP	- The Market		
							R 12.57 m		
F T A	THIS AUTOTURN S PREPARED USING THE PRACTITIONE AND/OR THE COM	BASE PLA R HAS NO PLETENES	H ANALYSIS HAS BEEN NS PROVIDED BY OTHERS. I INSPECTED THE ACCURACY S OF THESE BASE PLANS AND	North North		A.	WEILINGTON	A COUNT ROND TO	
(F • /	OMISSIONS WHICH RESULT. AIR PHOTO UNDER	H MAY BE I	E FOR ANY ERRORS OR NCORPORATED HEREIN AS A RCE: GOOGLE EARTH XIMATE BASED OFF AIR		DESIGN	I VEHICLE:		0.80 23	
					3.00 1.05 e2 WB-20.5			JRN ASSESSM AY 7 & WELLIN I	
NO.	DATE	INITIAL	REVISION DETAIL		Tractor Weth Traiter Weth Traiter Weth Track	meters 2.60 Lock to Lock Time : 6.0 2.20 Steering Argle : 30,1 2.20 Anticulating Argle : 70,0	naradigm	PROJECT NO.: 230251 DRAWN: LC	DATE: FE

DATE	INITIAL	RE
DATE		



- NORTHBOUND RIGHT-TURN N COUNTY ROAD 29 GUELPH-IOSA, ON

DATE: FEBRUARY 2024	SCALE: 1:500	DRAWING NO .:
DESIGN: LC	CHECK: RP	01

F T A S C C F F • A • E	THIS AUTOTURN S PREPARED USING THE PRACTITIONE AND/OR THE COM BHALL NOT BE RE DMISSIONS WHICH RESULT. AIR PHOTO UNDER	BASE PLA R HAS NOT PLETENES SPONSIBLE H MAY BE II RLAY SOUF	HANALYSIS HAS BEEN SPROVIDED BY OTHERS. INSPECTED THE ACCURACYS SOFT ANY ERRORS OR COR ANY ERRORS OR SOFT ANY ERRORS OR COR DATE FOR THE ACCURACYS SOFT ANY ERRORS OR COR DATE FOR THE ACCURACYS	Mattheored	APPROX.	EP	A DE	A COUNT ROAD 30	
					DESIGN VEHICLE:				
								TURN ASSES AY 7 & WELLI	
					WB-20.5 meters				ERA
					Trackor Width : 2.40 Look to Look Trailer Width : 2.40 Seining Ang Trackor Track : 2.40 Antioulating An Trailer Track : 2.40 Antioulating An	Time : 6.0 le : 30.1 ingle : 70.0	paradigm	PROJECT NO.: 230251	DATE:
NO.	DATE	INITIAL	REVISION DETAIL					DRAWN: LC	DESIG



NT - WESTBOUND LEFT-TURN ON COUNTY ROAD 29 GUELPH-AMOSA, ON

DATE: FEBRUARY 2024	SCALE: 1:500
DESIGN: LC	CHECK: RP

DRAWING NO .:

02

1	THIS AUTOTURN S PREPARED USING THE PRACTITIONED AND/OR THE COMP SHALL NOT BE RES OMISSIONS WHICH RESULT. AIR PHOTO UNDER	BASE PLAI R HAS NOT PLETENESS SPONSIBLE I MAY BE IN RLAY SOUF	HANALYSIS HAS BEEN SPROVIDED BY OTHERS INSPECTED THE ACCURACY OF THESE BASE PLANS AND FOR ANY ERRORS OR INSPECTED THE ACCURACY OF THESE BASE PLANS AND FOR ANY ERRORS OR INSPECTED THE ACCURACY OF THESE BASE PLANS AND FOR ANY ERRORS OR INSPECTED THE ACCURACY OF THESE BASE PLANS AND FOR ANY ERRORS OR INSPECTED THE ACCURACY	MELINGORGON	Address of the second s	Barring Contractions of the second se	A COUNT ROAD TO THE ARCAN	
							URN ASSESS	
					300 150 0.00 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	HIC	GHWAY 7 & WI GUEL	
					Taackov Widih : 2.40 Look Tune : 6.0 Taalow Widih : 2.40 Stevicy Angle : 30.1 Taackov Track : 2.40 Articulating Angle : 70.0 Taalow Track : 2.60	剩 paradigm	PROJECT NO.: 230251	DATE: I
1 10		INTITIAL			I. I			

NO.	DATE	INITIAL	RE

REVISION DETAIL	



NT - EASTBOUND RIGHT-TURN NGTON COUNTY ROAD 29 ERAMOSA, ON

DRAWN: LC

DATE: FEBRUARY 2024	SCALE: 1:500	DRAWING NO .:
DESIGN: LC	CHECK: RP	03

			VELLING TON COUNTY ROAD 20	APPROX.EP			
				R 12.57 m	ARCINE ARCINE		
P T A S C R • A • E	HIS AUTOTURN S REPARED USING HE PRACTITIONE ND/OR THE COM HALL NOT BE RE MISSIONS WHICH ESULT. IR PHOTO UNDER	BASE PLAI IR HAS NOT PLETENESS SPONSIBLE H MAY BE IN RLAY SOUF	H ANALYSIS HAS BEEN NS PROVIDED BY OTHERS. TINSPECTED THE ACCURACY S OF THESE BASE PLANS AND F FOR ANY ERRORS OR NCORPORATED HEREIN AS A CCE: GOOGLE EARTH XIMATE BASED OFF AIR		NG DA	A COUNT ROAD 39	
				DESIGN VEHICLE:		JRN ASSESSN HWAY 7 & WE GUEL	
NO.	DATE	INITIAL	REVISION DETAIL	medlers 2.20 Lock to Lock Time : 6.0 Trailer Widin : 2.20 Stearing Angle : 30.1 Trailor Track : 2.60 Articulating Angle : 70.0 Tratler Track : 2.60	naradigm	PROJECT NO.: 230251 DRAWN: LC	DATE: FEBRU
I NU.	DATE	INTIAL				DRAWN: LC	DESIGN: LC



- NORTHBOUND LEFT-TURN IGTON COUNTY ROAD 29 ERAMOSA, ON

FEBRUARY 2024

SCALE: 1:500

DRAWING NO .: 04