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TRANSPORTATION SOLUTIONS LIMITED

393 Rymal Road West, Village Square Transportation Impact Study & Parking Study Update

Paradigm Transportation Solutions Limited

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ptsl.com



Project Summary



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ZEST Communities

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393 Rymal Road West, Village Square Transportation Impact & Parking Study Update



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Executive Summary

Content

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact Study and Parking Study for the St. Elizabeth Village Master Plan Development of the Village Square. The site is located at 393 Rymal Road West in the City of Hamilton.

This study is an update to a previous version which was submitted to the City in May 2023. This update addresses changes to the Village Square portion of the development located on the southeast corner of the Rymal Road West and Hazelton Avenue/Bishop Ryan Way intersection.

Development Concept

The Village Square concept includes approximately 1,012 m² (10,893 sq.ft.) of ground floor retail, 1,012 m² (10,893 sq.ft.) of second floor office, approximately 374 apartment units, and 56 townhome units.

Vehicle access is proposed via the existing signalized intersection of Hazelton Avenue/Bishop Ryan Way at Rymal Road West. Bishop Ryan Way forms the south leg of the intersection and will operate a private driveway.

Conclusions

The main findings and conclusions of this study are as follows:

Transportation Impact Assessment

- ▶ **Existing Traffic Operations:** The study area intersections are operating with acceptable levels of service during the weekday AM, PM, and Saturday peak hours.
- ▶ **Site Trip Generation:** Upon full build-out, the subject site's total net trip generation is approximately 222 AM peak hour trips, 239 PM peak hour trips, and 234 Saturday peak hour trips.
- ▶ **Background Traffic Operations:** the study area intersections are forecast to operate with acceptable levels of service during the weekday AM, PM, and Saturday peak hours. The following critical movements are noted:
 - Rymal Road West and Hazelton Avenue/Bishop Ryan Way



- Westbound left-turn – queue length exceeds available storage during PM and Saturday peak hours. The westbound left-turn queue reach can be accommodated in the centre two-way left-turn lane. The average queue lengths can be accommodated in the westbound left-turn storage lane during the PM and Saturday peak hours.
 - ▶ **Total Traffic Operations:** The capacity deficiencies identified under background conditions will continue to occur with the addition of the site generated traffic. Site generated traffic results in the following critical movements:
 - Rymal Road West and Hazelton Avenue/Bishop Ryan Way
 - Eastbound through/right-turn – LOS D and v/c ratio of 0.98 during the Saturday peak hour; and
 - Westbound left-turn – LOS F, v/c ratio greater than 1.00, and queue length exceeds available storage during the PM peak hour.
 - ▶ **Remedial Measures:** To improve operations at the Rymal Road West and Hazelton Avenue/Bishop Ryan Way intersection an exclusive northbound left-turn lane as well as optimized signal phasing timing could be implemented upon build-out of the subject site. The concept plan illustrates a northbound left-turn lane with 30 metres of storage, which is forecast to contain the expected queue length.

With the improvements, the intersection of Rymal Road West and Hazelton Avenue/Bishop Ryan Way is forecast to operate with acceptable levels of service.

Parking Study

- ▶ The proposed parking supply is 547 spaces.
- ▶ The proposed development requires a total of 402 to 602 parking spaces to comply with the City's Zoning By-law. With a proposed supply of 547 parking spaces the site's parking supply is within the zoning by-law design domain.



Recommendations

Based on the findings of this study, it is recommended that:

- ▶ The City of Hamilton consider optimizing signal phases timings at the Rymal Road West and Hazelton Avenue intersection upon build-out of the subject site.
- ▶ The northbound left-turn lane on Bishop Ryan Way at Rymal Road West be constructed with at least 30-metres of storage.
- ▶ Parking for non-residents (visitors) be shared between all land uses.



Contents

1	Introduction	1
2	Existing Conditions	3
2.1	Roadway Characteristics.....	3
2.2	Pedestrian Network.....	3
2.3	Transit	6
2.4	Traffic Volumes	10
2.5	Traffic Operations	12
3	Development Concept	15
3.1	Description.....	15
3.2	Proposed Road Network.....	17
3.2.1	Gate Operations	17
3.3	Trip Generation.....	19
3.4	Trip Distribution and Assignment.....	21
4	Future Traffic Conditions	24
4.1	Forecast Traffic Volumes.....	24
4.2	Forecast Background Traffic Operations.....	28
4.3	Forecast Total Traffic Operations	30
5	Remedial Measures.....	32
5.1	Rymal Road West at Hazelton Avenue/Bishop Ryan Way ..	32
6	Parking Justification.....	34
6.1	Proposed Parking Supply.....	34
6.2	Zoning By-Law Requirements.....	34
6.3	Residential Parking Standards Review and Update.....	35
6.4	Summary	36
7	Conclusions and Recommendations	37
7.1	Conclusions.....	37
7.2	Recommendations	38



Appendices

Appendix A	Pre-Study Consultation
Appendix B	Traffic Data
Appendix C	Base Year Synchro/SimTraffic Reports
Appendix D	Gate Operations
Appendix E	TTS Trip Distribution
Appendix F	Background Development Traffic Volumes
Appendix G	Background Synchro/SimTraffic Reports
Appendix H	Total Synchro/SimTraffic Reports
Appendix I	Total with Improvements Synchro/SimTraffic Reports

Figures

Figure 1.1:	Site Location	2
Figure 2.1:	Existing Lane Configuration & Traffic Control.....	4
Figure 2.2:	Pedestrian Network	5
Figure 2.3:	Transit Network.....	8
Figure 2.4:	Transit Stop Locations	9
Figure 2.5:	Base Year Traffic Volumes	11
Figure 3.1:	Concept Plan.....	16
Figure 3.2:	Site Generated Traffic Volumes.....	22
Figure 3.3:	Pass-by Traffic Volumes	23
Figure 4.1:	Future Background Traffic Volumes	26
Figure 4.2:	Future Total Traffic Volumes	27

Tables

Table 2.1:	Existing Transit Routes.....	7
Table 2.2:	Turning Movement Summary	10
Table 2.3:	Base Year Traffic Operations	14
Table 3.1:	Trip Generation	20
Table 3.2:	Trip Distribution.....	21
Table 4.1:	Background Traffic Operations	29
Table 4.2:	Total Traffic Operations	31
Table 5.1:	Total Operations with Remedial Measures.....	33
Table 6.1:	Zoning By-Law Parking Requirement.....	35



1 Introduction

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact Study and Parking Study for the St. Elizabeth Village Master Plan Development of the Village Square. The site is located at 393 Rymal Road West in the City of Hamilton. **Figure 1.1** illustrates the site location.

This study is an update to the April 2022 TIS¹ which focuses on the Village Square portion of the development.

The scope of the study includes:

- ▶ Determine and assess the current study area traffic conditions;
- ▶ Forecast the additional traffic generated by the proposed development;
- ▶ Analyze the impacts of the additional traffic on the study area road network;
- ▶ Recommend necessary remedial measures required to mitigate the transportation impacts; and
- ▶ Estimate and analysis of the feasibility of the proposed parking supply.

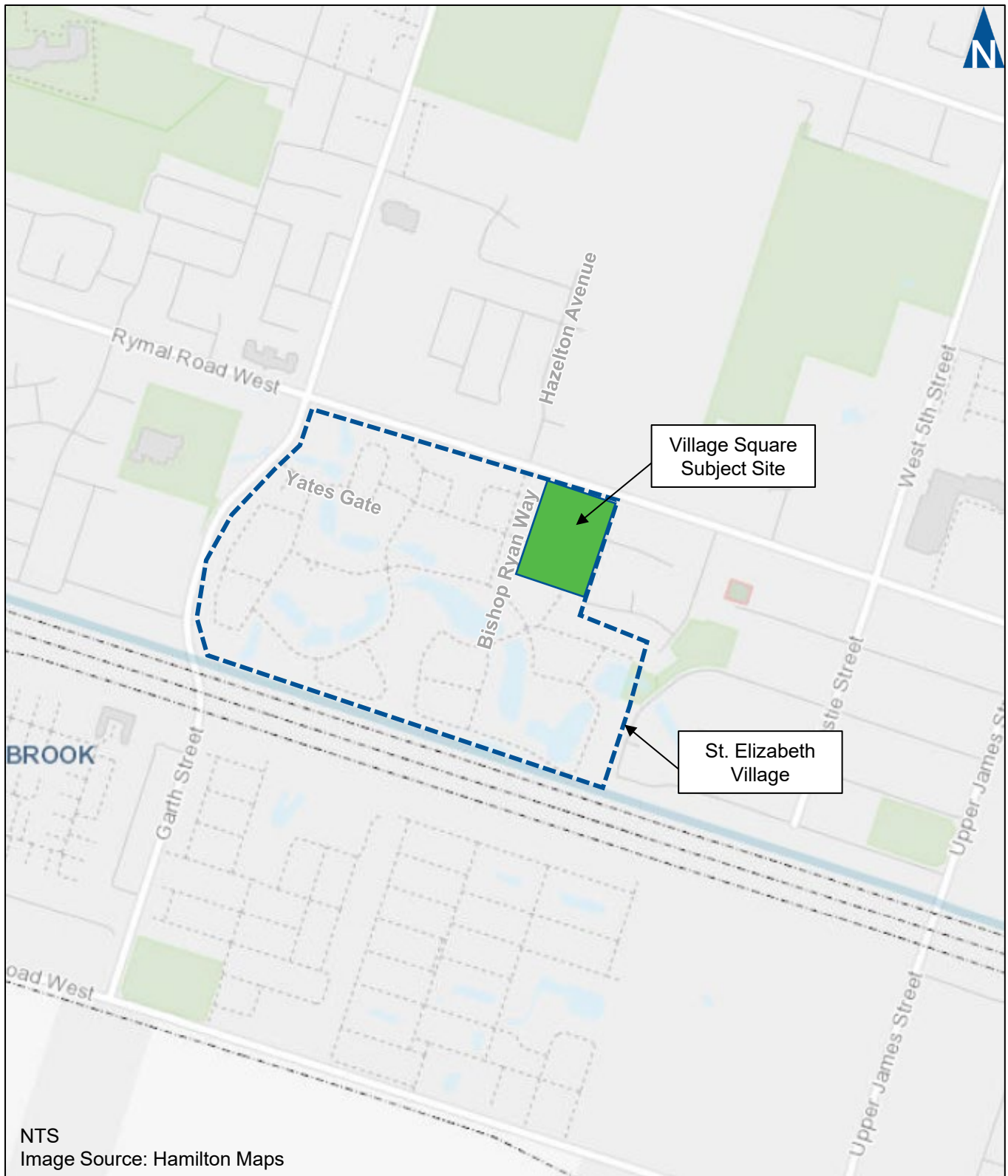
Pre-study consultation for the update was sent to the City of Hamilton via email in March 2023. **Appendix A** contains the pre-study correspondence.

The study area intersections assessed in this study update include:

- ▶ Rymal Road West and Hazelton Avenue/Bishop Ryan Way (signalized)
- ▶ Bishop Tonnos Way and Bishop Ryan Way (unsignalized); and
- ▶ The two proposed driveway connections to Bishop Ryan Way.

¹ Paradigm Transportation Solutions Limited, 393 Rymal Road West, Hamilton, ON
Transportation Impact Study & TDM Options Report Update, (PTSL April 2022).





2 Existing Conditions

2.1 Roadway Characteristics

The characteristics of the roadways within the study area are described generally as follows:

- ▶ **Rymal Road West** is an east-west major arterial roadway. The roadway's cross-section is primarily urban with two travel lanes per direction. Across the site's frontage, this roadway has a five-lane cross section with two travel lanes in each direction and a two-way centre left-turn lane. Sidewalks are provided along both sides of this roadway east of Garth Street. The posted speed limit on this roadway is 60 km/h. The intersection with Hazelton Avenue/Bishop Ryan Way is signalized. There is a paved off-road cycle path on the north side of Rymal Road. There are no on-street cycle lanes.
- ▶ **Hazelton Avenue** is a north-south local roadway. The statutory speed limit on Hazelton Avenue is 40 km/h. Sidewalks are provided on both sides of this roadway. No cycling facilities are present along this roadway.
- ▶ **Bishop Ryan Way** is a private driveway opposite Hazelton Avenue. This roadway operates with a two-lane cross-section. At present there are no sidewalks along this roadway.

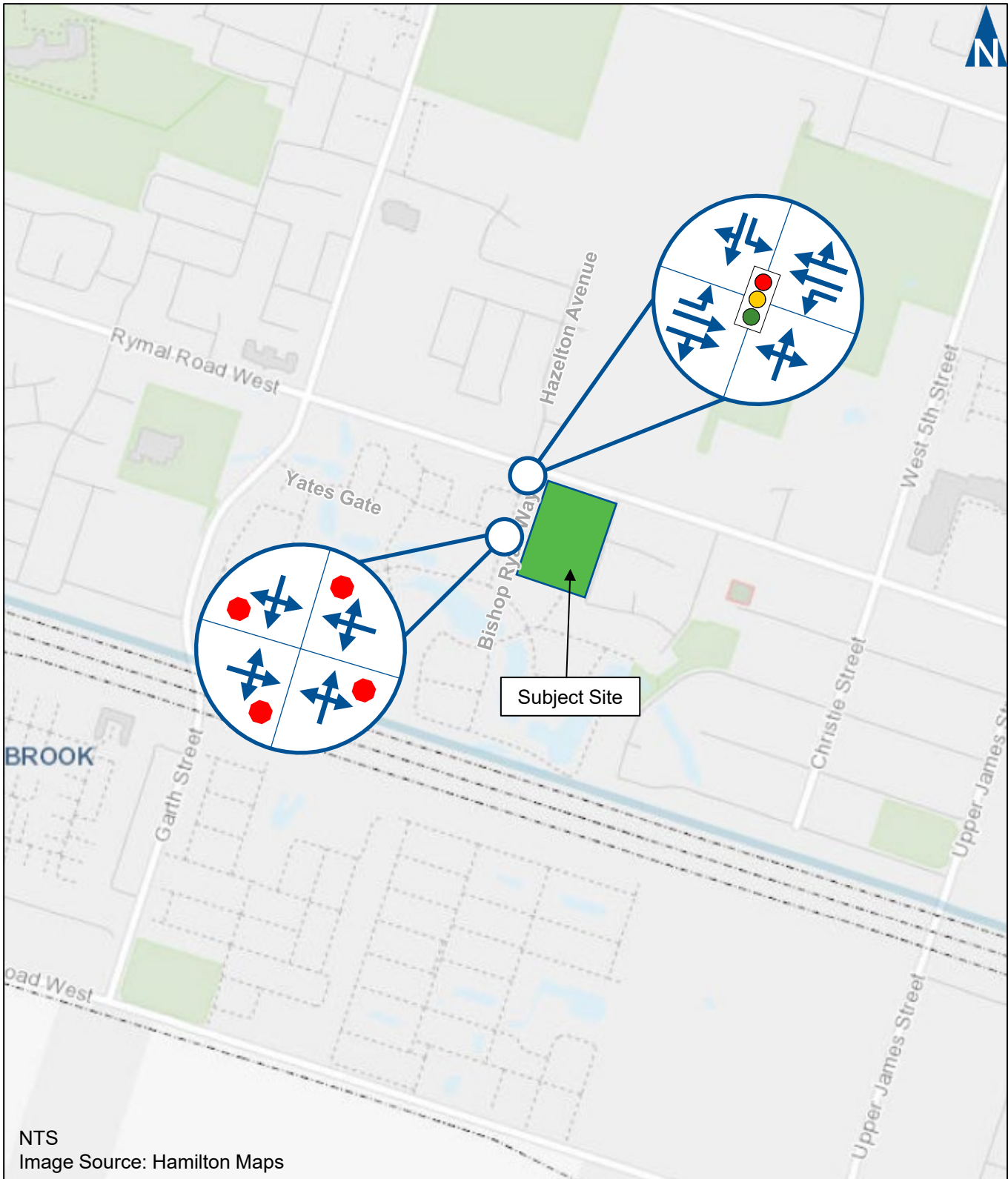
The internal intersection of Bishop Tonnos Way at Bishop Ryan Way operates as an all-way stop controlled intersection.

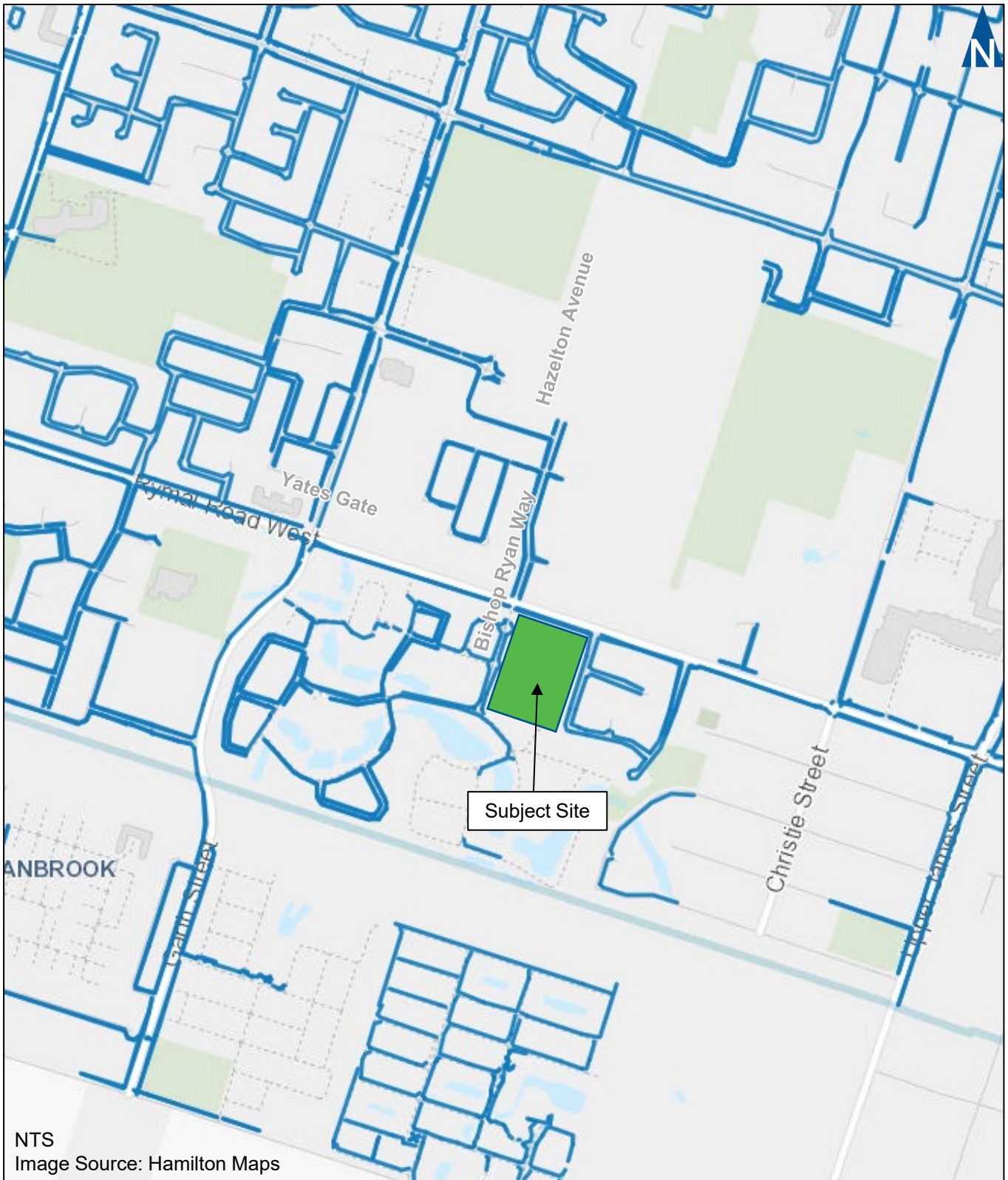
Figure 2.1 illustrates the existing lane configurations and traffic control at the study area intersections.

2.2 Pedestrian Network

Sidewalks are provided on both sides of all roads within the study area. Crosswalks are provided on all approaches of the signalized and unsignalized study area intersections. **Figure 2.2** illustrates the existing pedestrian facilities near the subject site.







Pedestrian Network

2.3 Transit

Hamilton Street Railway (HSR) operates the public transit system in the City of Hamilton. **Figure 2.3** illustrates the existing transit network. **Figure 2.4** illustrates the existing transit stops within 500 metres (about a 5-minute walk) of the subject site².

Table 2.1 summarizes the HSR routes in operation along the study area roadways.

The existing transit routes provide opportunities for users to transfer to/from other HSR routes at various locations. They also provide connections to inter-regional GO Transit service in the City's Downtown area and the Hamilton "John C. Munro" International Airport (via the express #20 - A-Line). The express route operates with 30-minute headways between the airport and Pier 8 at the Hamilton Waterfront.

Route 35 (College) provides the most direct and convenient transit service to the site. Transit stops are provided internal to the subject site along the "St. Elizabeth Village Loop."

All HSR buses have accessible low floors with ramps that provide entry and exit without steps. This allows users to enter and exit the vehicles more easily. The HSR provides accessible transportation services in addition to the regular transit routes.

The *City of Hamilton Transportation Master Plan Review and Update*³ identifies Rymal Road West as part of the BLAST network, specifically the S Line, which is a proposed frequent rapid transit system in the City of Hamilton. The timing for Rapid Transit along the Rymal Road corridor is considered long-term.

² <https://www.triplinx.ca/>

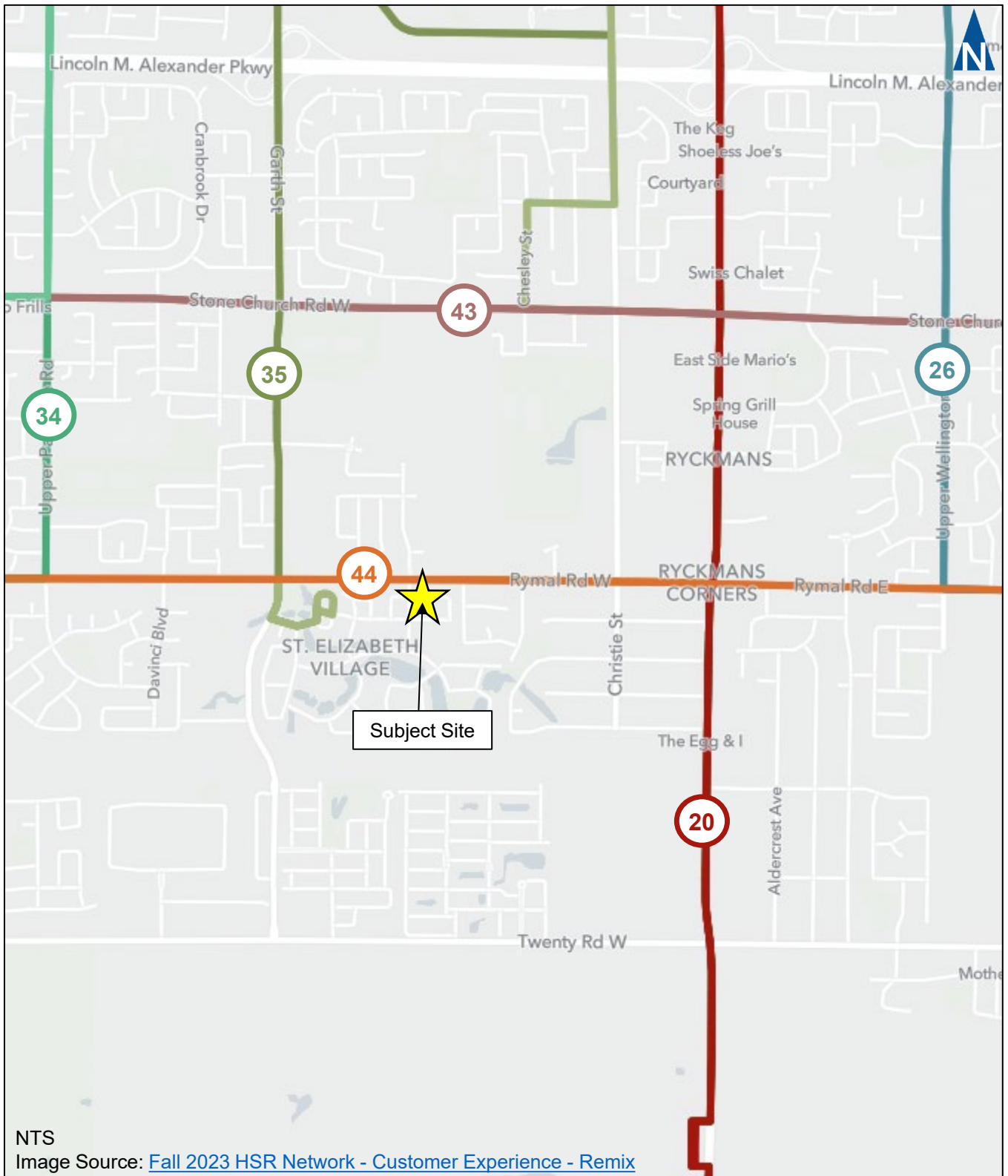
³ City of Hamilton, *Transportation Master Plan Review and Update, Map 2: Rapid Transit Map & Inter-Regional Connections*.



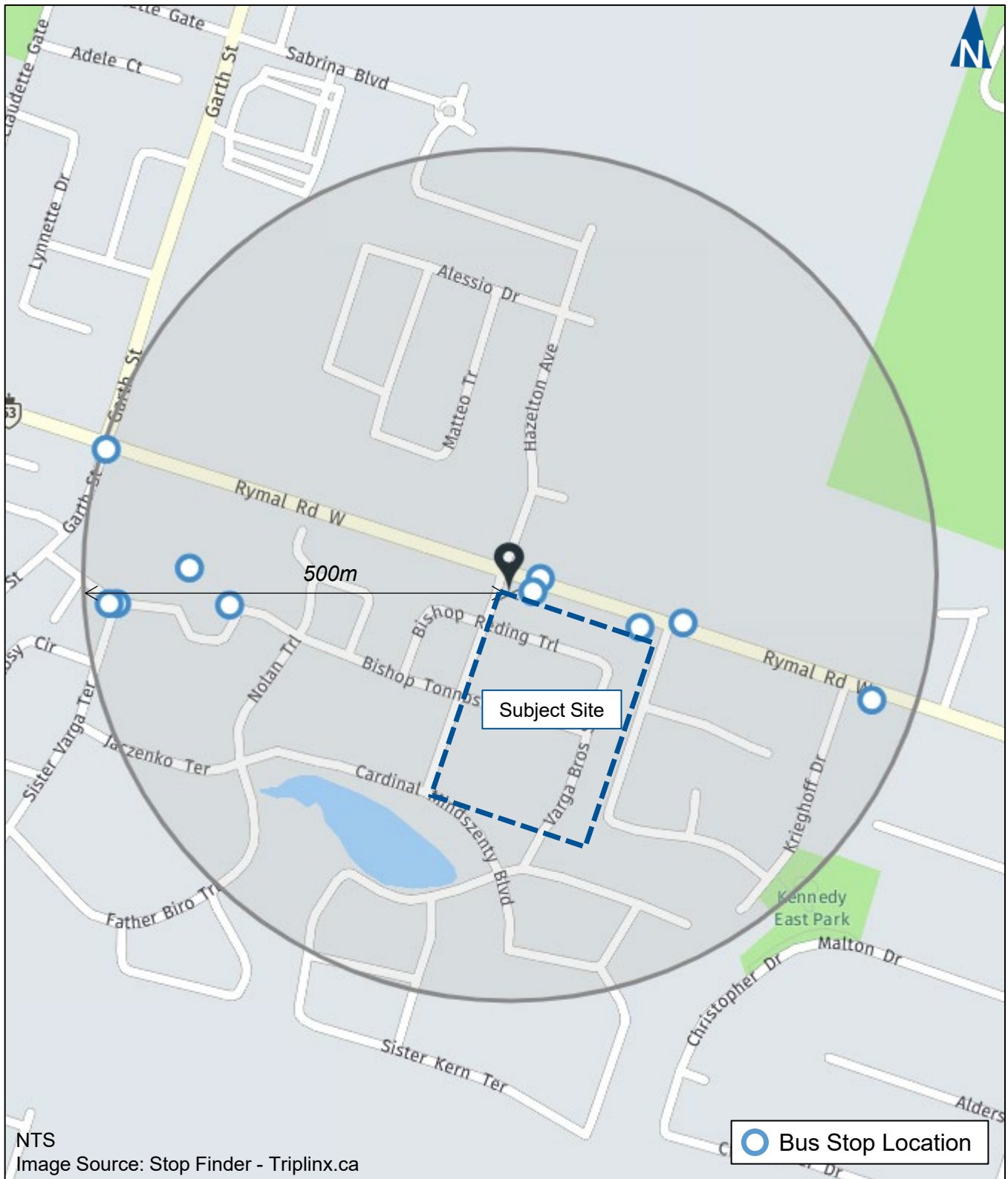
TABLE 2.1: EXISTING TRANSIT ROUTES

Route	Direction	Day of Week	Frequency
34 – Upper Paradise	North/South	Weekday	20-30 minutes
		Saturday	30 minutes
		Sunday	60 minutes
35 - College	North/South	Weekday	15-30 minutes
		Saturday	20-30 minutes
		Sunday	30 minutes
43 – Stone Church	East/West	Weekday	30-60 minutes
		Saturday	
		Sunday	
44 - Rymal	East/West	Weekday	30-60 minutes
		Saturday	
		Sunday	





Transit Network



Transit Stop Locations

2.4 Traffic Volumes

Turning movement counts conducted by Paradigm for a typical weekday and a Saturday condition establish the existing traffic conditions. **Appendix B** contains the existing turning movement count data and signal timings. **Table 2.2** summarizes the dates of the turning movement counts at the study area intersections.

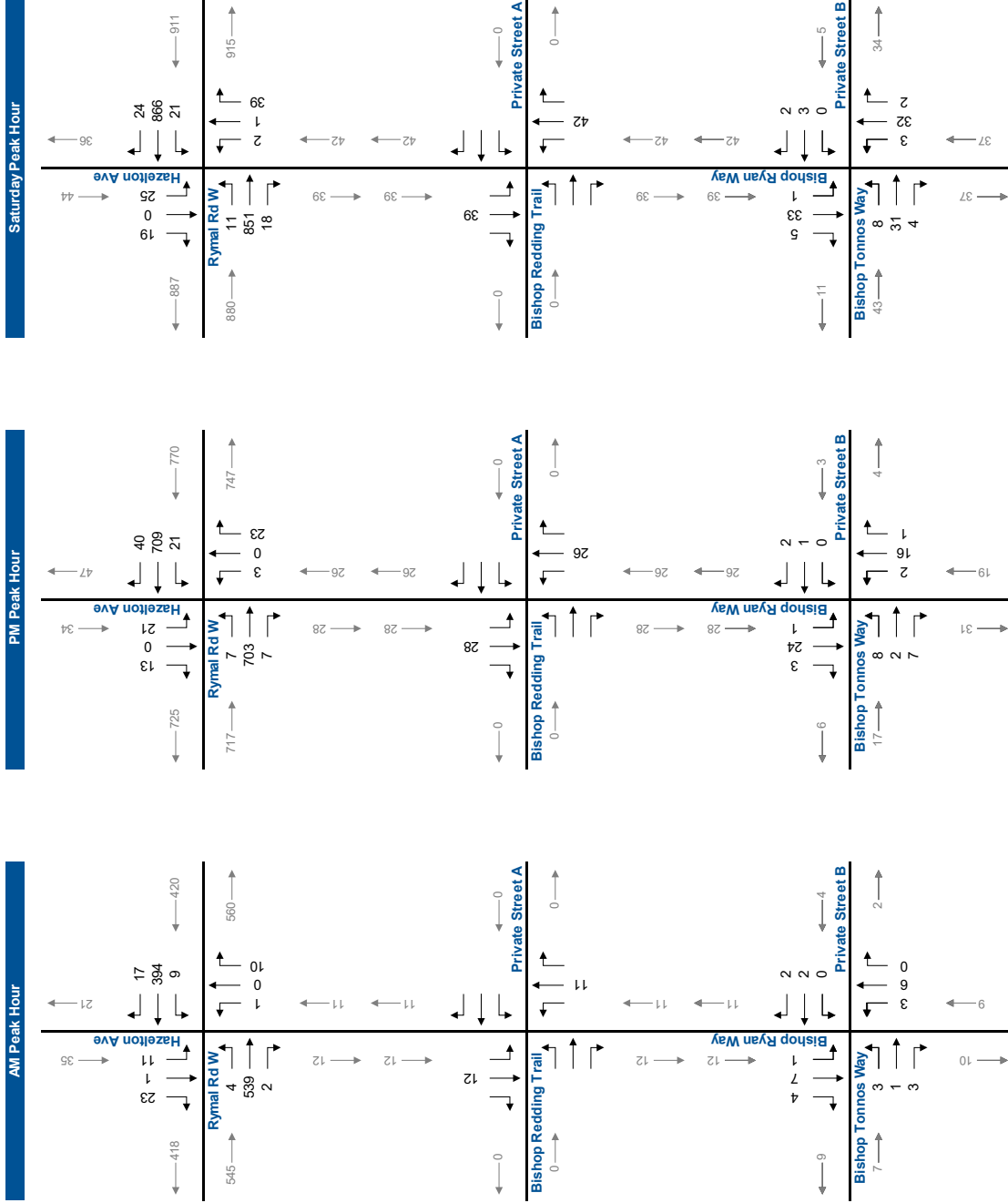
TABLE 2.2: TURNING MOVEMENT SUMMARY

Intersection	Date	
	Weekday	Saturday
Rymal Road West at Hazelton Avenue/Bishop Ryan Way	13 June 2019	15 June 2019
Bishop Tonnos Way at Bishop Ryan Way	13 June 2019	15 June 2019

To derive base year traffic volumes (Year 2023), the TMC data was factored to Year 2023 by using a 1% growth rate. The growth rate was provided in previous comments from the City of Hamilton.

Figure 2.5 illustrates the base year AM, PM, and Saturday peak hour traffic volumes.





Base Year Traffic Volumes

Village Square Update 393 Rymal Road West, Hamilton
230019

Figure 2.5

2.5 Traffic Operations

Intersection Level of Service (LOS) is a recognized method of quantifying the efficiency of traffic flow at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles desiring to make a particular movement, compared to the estimated capacity for that movement. The capacity is based on several criteria related to the opposing traffic flows. The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds at signalized intersections, the movement is classified as LOS F and remedial measures are usually implemented if they are feasible.

The operation of the intersections in the study area were evaluated using the existing lane geometry, traffic control, existing signal timings and the existing peak hour traffic. The intersection analysis considered three separate measures of performance:

- ▶ The level of service (LOS) for each turning movement
- ▶ The volume to capacity (v/c) ratio for each turning movement; and
- ▶ The 95th percentile queue length estimates using Synchro.

The level of service conditions on the existing road network have been assessed using Synchro 11 with HCM 2000 procedures. Queue reach was assessed using SimTraffic with ten 60-minute simulations with 15-minutes of seeding. Movements are considered critical⁴ under the following conditions:

- ▶ Volume to capacity (v/c) ratios for through movements or shared through/turning movements at 0.85 or greater;
- ▶ V/C ratios for exclusive turning movements increase to 0.90 or greater;
- ▶ Queues for an individual movement are projected to exceed available turning lane storage; and
- ▶ At unsignalized intersections movements where the average delay is classified as LOS D or greater.

Table 2.3 summarizes the LOS results for the AM, PM, and Saturday peak hours. The study area intersections are currently operating with acceptable level of service with no critical movements noted.

⁴ City of Hamilton, *Traffic Impact Study Guidelines*, (Hamilton, July 2009).



Appendix C contains the supporting detailed Synchro and SimTraffic reports.



TABLE 2.3: BASE YEAR TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Rymal Road West & Hazelton Avenue/Bishop Ryan Way	TCS	LOS	A	A	>	A	A	>	A	<	B	>	B	B	>	B	A	0.23	
			Delay	2	3	>	2	3	>	2	<	15	>	16	15	>	16	>		
			V/C	0.01	0.26	>	0.02	0.20	>	<	0.01	>	0.07	0.02	>	<	>	>		
Q	5	44	>	6	35	>	<	9	>	10	11	>	<	>	>	>				
Ex	25	-	>	30	-	>	<	-	>	30	-	>	-	>	-	>	>			
Avail.	20	-	>	24	-	>	<	-	>	21	-	>	-	>	-	>	>			
AM Peak Hour	Bishop Ryan Way & Bishop Reding Trail	TWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	A	0	
			Delay	<	0	>	<	0	>	<	0	>	<	0	>	<	0	>		
			V/C	<	0.00	>	<	0.00	>	<	0.00	>	<	0.00	>	<	0.00	>		
Q	<	0	>	<	0	>	<	0	>	<	0	>	<	0	>	<	>			
Ex	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	>			
Avail.	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	>			
AM Peak Hour	Bishop Ryan Way & Bishop Tonnos Way	AWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	A	7	
			Delay	<	7	>	<	7	>	<	7	>	<	7	>	<	7	>		
			V/C	<	0.01	>	<	0.00	>	<	0.01	>	<	0.01	>	<	0.01	>		
Q	<	6	>	<	5	>	<	9	>	<	10	>	<	10	>	<	>			
Ex	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	>			
Avail.	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	>			
PM Peak Hour	Rymal Road West & Hazelton Avenue/Bishop Ryan Way	TCS	LOS	A	A	>	A	A	>	A	<	B	>	B	B	>	B	A	0.31	
			Delay	2	3	>	2	3	>	2	<	16	>	16	16	>	16	>		
			V/C	0.20	0.34	>	0.05	0.35	>	<	0.04	>	0.12	0.01	>	0.12	0.01	>		
Q	7	50	>	12	56	>	<	11	>	13	8	>	13	8	>	<	>			
Ex	25	-	>	30	-	>	<	-	>	30	-	>	-	>	-	>	>			
Avail.	18	-	>	18	-	>	<	-	>	17	-	>	-	>	-	>	>			
PM Peak Hour	Bishop Ryan Way & Bishop Reding Trail	TWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	A	0	
			Delay	<	0	>	<	0	>	<	0	>	<	0	>	<	0	>		
			V/C	<	0.00	>	<	0.00	>	<	0.00	>	<	0.00	>	<	0.00	>		
Q	<	0	>	<	0	>	<	0	>	<	0	>	<	0	>	<	>			
Ex	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	>			
Avail.	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	>			
PM Peak Hour	Bishop Ryan Way & Bishop Tonnos Way	AWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	A	7	
			Delay	<	7	>	<	7	>	<	7	>	<	7	>	<	7	>		
			V/C	<	0.02	>	<	0.00	>	<	0.03	>	<	0.03	>	<	0.03	>		
Q	<	12	>	<	5	>	<	11	>	<	13	>	<	13	>	<	>			
Ex	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	>			
Avail.	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	>			
Saturday Peak Hour	Rymal Road West & Hazelton Avenue/Bishop Ryan Way	TCS	LOS	A	A	>	A	A	>	A	<	B	>	B	B	>	B	A	0.38	
			Delay	4	5	>	4	5	>	4	<	17	>	17	16	>	17	>		
			V/C	0.05	0.46	>	0.08	0.47	>	<	0.12	>	0.10	0.01	>	0.10	0.01	>		
Q	14	67	>	17	69	>	<	14	>	13	9	>	13	9	>	<	>			
Ex	25	-	>	30	-	>	<	-	>	30	-	>	-	>	-	>	>			
Avail.	11	-	>	13	-	>	<	-	>	17	-	>	-	>	-	>	>			
Saturday Peak Hour	Bishop Ryan Way & Bishop Reding Trail	TWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	A	0	
			Delay	<	0	>	<	0	>	<	0	>	<	0	>	<	0	>		
			V/C	<	0.00	>	<	0.00	>	<	0.00	>	<	0.00	>	<	0.00	>		
Q	<	0	>	<	0	>	<	0	>	<	0	>	<	0	>	<	>			
Ex	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	>			
Avail.	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	>			
Saturday Peak Hour	Bishop Ryan Way & Bishop Tonnos Way	AWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	A	7	
			Delay	<	7	>	<	7	>	<	7	>	<	7	>	<	7	>		
			V/C	<	0.05	>	<	0.01	>	<	0.04	>	<	0.05	>	<	0.05	>		
Q	<	14	>	<	7	>	<	13	>	<	14	>	<	14	>	<	>			
Ex	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	>			
Avail.	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	>			

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length (m)

Ex. - Existing Available Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

</> - Shared Turning Movement



3 Development Concept

3.1 Description

The proposed Village Square development is part of the larger St. Elizabeth Master Plan development. The Village Square area located on the southeast corner of Rymal Road West and Hazelton Avenue/Bishop Ryan Way intersection.

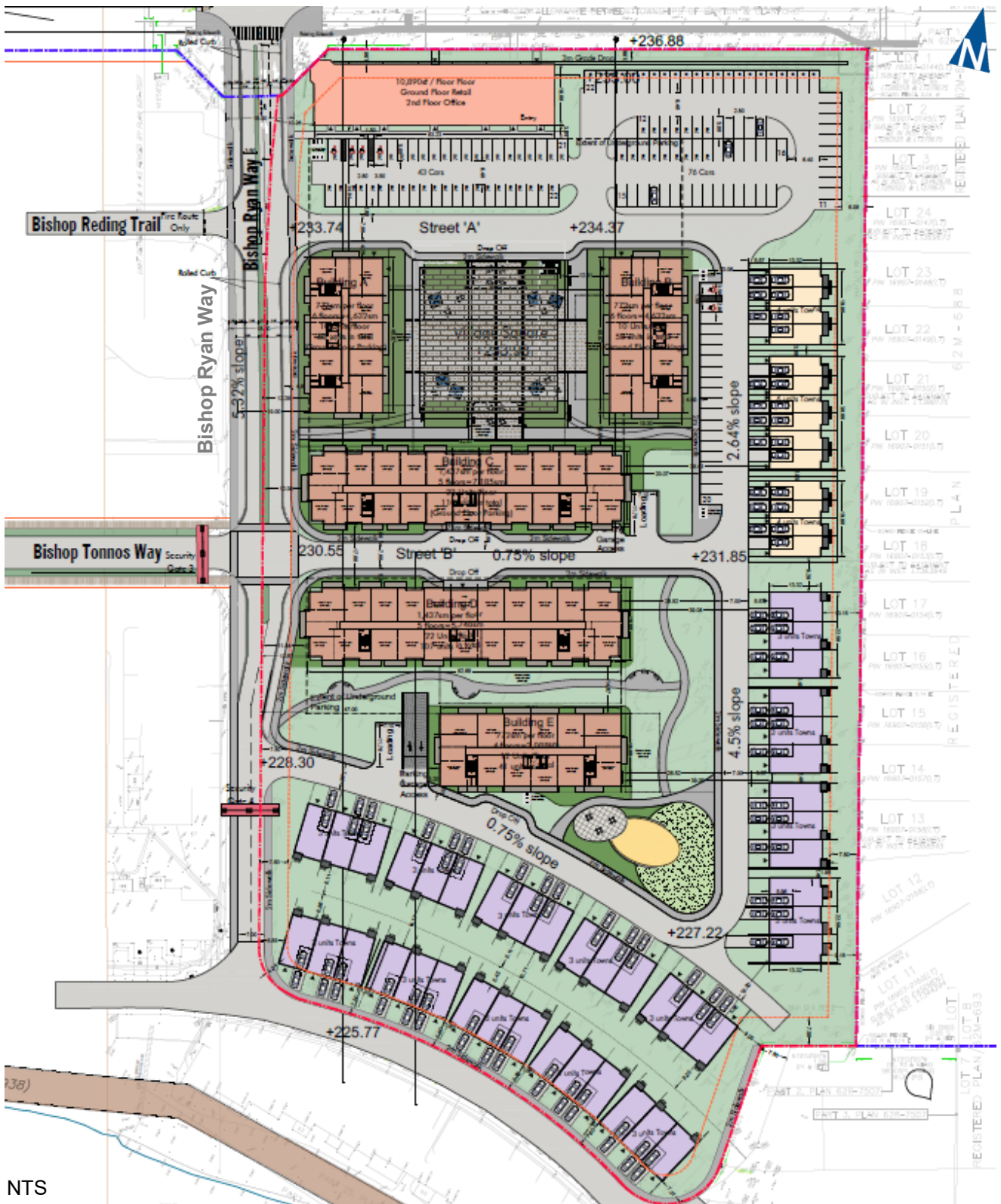
The Village Square concept includes approximately 1,012 m² (10,893 sq.ft.) of ground floor retail, 1,012 m² (10,893 sq.ft.) of second floor office, approximately 374 apartment units, and 56 townhome units.

Vehicle access is proposed via the existing signalized intersection of Hazelton Avenue/Bishop Ryan Way at Rymal Road West. Bishop Ryan Way forms the south leg of the intersection and will operate a private driveway. The concept plan illustrates a northbound left-turn lane with 30 metres of storage on Bishop Ryan Way at the Rymal Road West intersection.

Build-out is expected by the 2026 horizon year dependent on market conditions.

Figure 3.1 shows the concept plan.





NTS



Concept Plan

Village Square Update 393 Rymal Road West, Hamilton
230019

Figure 3.1

3.2 Proposed Road Network

The existing vehicular access point at Rymal Road West (Bishop Ryan Way) to the St. Elizabeth Village will be retained as part of the re-development. The current lane configuration (shared northbound left/through/right-turn) is maintained in the future traffic analysis.

The concept plan illustrates a northbound left-turn lane with 30 metres of storage on Bishop Ryan Way at the Rymal Road West intersection. A northbound left-turn lane should be provided on Bishop Ryan Way to provide lane balancing with the lane configuration on Hazelton Avenue. Having exclusive left-turn lanes opposite each other provides for safer left-turns as it makes it easier to identify which vehicles are turning or going straight through. The need for an exclusive northbound left-turn lane is outlined in **Section 5**.

Bishop Ryan Way will be maintained as a private roadway. A raised centre median on Bishop Ryan Way will be constructed from Rymal Road West to Bishop Tonnos Way converting the intersection of Bishop Ryan Way and Bishop Reding Way/Street A into right-in/right-out only intersections.

The intersection of Bishop Ryan Way and Bishop Tonnos Way/Street A is assumed to operate as an all-way stop control intersection.

3.2.1 Gate Operations

Public access to St. Elizabeth Village will be restricted by a gate system. The owner intends to utilize the same, or similar, gates that are in use today (Linear-Model No. BGU-12-3). The system operates using a sensor to detect a vehicle and a key fob/transmitter.

Based on preliminary gate information gathered, see **Appendix D**, the time a gate requires to open is 2.5 seconds. Using this information along with video of gate operations from the site, an estimate of 5 seconds for the overall gate operation (opening and closing) was determined.

A gate can accommodate approximately 720 vehicles per hour. With a gate provided in each direction this equates to a two-way peak maximum hourly capacity of 1,440 vehicles per hour. The maximum peak anticipated two-way hourly volume, experienced in the 2032 horizon, is anticipated to be approximately 200 vehicles per hour, which is well below the capacity of the gates. The gates are positioned approximately 10 metres from the curb face of Bishop Ryan Way which



would provide storage for approximately one passenger vehicle in front of the gates.



3.3 Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation Manual⁵ is used to estimate the site trip generation. The following Land Use Codes (LUC) were used to estimate the site trip generation:

- ▶ LUC 220 – Multifamily Housing, Low-Rise (Dwelling Units) for the townhouse units
- ▶ LUC 221 - Multifamily Housing, Mid Rise (Dwelling Units) for the apartment units;
- ▶ LUC 710 – General Office Building (GFA per 1,000 sq.ft.); and
- ▶ LUC 822 – Strip Plaza, <40K (GFA per 1,000 sq.ft.).

Regression equation rates were used where applicable to calculate the trips generated by the subject site for all land uses. No internal trips or modal split was calculated. Pass-by trips for LUC 820 (Shopping Center) was used for LUC 822 for the PM and Saturday peak hours as LUC 822 pass-by trip percentages are not provided by ITE.

Table 3.1 summarizes the estimated trip generation. Upon full build-out, the site's net trip generation is estimated to be approximately 222 AM peak hour vehicle trips, 239 PM peak hour vehicle trips and 234 Saturday peak hour trips.

⁵ Institute of Transportation Engineers, *Trip Generation Manual*, 11th ed., (Washington, DC: ITE, 2021).



TABLE 3.1: TRIP GENERATION

ITE Land Use	Units	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
220 - Multifamily Housing, Low-Rise (Dwelling Units)	56	5	17	22	18	11	29	11	12	23
221 - Multifamily Housing, Mid-Rise (Dwelling Units)	374	35	118	153	89	57	146	79	72	151
822 - Strip Plaza, <40K (GFA/1,000ft ²)	10.9	18	12	30	36	36	72	37	35	72
710 - General Office Building (GFA/1,000ft ²)	10.9	15	2	17	3	13	16	3	3	6
Total Trip Generation		73	149	222	146	117	263	130	122	252
<i>Pass-by AM Peak Hour</i>	0%									
<i>Pass-by PM Peak Hour</i>	34%				-12	-12	-24			
<i>Pass-by SAT Peak Hour</i>	26%							-9	-9	-18
Net Trip Generation		73	149	222	134	105	239	121	113	234

220: AM Average Rate 0.40 | PM Average Rate 0.51 | SAT Average Rate 0.41

221: AM $T=0.44(X)-11.61$ | PM $T=0.39(X)+0.34$ | SAT $\ln(X)=1.00 \ln(X)-0.91$

822: AM $\ln(T)=0.66\ln(X)+1.84$ | PM Average Rate 6.59 | SAT Average Rate 6.57

710: AM Average Rate 1.52 | PM Average Rate 1.44 | SAT Average Rate 0.53



3.4 Trip Distribution and Assignment

Table 3.2 summarizes the estimated trip distribution for the weekday AM, PM, and Saturday peak hours. The distribution for the site generated traffic has been developed using data from the 2016 Transportation Tomorrow Survey (TTS)⁶ and existing travel patterns within the study area. **Appendix E** contains the TTS calculations.

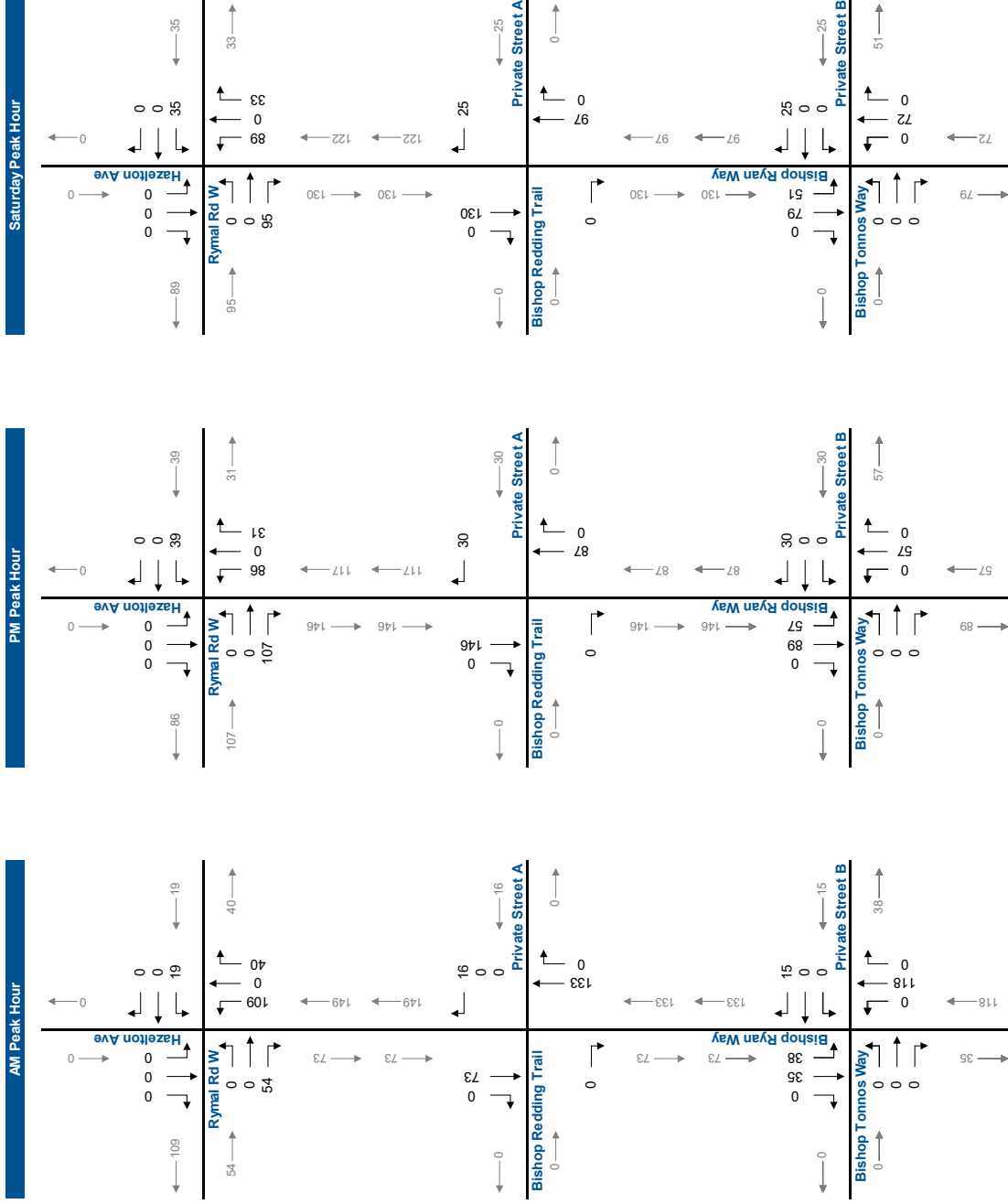
TABLE 3.2: TRIP DISTRIBUTION

Direction	Inbound	Outbound
North via Upper James Street/Garth Street	43%	43%
East via Rymal Road	27%	27%
South via Upper James Street/Garth Street	10%	5%
West via Rymal Road	20%	25%
Total	100%	100%

Figure 3.2 illustrates the site generated traffic volumes for the weekday AM, PM, and Saturday peak hours. **Figure 3.3** illustrates the pass-by traffic volumes for the weekday AM, PM, and Saturday peak hours for the commercial land uses.

⁶ Data Management Group, *Transportation Tomorrow Survey 2016*, University of Toronto, 2016.

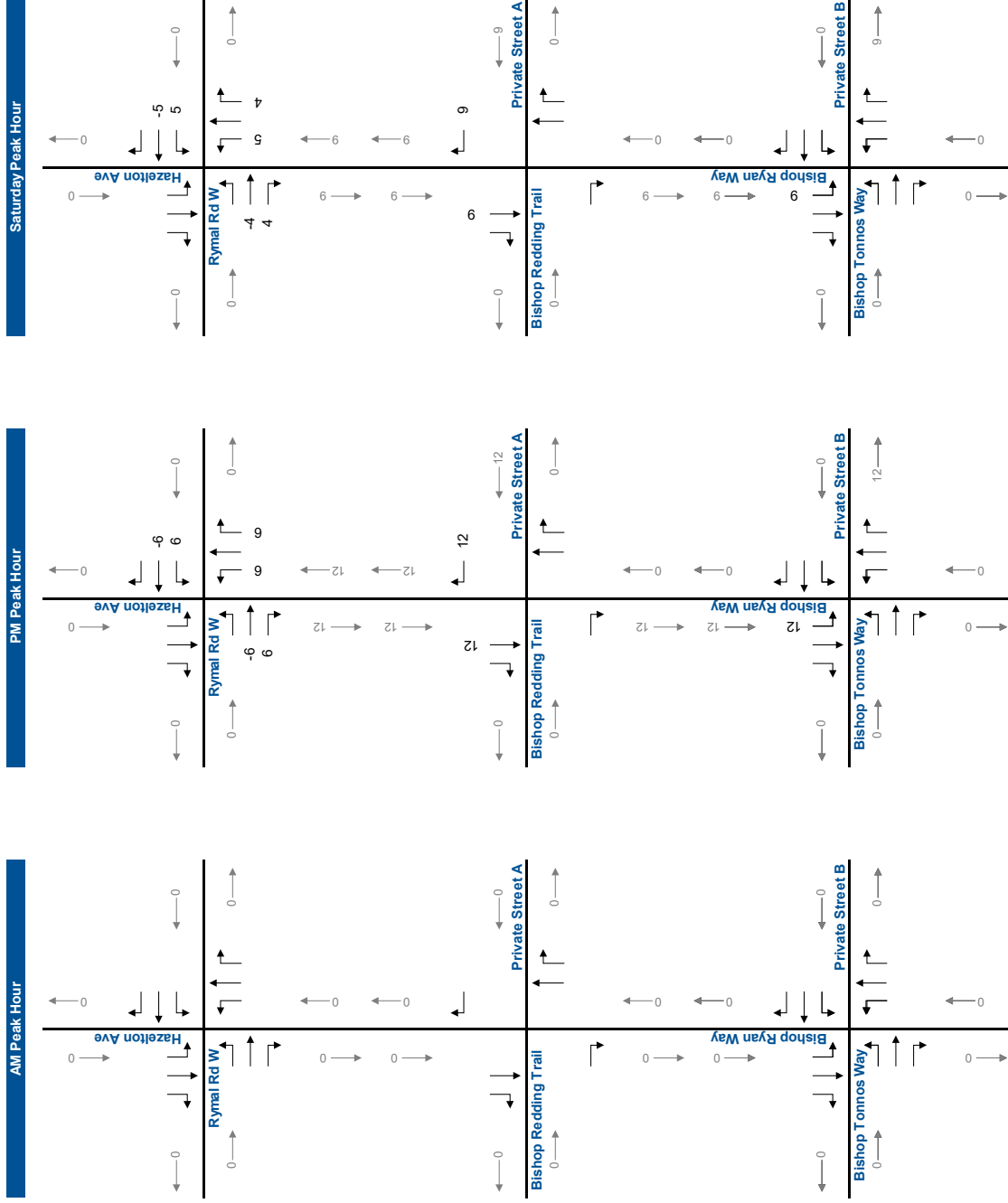




Site Generated Traffic Volumes

Figure 3.2





Pass-by Traffic Volumes

Figure 3.3

4 Future Traffic Conditions

The assessment of future conditions in this section includes the following components necessary to assess the traffic implications on the adjacent road network:

- ▶ Future background traffic estimates
- ▶ Level of service analysis for background traffic (pre-development)
- ▶ Future total traffic estimates; and
- ▶ Level of service analysis for total traffic (post-development).

4.1 Forecast Traffic Volumes

The likely future traffic volumes are estimated to consist of:

- ▶ Increased non-site traffic (generalized background traffic growth) estimated to be 1% per annum;
- ▶ Traffic generated by adjacent future developments including:
 - Upper Mill Pond consists of 157 residential units and a 902 square metre fitness/recreation centre and is located within the St. Elizabeth Village site;
 - 35 Sabrina Boulevard consists of 331 townhouse units and is located on the north side of Sabrina Boulevard east of Garth Street;
 - 384-400 Rymal Road West consists of a three-storey residential care facility with 115 beds and is located near the north-east corner of Rymal Road West and Garth Street;
 - 1670 Garth Street consists of two 10-storey mixed-use buildings with 177 residential units and 445 square metres of ground floor retail located on the south/west corner of Garth Street and Rymal Road West;
 - 393 Rymal Road West, the remainder of the St. Elizabeth Village re-development site generated traffic; and
- ▶ Traffic generated by the subject site.

The ITE Trip Generation Manual was used to estimate the site trips for all background developments. **Appendix F** contains the trip generation and trip distribution for the above noted background developments .

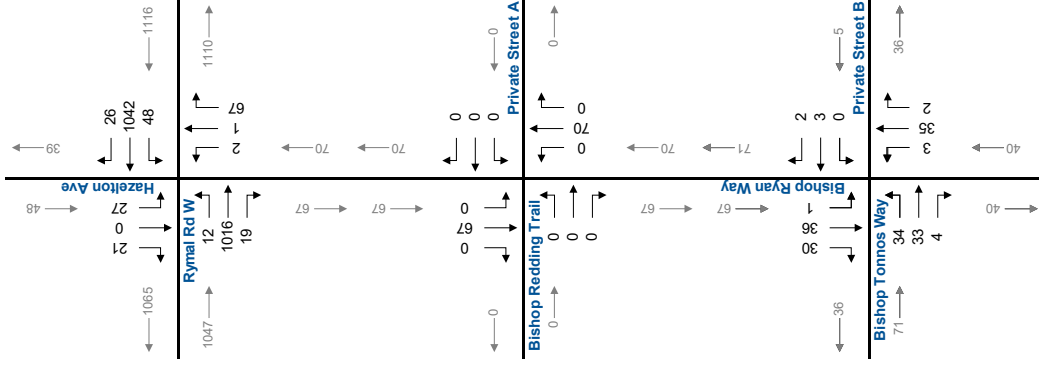


Figure 4.1 illustrates the future background traffic volumes reasonably expected to occur by 2031 for the weekday AM, PM, and Saturday peak hours.

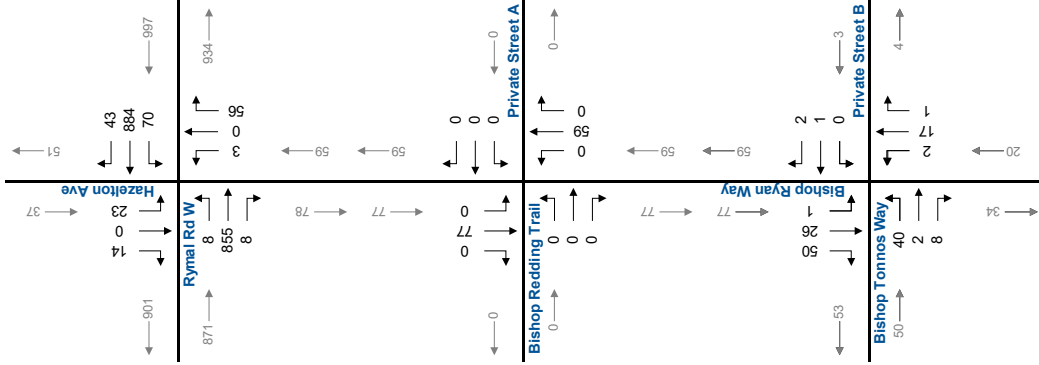
Figure 4.2 illustrates the future total traffic volumes for the weekday AM, PM, and Saturday peak hours.



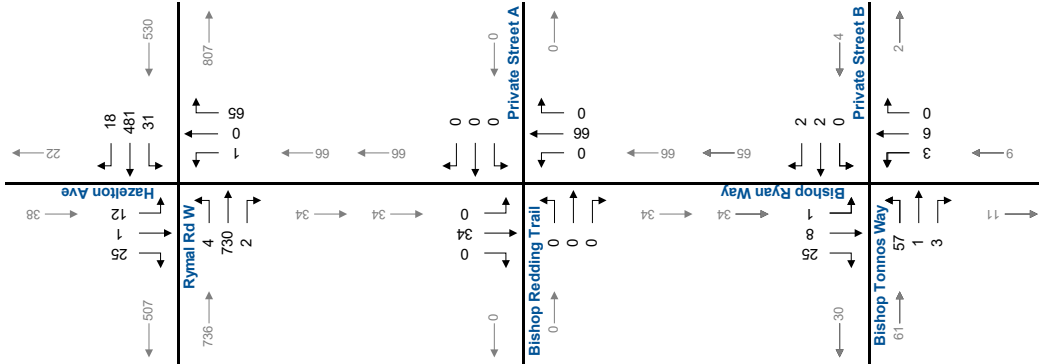
AM Peak Hour



PM Peak Hour

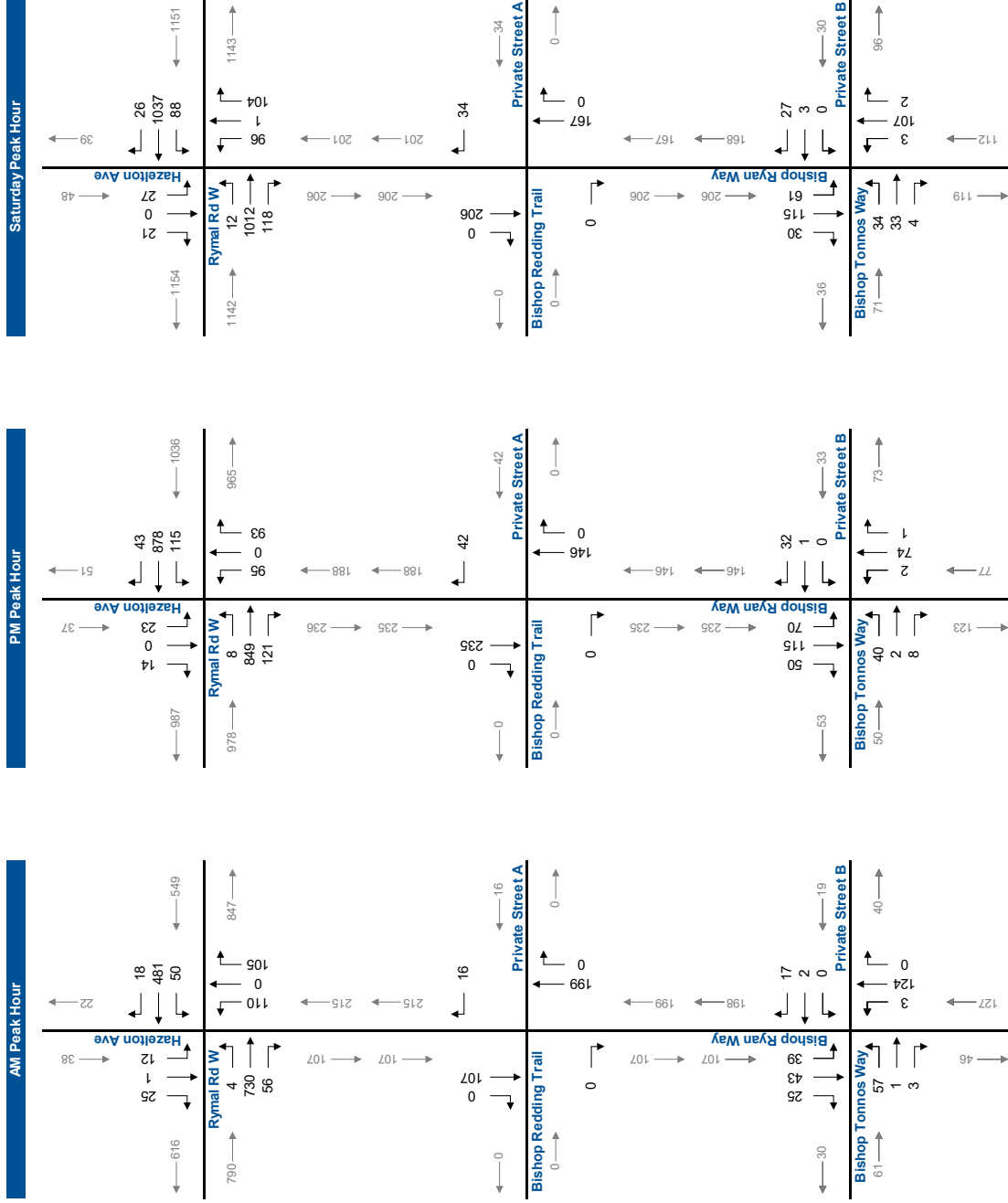


Saturday Peak Hour



Future Background Traffic Volumes

Figure 4.1



Future Total Traffic Volumes

Figure 4.2

4.2 Forecast Background Traffic Operations

The operations of the intersections under the future background traffic opening date horizon were evaluated using the same analytical approach that was used for the existing traffic operations.

Signal timings remain the same as existing conditions to identify any improvements required based on the future traffic forecasts.

Table 4.1 summarizes the resulting level of service conditions for the weekday AM, PM, and Saturday peak hours.

All study area intersections are forecast to operate with overall acceptable level of service during the analysis periods with the following critical movements noted:

- ▶ Rymal Road West and Hazelton Avenue/Bishop Ryan Way
 - Westbound left-turn – queue length exceeds available storage during PM and Saturday peak hours. The queue reach can be accommodated in the existing centre two-way left-turn lane.

The average queue length forecast for the westbound left-turn movement is approximately 17 metres during the PM peak hour and 15 metres during the Saturday peak hour. Both these average queue reaches can be accommodated in the 30 metres of available storage.

Appendix G contains the supporting detailed Synchro and SimTraffic reports.



TABLE 4.1: BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																Overall	
				Eastbound				Westbound				Northbound				Southbound					
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
AM Peak Hour	Rymal Road West & Hazelton Avenue/Bishop Ryan Way	TCS	LOS	A	A	>	A	A	>	A	<	B	>	B	B	>	B	A	0.32		
			Delay	4	5	>	5	5	>	4	<	15	>	15	14	14	>	14		5	
			V/C	0.01	0.39	>	0.09	0.27	>	<	0.13	>	0.05	0.02	>	0.02	>	0.02		>	0.02
Q	12	56	>	17	45	>	<	15	>	10	9	>	10	9	>	10	9	14			
Ex	25	-	>	30	-	>	<	-	>	30	-	>	30	-	>	-	-				
Avail.	13	-	>	13	-	>	<	-	>	20	-	>	20	-	>	-	-				
AM Peak Hour	Bishop Ryan Way & Bishop Reding Trail	TWSC	LOS	<	A	>	A	<	A	>	A	<	A	<	A	>	A	<	A	0	
			Delay	<	0	>	0	<	0	>	0	<	0	>	0	<	0	>	0		0
			V/C	<	0.00	>	<	0.00	>	<	0.00	>	<	0.00	>	<	0.00	>	<		0.00
Q	<	0	>	<	0	>	<	0	>	<	0	>	<	0	>	<	0	0	0		
Ex	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	-				
Avail.	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	-				
AM Peak Hour	Bishop Ryan Way & Bishop Tonnos Way	AWSC	LOS	<	A	>	A	<	A	>	A	<	A	<	A	>	A	<	A	7	
			Delay	<	8	>	7	<	7	>	7	<	7	>	7	<	7	>	7		7
			V/C	<	0.08	>	<	0.00	>	<	0.01	>	<	0.04	>	<	0.04	>	<		0.04
Q	<	14	>	<	6	>	<	9	>	<	14	>	<	14	>	<	14	14	7		
Ex	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	-				
Avail.	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	-				
PM Peak Hour	Rymal Road West & Hazelton Avenue/Bishop Ryan Way	TCS	LOS	A	A	>	A	A	>	A	<	B	>	B	B	>	B	A	0.36		
			Delay	4	5	>	4	5	>	5	<	17	>	17	17	16	>	16		6	
			V/C	0.03	0.42	>	0.23	0.45	>	<	0.11	>	0.08	0.01	>	0.01	>	0.01		>	0.01
Q	9	61	>	38	72	>	<	15	>	12	8	>	12	8	>	12	8	16			
Ex	25	-	>	30	-	>	<	-	>	30	-	>	30	-	>	-	-				
Avail.	16	-	>	-8	-	>	<	-	>	18	-	>	18	-	>	-	-				
PM Peak Hour	Bishop Ryan Way & Bishop Reding Trail	TWSC	LOS	<	A	>	A	<	A	>	A	<	A	<	A	>	A	<	A	0	
			Delay	<	0	>	0	<	0	>	0	<	0	>	0	<	0	>	0		0
			V/C	<	0.00	>	<	0.00	>	<	0.00	>	<	0.00	>	<	0.00	>	<		0.00
Q	<	0	>	<	0	>	<	0	>	<	0	>	<	0	>	<	0	0	0		
Ex	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	-				
Avail.	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	-				
PM Peak Hour	Bishop Ryan Way & Bishop Tonnos Way	AWSC	LOS	<	A	>	A	<	A	>	A	<	A	<	A	>	A	<	A	7	
			Delay	<	7	>	7	<	7	>	7	<	7	>	7	<	7	>	7		7
			V/C	<	0.07	>	<	0.00	>	<	0.03	>	<	0.09	>	<	0.09	>	<		0.09
Q	<	13	>	<	4	>	<	12	>	<	17	>	<	17	>	<	17	17	7		
Ex	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	-				
Avail.	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	-				
Saturday Peak Hour	Rymal Road West & Hazelton Avenue/Bishop Ryan Way	TCS	LOS	A	A	>	A	A	>	A	<	B	>	B	B	>	B	A	0.46		
			Delay	6	9	>	8	10	>	10	<	14	>	14	14	14	>	14		10	
			V/C	0.09	0.60	>	0.27	0.63	>	<	0.15	>	0.08	0.01	>	0.01	>	0.01		>	0.01
Q	22	85	>	39	95	>	<	17	>	11	10	>	11	10	>	11	10	14			
Ex	25	-	>	30	-	>	<	-	>	30	-	>	30	-	>	-	-				
Avail.	3	-	>	-9	-	>	<	-	>	19	-	>	19	-	>	-	-				
Saturday Peak Hour	Bishop Ryan Way & Bishop Reding Trail	TWSC	LOS	<	A	>	A	<	A	>	A	<	A	<	A	>	A	<	A	0	
			Delay	<	0	>	0	<	0	>	0	<	0	>	0	<	0	>	0		0
			V/C	<	0.00	>	<	0.00	>	<	0.00	>	<	0.00	>	<	0.00	>	<		0.00
Q	<	0	>	<	0	>	<	0	>	<	0	>	<	0	>	<	0	0	0		
Ex	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	-				
Avail.	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	-				
Saturday Peak Hour	Bishop Ryan Way & Bishop Tonnos Way	AWSC	LOS	<	A	>	A	<	A	>	A	<	A	<	A	>	A	<	A	7	
			Delay	<	8	>	7	<	7	>	7	<	7	>	7	<	7	>	7		7
			V/C	<	0.09	>	<	0.01	>	<	0.05	>	<	0.08	>	<	0.08	>	<		0.08
Q	<	13	>	<	7	>	<	14	>	<	16	>	<	16	>	<	16	16	7		
Ex	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	-				
Avail.	<	-	>	<	-	>	<	-	>	<	-	>	<	-	>	<	-				

MOE - Measure of Effectiveness
 LOS - Level of Service
 Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length (m)
 Ex. - Existing Available Storage (m)
 Avail. - Available Storage (m)

TCS - Traffic Control Signal
 TWSC - Two-Way Stop Control
 </> - Shared Turning Movement



4.3 Forecast Total Traffic Operations

The operations of the study area intersections were evaluated using the same analytical approach that was used for the existing and background traffic operations.

Signal timings remain the same as existing conditions to identify any improvements required based on the future traffic forecasts.

Table 4.2 summarizes the resulting level of service conditions for the weekday AM, PM, and Saturday peak hours.

The following critical movements are noted:

- ▶ Rymal Road West and Hazelton Avenue/Bishop Ryan Way
 - Eastbound through/right-turn – LOS D and v/c ratio of 0.98 during Saturday peak hour; and
 - Westbound left-turn – LOS F, v/c ratio greater than 1.00, and queue length exceeds available storage during PM peak hour and queue length exceeds available storage during Saturday peak hour.

Appendix H contains the supporting detailed Synchro and SimTraffic reports.

The proposed Street A right-in/right-out intersection and Bishop Tonos Way/Street B intersection with Bishop Ryan Way are forecast to operate with low levels of delay and v/c ratios during the analysis periods assessed.



TABLE 4.2: TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																Overall	
				Eastbound				Westbound				Northbound				Southbound					
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
AM Peak Hour	Rymal Road West & Hazelton Avenue/Bishop Ryan Way	TCS	LOS	B	B	>	B	B	>	B	<	A	>	A	A	>	A	B	0.46		
			Delay	13	19	>	18	17	16	>	16	<	9	>	9	8	>	8		8	
			V/C	0.02	0.69	>	0.40	0.44	>	0.29	>	0.29	>	0.02	0.02	>	0.02	>		0.02	
Q	5	62	>	25	47	>	29	>	29	>	11	9	>	30	-	>	8				
Ex	25	-	>	30	-	>	-	>	-	>	30	-	>	19	-	>	-	8			
Avail.	20	-	>	5	-	>	-	>	-	>	19	-	>	-	-	>	-	8			
AM Peak Hour	Bishop Ryan Way & Bishop Reding Trail/Street A	TWSC	LOS			A			A		A	>	A		A	>	A	A	1		
			Delay			0			10		10		0	>	0		0	>		0	
			V/C			0.00			0.02		0.13		0.13	>	0.07		0.07	>		0	
Q			0			11		0	>	0	>	0	>	0	>	0	>	0			
Ex			-			-		-	>	-	>	-	>	-	>	-	>	-			
Avail.			-			-		-	>	-	>	-	>	-	>	-	>	-			
AM Peak Hour	Bishop Ryan Way & Bishop Tonnos Way/Street B	AWSC	LOS	<	A	>	A	<	A	>	A	>	A	>	A	>	A	>	A	8	
			Delay	<	8	>	8	<	7	>	7	<	8	>	8	>	8	>	8		
			V/C	<	0.09	>	0.02	<	0.02	>	0.16	>	0.16	>	0.14	>	0.14	>	0.14		
Q	<	15	>	11	<	11	>	17	>	17	>	17	>	17	>	17	>	17			
Ex	<	-	>	-	<	-	>	-	>	-	>	-	>	-	>	-	>	-			
Avail.	<	-	>	-	<	-	>	-	>	-	>	-	>	-	>	-	>	-			
PM Peak Hour	Rymal Road West & Hazelton Avenue/Bishop Ryan Way	TCS	LOS	B	C	>	C	F	C	>	C	<	A	>	A	A	>	A	C	0.60	
			Delay	13	21	>	21	123	20	>	32	<	9	>	9	8	8	>	8		8
			V/C	0.08	0.80	>	1.07	0.75	>	0.25	>	0.25	>	0.04	0.01	>	0.04	0.01	>		0.01
Q	19	77	>	73	218	>	27	>	27	>	10	8	>	10	8	>	10	8			
Ex	25	-	>	30	-	>	-	>	-	>	30	-	>	30	-	>	-	>	30		
Avail.	6	-	>	-43	-	>	-	>	-	>	20	-	>	20	-	>	-	>	20		
PM Peak Hour	Bishop Ryan Way & Bishop Reding Trail/Street A	TWSC	LOS			A			A		A	>	A		A	>	A	A	1		
			Delay			0			9		9		0	>	0		0	>		0	
			V/C			0.00			0.05		0.09		0.09	>	0.15		0.15	>		0	
Q			0			14		0	>	0	>	0	>	0	>	0	>	0			
Ex			-			-		-	>	-	>	-	>	-	>	-	>	-			
Avail.			-			-		-	>	-	>	-	>	-	>	-	>	-			
PM Peak Hour	Bishop Ryan Way & Bishop Tonnos Way/Street B	AWSC	LOS	<	A	>	A	<	A	>	A	>	A	>	A	>	A	>	A	8	
			Delay	<	8	>	8	<	7	>	7	<	8	>	8	>	8	>	8		9
			V/C	<	0.07	>	0.04	<	0.04	>	0.10	>	0.10	>	0.29	>	0.29	>	0.29		>
Q	<	14	>	13	<	13	>	14	>	14	>	21	>	21	>	21	>	21			
Ex	<	-	>	-	<	-	>	-	>	-	>	-	>	-	>	-	>	-			
Avail.	<	-	>	-	<	-	>	-	>	-	>	-	>	-	>	-	>	-			
Saturday Peak Hour	Rymal Road West & Hazelton Avenue/Bishop Ryan Way	TCS	LOS	B	D	>	D	D	C	>	C	<	A	>	A	A	>	A	C	0.58	
			Delay	14	42	>	41	51	32	>	34	<	9	>	9	8	8	>	8		8
			V/C	0.14	0.98	>	0.81	0.93	>	0.28	>	0.28	>	0.05	0.01	>	0.05	0.01	>		0.01
Q	29	170	>	61	560	>	31	>	31	>	13	10	>	13	10	>	13	10			
Ex	25	-	>	30	-	>	-	>	-	>	30	-	>	30	-	>	-	>	30		
Avail.	-4	-	>	-31	-	>	-	>	-	>	17	-	>	17	-	>	-	>	17		
Saturday Peak Hour	Bishop Ryan Way & Bishop Reding Trail/Street A	TWSC	LOS			A			A		A	>	A		A	>	A	A	1		
			Delay			0			9		9		0	>	0		0	>		0	
			V/C			0.00			0.04		0.11		0.11	>	0.13		0.13	>		0	
Q			0			13		2	>	2	>	0	>	0	>	0	>	0			
Ex			-			-		-	>	-	>	-	>	-	>	-	>	-			
Avail.			-			-		-	>	-	>	-	>	-	>	-	>	-			
Saturday Peak Hour	Bishop Ryan Way & Bishop Tonnos Way/Street B	AWSC	LOS	<	A	>	A	<	A	>	A	>	A	>	A	>	A	>	A	9	
			Delay	<	8	>	8	<	7	>	7	<	8	>	8	>	8	>	8		9
			V/C	<	0.10	>	0.04	<	0.04	>	0.15	>	0.15	>	0.27	>	0.27	>	0.27		>
Q	<	14	>	13	<	13	>	13	>	13	>	18	>	18	>	18	>	18			
Ex	<	-	>	-	<	-	>	-	>	-	>	-	>	-	>	-	>	-			
Avail.	<	-	>	-	<	-	>	-	>	-	>	-	>	-	>	-	>	-			

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length (m)

Ex. - Existing Available Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

</> - Shared Turning Movement



5 Remedial Measures

As noted in **Section 4** above, there are individual turning movements that are forecast to operate above critical thresholds under future traffic conditions. The following provides recommendations to assist in mitigating these critical movements.

5.1 Rymal Road at Hazelton Avenue/Bishop Ryan Way

The westbound left-turn is forecast to have 95th percentile queue lengths that exceed its storage length starting from the background horizon (43 metres greater than available storage during the PM peak hour). While the queue reach can be accommodated in the centre two-way left-turn lane, with the addition of the site generated traffic, the westbound left-turn will operate at LOS F and approaching/exceeding capacity.

Synchro analysis was done for the intersection of Rymal Road and Hazelton Avenue/Bishop Ryan Way using the total traffic volumes and the following improvements:

- ▶ Northbound left-turn lane to provide lane balancing with the lane configuration of Hazelton Avenue; and
- ▶ Optimized signal phases while still maintaining the previous cycle length.

Table 5.1 summarizes the resulting level of service conditions. **Appendix I** contains the supporting detailed Synchro and SimTraffic reports.

With optimized signal phases the delays forecast to occur for the westbound left-turn movement is mitigated. The queue reach is still expected to exceed the available storage lane length during the PM peak hour (by 11 metres) and Saturday peak hour (by 17 metres). The queue reach can be accommodated in the centre two-way left-turn lane. The reported average queue length for the westbound left-turn movement is 22 metres during the PM peak hour and 22 metres during the Saturday peak hour. These average queue reach can be accommodated in the 30 metres of storage.

To accommodate the queue for the northbound left-turn movement 30 metres of storage is required. The concept plan illustrates a northbound left-turn lane with 30 metres of storage. The forecast queue reach for the northbound through/right-turn movement is not expected to block vehicles from entering the northbound left-turn lane.



TABLE 5.1: TOTAL OPERATIONS WITH REMEDIAL MEASURES

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																Overall		
				Eastbound				Westbound				Northbound				Southbound						
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach			
AM Peak Hour	Rymal Road West & Hazelton Avenue/Bishop Ryan Way	TCS	LOS	A	B	>	B	B	>	B	B	>	B	B	>	B	B	>	B	B		
			Delay	9	12	>	12	11	>	11	11	>	11	13	>	12	10	10	>	10	10	
			V/C	0.01	0.56	>	0.26	0.36	>	0.23	0.14	>	0.23	0.14	>	0.03	0.02	>	0.03	0.02	>	0.03
			Q	5	65	>	28	49	>	21	20	>	21	20	>	11	10	>	11	10	>	11
			Ex	25	-	>	30	-	>	30	-	>	30	-	>	30	-	>	30	-	>	30
Avail.	20	-	>	2	-	>	9	-	>	9	-	>	20	-	>	20	-	>	20			
PM Peak Hour	Rymal Road West & Hazelton Avenue/Bishop Ryan Way	TCS	LOS	A	B	>	B	B	>	B	B	>	B	B	>	B	B	>	B	B		
			Delay	7	10	>	10	16	>	11	19	>	17	16	>	16	16	>	16	16	>	16
			V/C	0.04	0.54	>	0.60	0.51	>	0.24	0.06	>	0.24	0.06	>	0.06	0.01	>	0.06	0.01	>	0.06
			Q	11	68	>	41	66	>	25	22	>	25	22	>	11	7	>	11	7	>	11
			Ex	25	-	>	30	-	>	30	-	>	30	-	>	30	-	>	30	-	>	30
Avail.	14	-	>	-11	-	>	6	-	>	6	-	>	19	-	>	19	-	>	19			
Saturday Peak	Rymal Road West & Hazelton Avenue/Bishop Ryan Way	TCS	LOS	A	B	>	B	B	>	B	C	>	B	B	>	B	B	>	B	B		
			Delay	7	11	>	11	15	>	11	21	>	19	18	>	18	18	>	18	18	>	18
			V/C	0.09	0.63	>	0.57	0.60	>	0.25	0.13	>	0.25	0.13	>	0.08	0.01	>	0.08	0.01	>	0.08
			Q	20	76	>	47	80	>	27	22	>	27	22	>	14	11	>	14	11	>	14
			Ex	25	-	>	30	-	>	30	-	>	30	-	>	30	-	>	30	-	>	30
Avail.	5	-	>	-17	-	>	3	-	>	3	-	>	17	-	>	17	-	>	17			

MOE - Measure of Effectiveness
 LOS - Level of Service
 Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length (m)
 Ex. - Existing Available Storage (m)
 Avail. - Available Storage (m)

TCS - Traffic Control Signal
 TWSC - Two-Way Stop Control
 </> - Shared Turning Movement



6 Parking Justification

6.1 Proposed Parking Supply

The site's proposed vehicle parking supply is 547 spaces and is comprised of:

- ▶ 139 surface spaces;
- ▶ 296 underground spaces; and
- ▶ 112 townhome spaces .

A total of 216 long-term and 30 short-term bicycle parking spaces will be provided.

6.2 Zoning By-Law Requirements

The City of Hamilton's Zoning By-Law 05-200 prescribes parking ratios for all zones outside of the downtown core. The following parking ratios are noted:

- ▶ Multiple Dwelling (Commercial and Mixed-Use)
 - Units less than 50 m² a minimum of 0.3 spaces per unit to a maximum of 1.25 spaces per unit; and
 - Units greater than 50 m² – a minimum of 0.7 spaces per unit for the first 14 units, 0.85 spaces per unit for units 15 through 50, 1.0 spaces per unit for units remaining units over 51, and a maximum of 1.25 spaces per unit.
- ▶ Retail within a Commercial and Mixed-Use Zone
 - Medical Clinic (most restrictive) – 1.0 space for each 16.0 m² any gross floor area; and
 - Office – 0 spaces where a use is less than 450.0 m² in gross floor area, and 1 space for each 30.0 m² of gross floor area which accommodates such use, for that portion of a building that is in excess of 450.0 m².

Table 6.1 summarizes the Zoning By-Law parking requirement. The zoning requirement for the subject site is calculated to be 402 to 620 spaces. With a proposed supply of 547 parking spaces, the site's parking supply is within the zoning by-law design domain.



TABLE 6.1: ZONING BY-LAW PARKING REQUIREMENT

Land Use		Parking Rates		Required Parking	
Apartment	Units	Min	Max	Min	Max
< 50.0 m ²	26	0.30	1.25	8	33
>50.0 m ²	1-14	0.70	1.25	10	435
	15-50	0.85		31	
	298	1.00		298	
Townhouses	Units	Min	Max	Min	Max
< 50.0 m ²	--	--	--	--	--
>50.0 m ²	56	1.00	1.25	56	70
Commercial	Units	Min	Max	Min	Max
Medical Office	1,012 m ²	--	1/16.0 m ²	--	63
Office	0-450 m ²	--	0	--	--
	562 m ²	--	1/30.0 m ²	--	18
Subtotal – Resident				402	538
Subtotal – Non-Resident				--	82
Total				402	620

6.3 Residential Parking Standards Review and Update

The City of Hamilton recently prepared a review and update of city parking standards for residential uses⁷. Minimum parking requirements recommended within the review are subject to change and have not been approved by council. The subject site is located within Parking Area 2 (PRA 2) which generally includes most of the area on top of the escarpment. The proposed parking requirements for multiple dwellings in PRA 2 is reduced compared to the Zoning By-Law 05-200 rates.

Should the proposed changes be adopted by Council, the site’s parking supply will remain within the domain outlined in the draft by-law (that is, above the minimum supply and below the maximum supply).

⁷ City of Hamilton, Residential Parking Standards Review and Update (PED23156) (City Wide), August 2023.



6.4 Summary

Based on zoning by-law parking requirements, the subject site is estimated to have a parking requirement of between 402 to 620 spaces. The proposed parking supply of 547 spaces exceeds the minimum requirement.

The site's proposed parking supply is sufficient and is forecast to accommodate the site's parking demand. Visitor parking for the residential units and the commercial land uses should be shared.

The City of Hamilton recently prepared a review and update of city parking standards for residential uses. Should the proposed changes be adopted by Council, the site's parking supply will remain within the domain outlined in the draft by-law (that is, above the minimum supply and below the maximum supply).



7 Conclusions and Recommendations

7.1 Conclusions

The main findings and conclusions of this study are as follows:

Transportation Impact Assessment

- ▶ **Existing Traffic Operations:** The study area intersections are operating with acceptable levels of service during the weekday AM, PM, and Saturday peak hours.
- ▶ **Site Trip Generation:** Upon full build-out, the subject site's total net trip generation is approximately 222 AM peak hour trips, 239 PM peak hour trips, and 234 Saturday peak hour trips.
- ▶ **Background Traffic Operations:** the study area intersections are forecast to operate with acceptable levels of service during the weekday AM, PM, and Saturday peak hours. The following critical movements are noted:
 - Rymal Road West and Hazelton Avenue/Bishop Ryan Way
 - Westbound left-turn – queue length exceeds available storage during PM and Saturday peak hours. The westbound left-turn queue reach can be accommodated in the centre two-way left-turn lane. The average queue lengths can be accommodated in the westbound left-turn storage lane during the PM and Saturday peak hours.
- ▶ **Total Traffic Operations:** The capacity deficiencies identified under background conditions will continue to occur with the addition of the site generated traffic. Site generated traffic results in the following critical movements:
 - Rymal Road West and Hazelton Avenue/Bishop Ryan Way
 - Eastbound through/right-turn – LOS D and v/c ratio of 0.98 during the Saturday peak hour; and
 - Westbound left-turn – LOS F, v/c ratio greater than 1.00, and queue length exceeds available storage during the PM peak hour.
- ▶ **Remedial Measures:** To improve operations at the Rymal Road West and Hazelton Avenue/Bishop Ryan Way intersection an exclusive northbound left-turn lane as well as optimized signal phasing timing could be implemented upon build-out of the subject site. The concept plan illustrates a northbound left-turn lane with 30 metres of storage, which is forecast to contain the expected queue length.



With the improvements, the intersection of Rymal Road West and Hazelton Avenue/Bishop Ryan Way is forecast to operate with acceptable levels of service.

Parking Study

- ▶ The proposed parking supply is 547 spaces.
- ▶ The proposed development requires a total of 402 to 602 parking spaces to comply with the City's Zoning By-law. With a proposed supply of 547 parking spaces the site's parking supply is within the zoning by-law design domain.

7.2 Recommendations

Based on the findings of this study, it is recommended that:

- ▶ The City of Hamilton consider optimizing signal phases timings at the Rymal Road West and Hazelton Avenue intersection upon build-out of the subject site.
- ▶ The northbound left-turn lane on Bishop Ryan Way at Rymal Road West be constructed with at least 30-metres of storage.
- ▶ Parking for non-residents (visitors) be shared between all land uses.



Appendix A

Pre-Study Consultation



From: [Andrew Evans](#)
To: [Transportation Planning](#)
Cc: [Scott Catton](#)
Subject: (230019) 393 Rymal Road West (SEV Village Square) TIS Scope - 25T-202003, UHOPA-20-017 & ZAC 20-029
(Previous Files: FC-19-003)
Date: March 29, 2023 10:24:00 AM
Attachments: [image001.png](#)

393 Rymal Road West, Hamilton (Ward 8)
25T-202003, UHOPA-20-017 & ZAC 20-029 (Previous Files: FC-19-003)

Paradigm Transportation Solutions Limited is preparing a Transportation Impact Assessment and Parking Study for a proposed mixed-use development of the lands 393 Rymal Road West, Hamilton. This is focusing on the Village Square portion of the St. Elizabeth Village (SEV) development.

Below is a brief description of the concept and our proposed terms of reference for the TIS and Parking study. Please review and provide comment at your earliest convenience.

SITE DESCRIPTION

-
The Village Square area of the site is located on the southeast quadrant of Rymal Road West and Bishop Ryan Way. The property owner is proposing to develop the Village Square area with a variety of commercial and residential land uses. The development statistics will be finalized prior to commencing work.

Vehicle access is proposed by Bishop Ryan Way, which is a private driveway. Bishop Ryan Way is no longer contemplated as a municipal right-of-way. The majority of the Village Square area will be separated from the St. Elizabeth Village complex by security gates. The site's parking supply and the associated zoning requirements are unknown.

PROPOSED TERMS OF REFERENCE

-
Study Area Intersections:

- Rymal Road West at Hazelton Avenue/Bishop Ryan Way (signalized)
- Bishop Ryan Way at Bishop Reding Way/Private Street A (unsignalized)
- Bishop Ryan Way at Bishop Tonnos Way/Private Street B (unsignalized)

Analysis Periods:

- Weekday AM peak hour
- Weekday PM peak hour

Horizon Year

- Five-years from the assumed full build-out (assumed Year 2031).

Existing Data:

- Eight Hour TMC at the study area intersections

Analysis

- Synchro 11

Background Traffic

- Generalized growth rate: **2% per annum** to be consistent with previous April 2022 TIS
- Active Development Applications used in previous April 2022 TIS plus the other SEV site generated traffic.

Trip Generation

- ITE Trip Generation Data 11th Edition with no modal split reductions.

Site Traffic Distribution

- Same as previous April 2022 TIS

Parking Study:

- To estimate the parking demand generated by the proposed development and establish the number of on-site parking spaces that should be provided, recognizing site constraints and local conditions. If needed, a strategy would be developed to satisfy the parking demands of the proposed development.

Report

- We will document the study methodologies, findings, and conclusions in a report with appendices containing the detailed analysis results and any data collected.

Please let us know your comments on the study.

Thank you and regards.

Andrew Evans, M.Sc.

Transportation Planner

Paradigm Transportation Solutions Limited

5A-150 Pinebush Road Cambridge ON N1R 8J8

p: 905.381.2229 x **305**

m: 519.497.3239

e: aevans@ptsl.com

w: www.ptsl.com



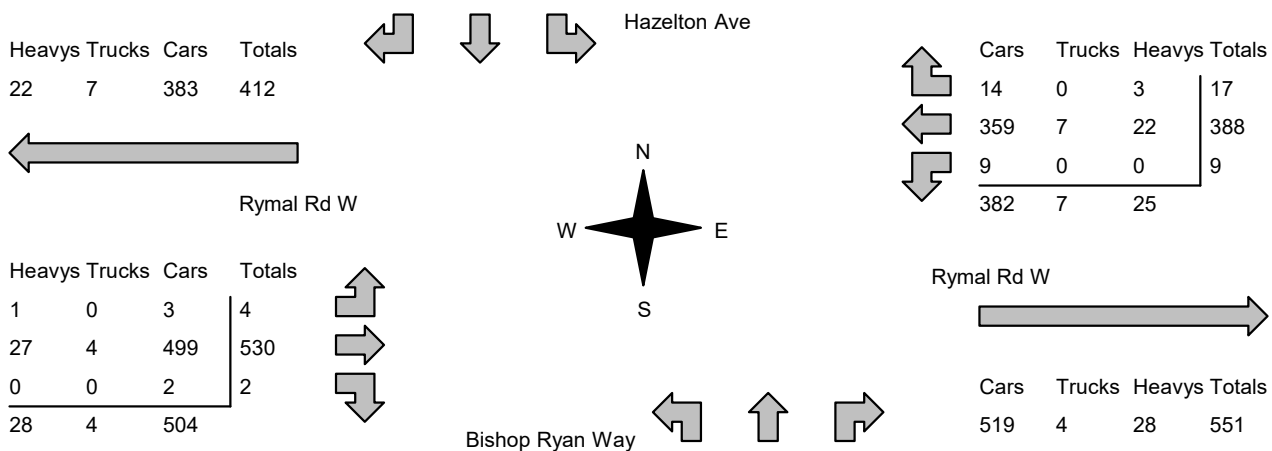
Employee-owned | Client-centric | Solution-focused


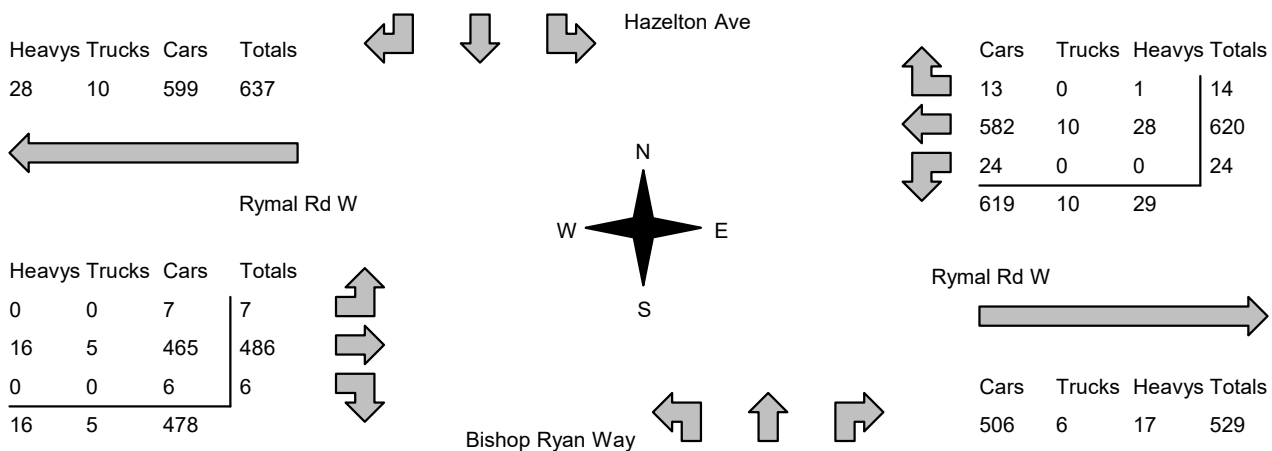




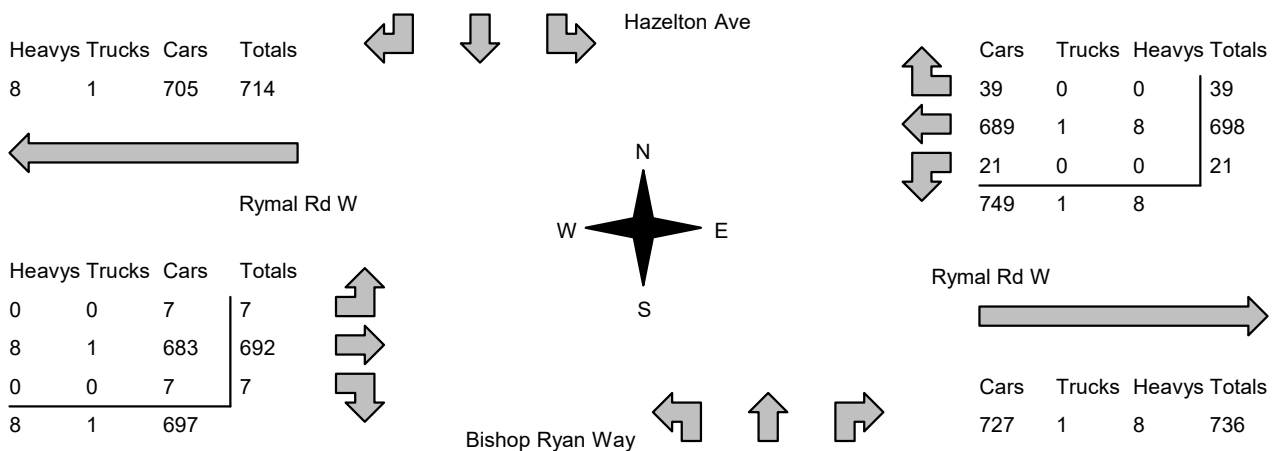
Appendix B

Traffic Data



<h1>Morning Peak Diagram</h1>	Specified Period From: 7:00:00 To: 9:00:00	One Hour Peak From: 8:00:00 To: 9:00:00																																																									
Municipality: Hamilton Site #: 1910000002 Intersection: Rymal Rd W & Hazelton Ave TFR File #: 1 Count date: 13-Jun-19	Weather conditions: Person counted: Person prepared: Person checked:																																																										
** Signalized Intersection **		Major Road: Rymal Rd W runs W/E																																																									
North Leg Total: 56 North Entering: 35 North Peds: 3 Peds Cross: \bowtie	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>1</td><td>1</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>23</td><td>1</td><td>10</td><td>34</td></tr> <tr><td>Totals</td><td>23</td><td>1</td><td>11</td><td></td></tr> </table>	Heavys	0	0	1	1	Trucks	0	0	0	0	Cars	23	1	10	34	Totals	23	1	11		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>4</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>17</td></tr> <tr><td>Totals</td><td>21</td></tr> </table>	Heavys	4	Trucks	0	Cars	17	Totals	21	East Leg Total: 965 East Entering: 414 East Peds: 1 Peds Cross: \bowtie																												
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<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>22</td><td>7</td><td>383</td><td>412</td></tr> </table>	Heavys	Trucks	Cars	Totals	22	7	383	412	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>14</td><td>0</td><td>3</td><td>17</td></tr> <tr><td>359</td><td>7</td><td>22</td><td>388</td></tr> <tr><td>9</td><td>0</td><td>0</td><td>9</td></tr> <tr><td>382</td><td>7</td><td>25</td><td></td></tr> </table>	Cars	Trucks	Heavys	Totals	14	0	3	17	359	7	22	388	9	0	0	9	382	7	25		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>1</td><td>0</td><td>3</td><td>4</td></tr> <tr><td>27</td><td>4</td><td>499</td><td>530</td></tr> <tr><td>0</td><td>0</td><td>2</td><td>2</td></tr> <tr><td>28</td><td>4</td><td>504</td><td></td></tr> </table>	Heavys	Trucks	Cars	Totals	1	0	3	4	27	4	499	530	0	0	2	2	28	4	504		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>519</td><td>4</td><td>28</td><td>551</td></tr> </table>	Cars	Trucks	Heavys	Totals	519	4	28	551
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<h2>Comments</h2>																																																											

Mid-day Peak Diagram		Specified Period From: 11:00:00 To: 15:00:00	One Hour Peak From: 13:15:00 To: 14:15:00																													
Municipality: Hamilton Site #: 1910000002 Intersection: Rymal Rd W & Hazelton Ave TFR File #: 1 Count date: 13-Jun-19		Weather conditions: Person counted: Person prepared: Person checked:																														
** Signalized Intersection **		Major Road: Rymal Rd W runs W/E																														
North Leg Total: 43 North Entering: 22 North Peds: 1 Peds Cross: ☒	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>1</td><td>1</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>11</td><td>0</td><td>10</td><td>21</td></tr> <tr><td>Totals</td><td>11</td><td>0</td><td>11</td><td></td></tr> </table>	Heavys	0	0	1	1	Trucks	0	0	0	0	Cars	11	0	10	21	Totals	11	0	11			<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>1</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>20</td></tr> <tr><td>Totals</td><td>21</td></tr> </table>	Heavys	1	Trucks	0	Cars	20	Totals	21	East Leg Total: 1187 East Entering: 658 East Peds: 4 Peds Cross: ☒
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16	5	478																														
Cars	Trucks	Heavys	Totals																													
506	6	17	529																													
Peds Cross: ☒ West Peds: 1 West Entering: 499 West Leg Total: 1136	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>30</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Totals</td><td>30</td></tr> </table>	Cars	30	Trucks	0	Heavys	0	Totals	30		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>6</td><td>0</td><td>31</td><td>37</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>1</td><td>1</td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Totals</td><td>6</td><td>0</td><td>32</td><td></td></tr> </table>	Cars	6	0	31	37	Trucks	0	0	1	1	Heavys	0	0	0	0	Totals	6	0	32		Peds Cross: ☒ South Peds: 0 South Entering: 38 South Leg Total: 68
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Cars	6	0	31	37																												
Trucks	0	0	1	1																												
Heavys	0	0	0	0																												
Totals	6	0	32																													
Comments																																

Afternoon Peak Diagram		Specified Period From: 16:00:00 To: 18:00:00	One Hour Peak From: 16:30:00 To: 17:30:00																																							
Municipality: Hamilton Site #: 1910000002 Intersection: Rymal Rd W & Hazelton Ave TFR File #: 1 Count date: 13-Jun-19		Weather conditions: Person counted: Person prepared: Person checked:																																								
** Signalized Intersection **		Major Road: Rymal Rd W runs W/E																																								
North Leg Total: 80 North Entering: 34 North Peds: 3 Peds Cross: \bowtie	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>13</td><td>0</td><td>21</td><td>34</td></tr> <tr><td>Totals</td><td>13</td><td>0</td><td>21</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	0	0	0	0	Cars	13	0	21	34	Totals	13	0	21			<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>46</td></tr> <tr><td>Totals</td><td>46</td></tr> </table>	Heavys	0	Trucks	0	Cars	46	Totals	46	East Leg Total: 1494 East Entering: 758 East Peds: 1 Peds Cross: \bowtie										
Heavys	0	0	0	0																																						
Trucks	0	0	0	0																																						
Cars	13	0	21	34																																						
Totals	13	0	21																																							
Heavys	0																																									
Trucks	0																																									
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Totals	46																																									
																																										
<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>8</td><td>1</td><td>705</td><td>714</td></tr> </table>		Heavys	Trucks	Cars	Totals	8	1	705	714	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>39</td><td>0</td><td>0</td><td>39</td></tr> <tr><td>689</td><td>1</td><td>8</td><td>698</td></tr> <tr><td>21</td><td>0</td><td>0</td><td>21</td></tr> <tr><td>749</td><td>1</td><td>8</td><td></td></tr> </table>			Cars	Trucks	Heavys	Totals	39	0	0	39	689	1	8	698	21	0	0	21	749	1	8		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>727</td><td>1</td><td>8</td><td>736</td></tr> </table>		Cars	Trucks	Heavys	Totals	727	1	8	736
Heavys	Trucks	Cars	Totals																																							
8	1	705	714																																							
Cars	Trucks	Heavys	Totals																																							
39	0	0	39																																							
689	1	8	698																																							
21	0	0	21																																							
749	1	8																																								
Cars	Trucks	Heavys	Totals																																							
727	1	8	736																																							
Peds Cross: \bowtie West Peds: 1 West Entering: 706 West Leg Total: 1420		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>28</td><td>Cars</td><td>3</td><td>0</td><td>23</td><td>26</td></tr> <tr><td>Trucks</td><td>0</td><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Totals</td><td>28</td><td>Totals</td><td>3</td><td>0</td><td>23</td><td></td></tr> </table>			Cars	28	Cars	3	0	23	26	Trucks	0	Trucks	0	0	0	0	Heavys	0	Heavys	0	0	0	0	Totals	28	Totals	3	0	23		Peds Cross: \bowtie South Peds: 0 South Entering: 26 South Leg Total: 54									
Cars	28	Cars	3	0	23	26																																				
Trucks	0	Trucks	0	0	0	0																																				
Heavys	0	Heavys	0	0	0	0																																				
Totals	28	Totals	3	0	23																																					
Comments																																										

Total Count Diagram

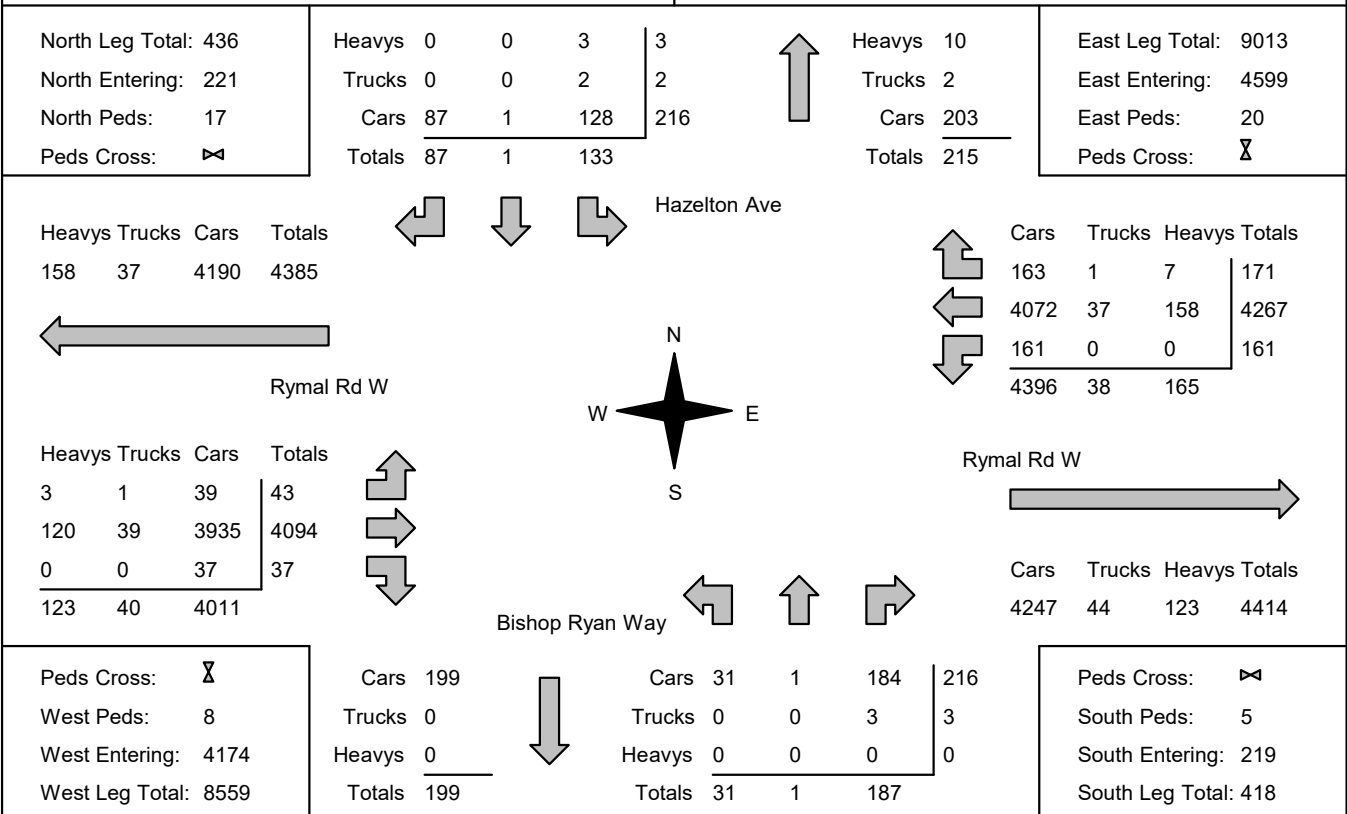
Municipality: Hamilton
Site #: 1910000002
Intersection: Rymal Rd W & Hazelton Ave
TFR File #: 1
Count date: 13-Jun-19

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Rymal Rd W runs W/E



Comments

Traffic Count Summary

Intersection: Rymal Rd W & Hazelton Ave

Count Date: 13-Jun-19

Municipality: Hamilton

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	20	0	14	34	3	47	8:00:00	2	0	11	13	0
9:00:00	11	1	23	35	3	46	9:00:00	1	0	10	11	4
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0
12:00:00	9	0	4	13	1	48	12:00:00	5	0	30	35	0
13:00:00	16	0	8	24	1	61	13:00:00	6	0	31	37	0
14:00:00	13	0	13	26	0	61	14:00:00	7	0	28	35	0
15:00:00	19	0	8	27	2	65	15:00:00	4	1	33	38	0
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	20	0	6	26	4	57	17:00:00	4	0	27	31	1
18:00:00	25	0	11	36	3	55	18:00:00	2	0	17	19	0
Totals:	133	1	87	221	17	440	S Totals:	31	1	187	219	5
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	4	308	3	315	6	693	8:00:00	4	373	1	378	1
9:00:00	9	388	17	414	1	950	9:00:00	4	530	2	536	1
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0
12:00:00	25	475	20	520	2	995	12:00:00	5	463	7	475	2
13:00:00	28	520	23	571	1	1071	13:00:00	4	492	4	500	1
14:00:00	26	626	19	671	2	1144	14:00:00	5	462	6	473	1
15:00:00	29	588	19	636	6	1121	15:00:00	6	475	4	485	1
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	20	651	31	702	1	1345	17:00:00	8	630	5	643	1
18:00:00	20	711	39	770	1	1454	18:00:00	7	669	8	684	0
Totals:	161	4267	171	4599	20	8773	W Totals:	43	4094	37	4174	8
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	8:00	9:00	12:00	13:00			14:00	15:00	17:00	18:00		
Crossing Values:	29	15	18	24			23	31	26	28		



Count Date: 13-Jun-19 Site #: 191000002

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	7	7	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	8	1	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	13	5	0	0	5	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	19	6	0	0	14	9	1	0	0	0	0	0	0	0	0	0	0	0	3	3
8:15:00	22	3	0	0	26	12	1	0	0	0	0	0	1	1	0	0	0	0	4	1
8:30:00	23	1	0	0	30	4	1	0	0	0	0	0	1	0	0	0	0	0	4	0
8:45:00	24	1	0	0	32	2	1	0	0	0	0	0	1	0	0	0	0	0	5	1
9:00:00	29	5	1	1	37	5	1	0	0	0	0	0	1	0	0	0	0	0	6	1
9:15:00	29	0	1	0	37	0	1	0	0	0	0	0	1	0	0	0	0	0	6	0
11:00:00	29	0	1	0	37	0	1	0	0	0	0	0	1	0	0	0	0	0	6	0
11:15:00	31	2	1	0	38	1	1	0	0	0	0	0	1	0	0	0	0	0	6	0
11:30:00	32	1	1	0	38	0	1	0	0	0	0	0	1	0	0	0	0	0	6	0
11:45:00	36	4	1	0	39	1	1	0	0	0	0	0	1	0	0	0	0	0	6	0
12:00:00	38	2	1	0	41	2	1	0	0	0	0	0	1	0	0	0	0	0	7	1
12:15:00	40	2	1	0	45	4	2	1	0	0	0	0	1	0	0	0	0	0	8	1
12:30:00	42	2	1	0	46	1	2	0	0	0	0	0	1	0	0	0	0	0	8	0
12:45:00	48	6	1	0	47	1	2	0	0	0	0	0	1	0	0	0	0	0	8	0
13:00:00	53	5	1	0	49	2	2	0	0	0	0	0	1	0	0	0	0	0	8	0
13:15:00	58	5	1	0	52	3	2	0	0	0	0	0	1	0	0	0	0	0	8	0
13:30:00	61	3	1	0	57	5	2	0	0	0	0	0	1	0	0	0	0	0	8	0
13:45:00	62	1	1	0	58	1	2	0	0	0	0	0	1	0	0	0	0	0	8	0
14:00:00	65	3	1	0	62	4	2	0	0	0	0	0	2	1	0	0	0	0	8	0
14:15:00	68	3	1	0	63	1	2	0	0	0	0	0	2	0	0	0	0	0	9	1
14:30:00	74	6	1	0	64	1	2	0	0	0	0	0	2	0	0	0	0	0	9	0
14:45:00	80	6	1	0	66	2	2	0	0	0	0	0	2	0	0	0	0	0	9	0
15:00:00	84	4	1	0	70	4	2	0	0	0	0	0	2	0	0	0	0	0	10	1
15:15:00	84	0	1	0	70	0	2	0	0	0	0	0	2	0	0	0	0	0	10	0
16:00:00	84	0	1	0	70	0	2	0	0	0	0	0	2	0	0	0	0	0	10	0
16:15:00	89	5	1	0	70	0	2	0	0	0	0	0	2	0	0	0	0	0	11	1
16:30:00	96	7	1	0	70	0	2	0	0	0	0	0	2	0	0	0	0	0	12	1
16:45:00	99	3	1	0	75	5	2	0	0	0	0	0	2	0	0	0	0	0	13	1
17:00:00	104	5	1	0	76	1	2	0	0	0	0	0	2	0	0	0	0	0	14	1
17:15:00	112	8	1	0	82	6	2	0	0	0	0	0	2	0	0	0	0	0	15	1
17:30:00	117	5	1	0	83	1	2	0	0	0	0	0	2	0	0	0	0	0	15	0
17:45:00	121	4	1	0	86	3	2	0	0	0	0	0	3	1	0	0	0	0	16	1
18:00:00	128	7	1	0	87	1	2	0	0	0	0	0	3	0	0	0	0	0	17	1
18:15:00	128	0	1	0	87	0	2	0	0	0	0	0	3	0	0	0	0	0	17	0
18:15:15	128	0	1	0	87	0	2	0	0	0	0	0	3	0	0	0	0	0	17	0

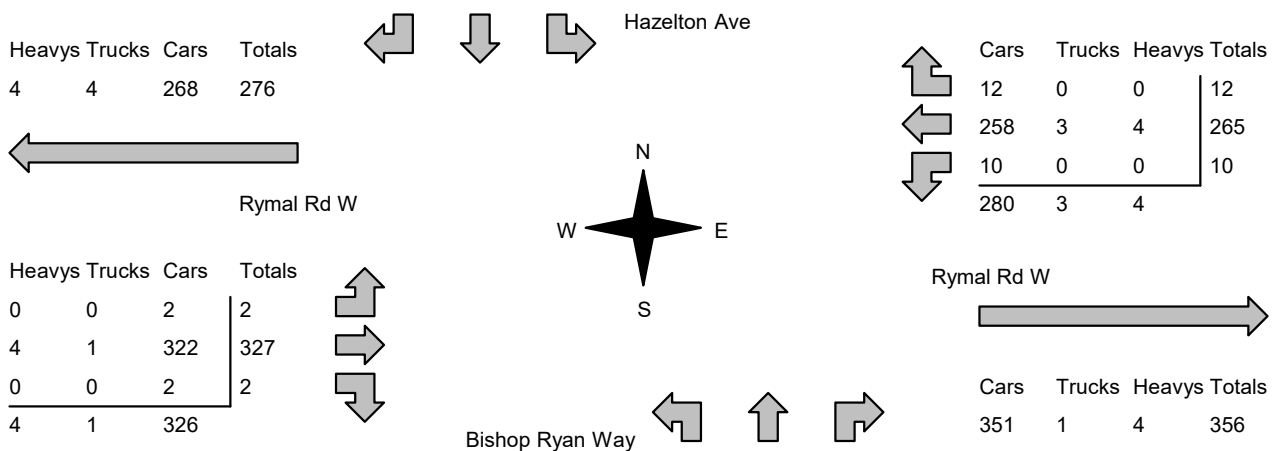
Count Date: 13-Jun-19 Site #: 191000002

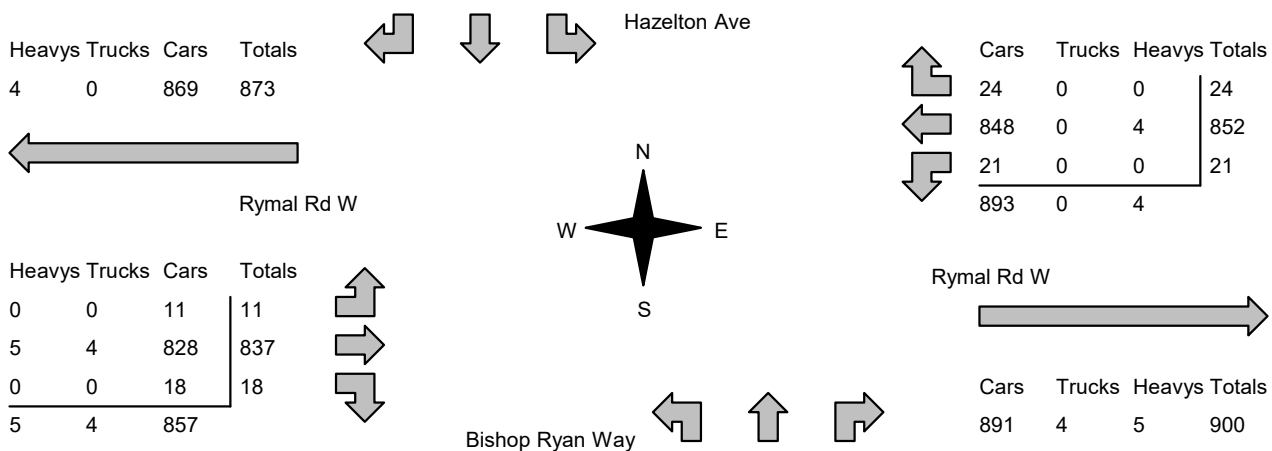
Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	1	44	44	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0
7:30:00	2	1	97	53	0	0	0	0	5	5	0	0	0	0	6	4	0	0	2	2
7:45:00	2	0	180	83	3	3	0	0	5	0	0	0	0	0	17	11	0	0	2	0
8:00:00	4	2	275	95	3	0	0	0	5	0	0	0	0	0	28	11	0	0	6	4
8:15:00	6	2	375	100	6	3	0	0	7	2	0	0	0	0	31	3	0	0	6	0
8:30:00	7	1	464	89	8	2	0	0	9	2	0	0	0	0	39	8	1	1	7	1
8:45:00	9	2	545	81	11	3	0	0	12	3	0	0	0	0	46	7	2	1	7	0
9:00:00	13	4	634	89	17	6	0	0	12	0	0	0	0	0	50	4	3	1	7	0
9:15:00	13	0	634	0	17	0	0	0	12	0	0	0	0	0	50	0	3	0	7	0
11:00:00	13	0	634	0	17	0	0	0	12	0	0	0	0	0	50	0	3	0	7	0
11:15:00	22	9	758	124	22	5	0	0	12	0	0	0	0	0	50	0	3	0	8	1
11:30:00	23	1	851	93	25	3	0	0	12	0	0	0	0	0	52	2	3	0	8	0
11:45:00	26	3	980	129	33	8	0	0	12	0	0	0	0	0	59	7	3	0	8	0
12:00:00	38	12	1094	114	37	4	0	0	13	1	0	0	0	0	64	5	3	0	9	1
12:15:00	46	8	1232	138	42	5	0	0	16	3	0	0	0	0	69	5	3	0	9	0
12:30:00	55	9	1366	134	46	4	0	0	16	0	0	0	0	0	70	1	3	0	9	0
12:45:00	60	5	1467	101	55	9	0	0	17	1	0	0	0	0	75	5	3	0	9	0
13:00:00	66	6	1588	121	59	4	0	0	20	3	0	0	0	0	83	8	4	1	10	1
13:15:00	73	7	1757	169	64	5	0	0	21	1	1	1	0	0	86	3	4	0	12	2
13:30:00	76	3	1893	136	68	4	0	0	23	2	1	0	0	0	96	10	4	0	12	0
13:45:00	86	10	2045	152	74	6	0	0	26	3	1	0	0	0	100	4	5	1	12	0
14:00:00	92	6	2180	135	76	2	0	0	29	3	1	0	0	0	108	8	5	0	12	0
14:15:00	97	5	2339	159	77	1	0	0	31	2	1	0	0	0	114	6	5	0	16	4
14:30:00	102	5	2459	120	82	5	0	0	31	0	1	0	0	0	126	12	5	0	16	0
14:45:00	111	9	2596	137	90	8	0	0	32	1	1	0	0	0	130	4	5	0	16	0
15:00:00	121	10	2735	139	95	5	0	0	33	1	1	0	0	0	137	7	5	0	18	2
15:15:00	121	0	2735	0	95	0	0	0	33	0	1	0	0	0	137	0	5	0	18	0
16:00:00	121	0	2735	0	95	0	0	0	33	0	1	0	0	0	137	0	5	0	18	0
16:15:00	122	1	2882	147	103	8	0	0	34	1	1	0	0	0	143	6	6	1	18	0
16:30:00	130	8	3029	147	110	7	0	0	34	0	1	0	0	0	144	1	6	0	18	0
16:45:00	138	8	3212	183	118	8	0	0	34	0	1	0	0	0	147	3	6	0	18	0
17:00:00	141	3	3372	160	125	7	0	0	34	0	1	0	0	0	150	3	6	0	19	1
17:15:00	145	4	3541	169	139	14	0	0	34	0	1	0	0	0	151	1	6	0	19	0
17:30:00	151	6	3718	177	149	10	0	0	35	1	1	0	0	0	152	1	6	0	19	0
17:45:00	154	3	3918	200	156	7	0	0	36	1	1	0	0	0	154	2	7	1	20	1
18:00:00	161	7	4072	154	163	7	0	0	37	1	1	0	0	0	158	4	7	0	20	0
18:15:00	161	0	4072	0	163	0	0	0	37	0	1	0	0	0	158	0	7	0	20	0
18:15:15	161	0	4072	0	163	0	0	0	37	0	1	0	0	0	158	0	7	0	20	0


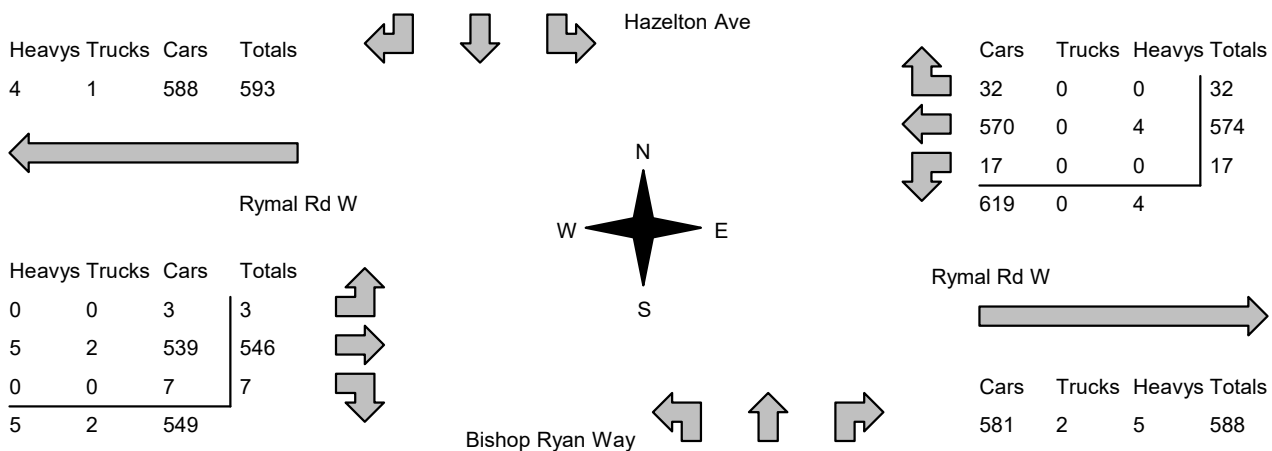



Count Date: 13-Jun-19 Site #: 191000002

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	54	54	0	0	0	0	1	1	0	0	0	0	2	2	0	0	0	0
7:30:00	3	3	136	82	0	0	0	0	1	0	0	0	0	0	4	2	0	0	0	0
7:45:00	3	0	249	113	1	1	0	0	2	1	0	0	0	0	7	3	0	0	0	0
8:00:00	3	0	358	109	1	0	0	0	3	1	0	0	1	1	12	5	0	0	1	1
8:15:00	4	1	492	134	1	0	0	0	4	1	0	0	1	0	20	8	0	0	1	0
8:30:00	5	1	609	117	1	0	0	0	5	1	0	0	2	1	29	9	0	0	1	0
8:45:00	6	1	717	108	1	0	0	0	5	0	0	0	2	0	34	5	0	0	1	0
9:00:00	6	0	857	140	3	2	0	0	7	2	0	0	2	0	39	5	0	0	2	1
9:15:00	6	0	857	0	3	0	0	0	7	0	0	0	2	0	39	0	0	0	2	0
11:00:00	6	0	857	0	3	0	0	0	7	0	0	0	2	0	39	0	0	0	2	0
11:15:00	7	1	959	102	5	2	0	0	9	2	0	0	2	0	42	3	0	0	2	0
11:30:00	9	2	1068	109	6	1	0	0	11	2	0	0	2	0	47	5	0	0	2	0
11:45:00	9	0	1183	115	7	1	0	0	14	3	0	0	2	0	50	3	0	0	2	0
12:00:00	10	1	1297	114	10	3	1	1	16	2	0	0	2	0	53	3	0	0	4	2
12:15:00	10	0	1413	116	12	2	1	0	17	1	0	0	2	0	57	4	0	0	5	1
12:30:00	10	0	1526	113	12	0	1	0	20	3	0	0	2	0	60	3	0	0	5	0
12:45:00	12	2	1641	115	13	1	1	0	20	0	0	0	2	0	66	6	0	0	5	0
13:00:00	14	2	1765	124	14	1	1	0	23	3	0	0	2	0	70	4	0	0	5	0
13:15:00	14	0	1865	100	16	2	1	0	25	2	0	0	2	0	73	3	0	0	5	0
13:30:00	15	1	1962	97	18	2	1	0	27	2	0	0	2	0	76	3	0	0	5	0
13:45:00	18	3	2075	113	20	2	1	0	27	0	0	0	2	0	78	2	0	0	5	0
14:00:00	19	1	2207	132	20	0	1	0	28	1	0	0	2	0	85	7	0	0	6	1
14:15:00	21	2	2330	123	22	2	1	0	30	2	0	0	2	0	89	4	0	0	6	0
14:30:00	22	1	2436	106	23	1	1	0	33	3	0	0	2	0	92	3	0	0	6	0
14:45:00	24	2	2548	112	23	0	1	0	34	1	0	0	2	0	94	2	0	0	6	0
15:00:00	24	0	2659	111	24	1	1	0	35	1	0	0	3	1	101	7	0	0	7	1
15:15:00	24	0	2659	0	24	0	1	0	35	0	0	0	3	0	101	0	0	0	7	0
16:00:00	24	0	2659	0	24	0	1	0	35	0	0	0	3	0	101	0	0	0	7	0
16:15:00	25	1	2811	152	25	1	1	0	36	1	0	0	3	0	106	5	0	0	7	0
16:30:00	28	3	2942	131	26	1	1	0	37	1	0	0	3	0	110	4	0	0	7	0
16:45:00	29	1	3101	159	28	2	1	0	38	1	0	0	3	0	112	2	0	0	7	0
17:00:00	32	3	3273	172	29	1	1	0	38	0	0	0	3	0	114	2	0	0	8	1
17:15:00	34	2	3460	187	31	2	1	0	38	0	0	0	3	0	115	1	0	0	8	0
17:30:00	35	1	3625	165	33	2	1	0	38	0	0	0	3	0	118	3	0	0	8	0
17:45:00	37	2	3771	146	35	2	1	0	39	1	0	0	3	0	118	0	0	0	8	0
18:00:00	39	2	3935	164	37	2	1	0	39	0	0	0	3	0	120	2	0	0	8	0
18:15:00	39	0	3935	0	37	0	1	0	39	0	0	0	3	0	120	0	0	0	8	0
18:15:15	39	0	3935	0	37	0	1	0	39	0	0	0	3	0	120	0	0	0	8	0

<h1>Morning Peak Diagram</h1>	Specified Period From: 7:00:00 To: 9:00:00	One Hour Peak From: 8:00:00 To: 9:00:00																																																																																								
Municipality: Hamilton Site #: 1910000002 Intersection: Rymal Rd W & Hazelton Ave TFR File #: 1 Count date: 15-Jun-19	Weather conditions: Person counted: Person prepared: Person checked:																																																																																									
** Signalized Intersection **		Major Road: Rymal Rd W runs W/E																																																																																								
North Leg Total: 34 North Entering: 20 North Peds: 1 Peds Cross: ☒	<table style="border-collapse: collapse; margin: auto;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>1</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>Cars</td><td>4</td><td>0</td><td>15</td><td>19</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>5</td><td>0</td><td>15</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	1	0	0	1	Cars	4	0	15	19	Totals	5	0	15			<table style="border-collapse: collapse; margin: auto;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>14</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>14</td></tr> </table>	Heavys	0	Trucks	0	Cars	14	Totals	14	East Leg Total: 643 East Entering: 287 East Peds: 3 Peds Cross: ☒																																																										
Heavys	0	0	0	0																																																																																						
Trucks	1	0	0	1																																																																																						
Cars	4	0	15	19																																																																																						
Totals	5	0	15																																																																																							
Heavys	0																																																																																									
Trucks	0																																																																																									
Cars	14																																																																																									
Totals	14																																																																																									
																																																																																										
<table style="border-collapse: collapse; margin: auto;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>4</td><td>4</td><td>268</td><td>276</td></tr> </table>	Heavys	Trucks	Cars	Totals	4	4	268	276	<table style="border-collapse: collapse; margin: auto;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>12</td><td>0</td><td>0</td><td>12</td></tr> <tr><td>258</td><td>3</td><td>4</td><td>265</td></tr> <tr><td>10</td><td>0</td><td>0</td><td>10</td></tr> <tr style="border-top: 1px solid black;"><td>280</td><td>3</td><td>4</td><td></td></tr> </table>	Cars	Trucks	Heavys	Totals	12	0	0	12	258	3	4	265	10	0	0	10	280	3	4		<table style="border-collapse: collapse; margin: auto;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>0</td><td>0</td><td>2</td><td>2</td></tr> <tr><td>4</td><td>1</td><td>322</td><td>327</td></tr> <tr><td>0</td><td>0</td><td>2</td><td>2</td></tr> <tr style="border-top: 1px solid black;"><td>4</td><td>1</td><td>326</td><td></td></tr> </table>	Heavys	Trucks	Cars	Totals	0	0	2	2	4	1	322	327	0	0	2	2	4	1	326		<table style="border-collapse: collapse; margin: auto;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>351</td><td>1</td><td>4</td><td>356</td></tr> </table>	Cars	Trucks	Heavys	Totals	351	1	4	356	Peds Cross: ☒ West Peds: 1 West Entering: 331 West Leg Total: 607	<table style="border-collapse: collapse; margin: auto;"> <tr><td>Cars</td><td>12</td><td>Cars</td><td>6</td><td>0</td><td>14</td><td>20</td></tr> <tr><td>Trucks</td><td>0</td><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>12</td><td>Totals</td><td>6</td><td>0</td><td>14</td><td></td></tr> </table>	Cars	12	Cars	6	0	14	20	Trucks	0	Trucks	0	0	0	0	Heavys	0	Heavys	0	0	0	0	Totals	12	Totals	6	0	14		Peds Cross: ☒ South Peds: 2 South Entering: 20 South Leg Total: 32
Heavys	Trucks	Cars	Totals																																																																																							
4	4	268	276																																																																																							
Cars	Trucks	Heavys	Totals																																																																																							
12	0	0	12																																																																																							
258	3	4	265																																																																																							
10	0	0	10																																																																																							
280	3	4																																																																																								
Heavys	Trucks	Cars	Totals																																																																																							
0	0	2	2																																																																																							
4	1	322	327																																																																																							
0	0	2	2																																																																																							
4	1	326																																																																																								
Cars	Trucks	Heavys	Totals																																																																																							
351	1	4	356																																																																																							
Cars	12	Cars	6	0	14	20																																																																																				
Trucks	0	Trucks	0	0	0	0																																																																																				
Heavys	0	Heavys	0	0	0	0																																																																																				
Totals	12	Totals	6	0	14																																																																																					
<h2>Comments</h2>																																																																																										

Mid-day Peak Diagram		Specified Period From: 11:00:00 To: 15:00:00	One Hour Peak From: 11:00:00 To: 12:00:00																												
Municipality: Hamilton Site #: 1910000002 Intersection: Rymal Rd W & Hazelton Ave TFR File #: 1 Count date: 15-Jun-19		Weather conditions: Person counted: Person prepared: Person checked:																													
** Signalized Intersection **		Major Road: Rymal Rd W runs W/E																													
North Leg Total: 80 North Entering: 44 North Peds: 0 Peds Cross: \times	<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>19</td><td>0</td><td>25</td><td>44</td></tr> <tr><td>Totals</td><td>19</td><td>0</td><td>25</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	0	0	0	0	Cars	19	0	25	44	Totals	19	0	25		<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>1</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>35</td></tr> <tr><td>Totals</td><td>36</td></tr> </table>	Heavys	1	Trucks	0	Cars	35	Totals	36	East Leg Total: 1797 East Entering: 897 East Peds: 5 Peds Cross: \times
Heavys	0	0	0	0																											
Trucks	0	0	0	0																											
Cars	19	0	25	44																											
Totals	19	0	25																												
Heavys	1																														
Trucks	0																														
Cars	35																														
Totals	36																														
																															
Peds Cross: \times West Peds: 0 West Entering: 866 West Leg Total: 1739	<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>39</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Totals</td><td>39</td></tr> </table>	Cars	39	Trucks	0	Heavys	0	Totals	39	<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>2</td><td>0</td><td>38</td><td>40</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td><td>1</td><td>0</td><td>1</td></tr> <tr><td>Totals</td><td>2</td><td>1</td><td>38</td><td></td></tr> </table>	Cars	2	0	38	40	Trucks	0	0	0	0	Heavys	0	1	0	1	Totals	2	1	38		Peds Cross: \times South Peds: 4 South Entering: 41 South Leg Total: 80
Cars	39																														
Trucks	0																														
Heavys	0																														
Totals	39																														
Cars	2	0	38	40																											
Trucks	0	0	0	0																											
Heavys	0	1	0	1																											
Totals	2	1	38																												
Comments																															

<h1>Afternoon Peak Diagram</h1>		Specified Period From: 16:00:00 To: 18:00:00	One Hour Peak From: 16:00:00 To: 17:00:00																																																										
Municipality: Hamilton Site #: 1910000002 Intersection: Rymal Rd W & Hazelton Ave TFR File #: 1 Count date: 15-Jun-19		Weather conditions: Person counted: Person prepared: Person checked:																																																											
** Signalized Intersection **		Major Road: Rymal Rd W runs W/E																																																											
North Leg Total: 63 North Entering: 28 North Peds: 2 Peds Cross: \bowtie	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>1</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>Cars</td><td>7</td><td>0</td><td>20</td><td>27</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>8</td><td>0</td><td>20</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	1	0	0	1	Cars	7	0	20	27	Totals	8	0	20			<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>35</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>35</td></tr> </table>	Heavys	0	Trucks	0	Cars	35	Totals	35	East Leg Total: 1211 East Entering: 623 East Peds: 1 Peds Cross: \bowtie																													
Heavys	0	0	0	0																																																									
Trucks	1	0	0	1																																																									
Cars	7	0	20	27																																																									
Totals	8	0	20																																																										
Heavys	0																																																												
Trucks	0																																																												
Cars	35																																																												
Totals	35																																																												
																																																													
<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>4</td><td>1</td><td>588</td><td>593</td></tr> </table>	Heavys	Trucks	Cars	Totals	4	1	588	593	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>32</td><td>0</td><td>0</td><td>32</td></tr> <tr><td>570</td><td>0</td><td>4</td><td>574</td></tr> <tr><td>17</td><td>0</td><td>0</td><td>17</td></tr> <tr style="border-top: 1px solid black;"><td>619</td><td>0</td><td>4</td><td></td></tr> </table>	Cars	Trucks	Heavys	Totals	32	0	0	32	570	0	4	574	17	0	0	17	619	0	4		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>0</td><td>0</td><td>3</td><td>3</td></tr> <tr><td>5</td><td>2</td><td>539</td><td>546</td></tr> <tr><td>0</td><td>0</td><td>7</td><td>7</td></tr> <tr style="border-top: 1px solid black;"><td>5</td><td>2</td><td>549</td><td></td></tr> </table>			Heavys	Trucks	Cars	Totals	0	0	3	3	5	2	539	546	0	0	7	7	5	2	549		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>581</td><td>2</td><td>5</td><td>588</td></tr> </table>	Cars	Trucks	Heavys	Totals	581	2	5	588
Heavys	Trucks	Cars	Totals																																																										
4	1	588	593																																																										
Cars	Trucks	Heavys	Totals																																																										
32	0	0	32																																																										
570	0	4	574																																																										
17	0	0	17																																																										
619	0	4																																																											
Heavys	Trucks	Cars	Totals																																																										
0	0	3	3																																																										
5	2	539	546																																																										
0	0	7	7																																																										
5	2	549																																																											
Cars	Trucks	Heavys	Totals																																																										
581	2	5	588																																																										
Peds Cross: \bowtie West Peds: 0 West Entering: 556 West Leg Total: 1149	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>24</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>24</td></tr> </table>	Cars	24	Trucks	0	Heavys	0	Totals	24		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>11</td><td>0</td><td>22</td><td>33</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>11</td><td>0</td><td>22</td><td></td></tr> </table>	Cars	11	0	22	33	Trucks	0	0	0	0	Heavys	0	0	0	0	Totals	11	0	22		Peds Cross: \bowtie South Peds: 3 South Entering: 33 South Leg Total: 57																													
Cars	24																																																												
Trucks	0																																																												
Heavys	0																																																												
Totals	24																																																												
Cars	11	0	22	33																																																									
Trucks	0	0	0	0																																																									
Heavys	0	0	0	0																																																									
Totals	11	0	22																																																										
<h2>Comments</h2>																																																													

Total Count Diagram

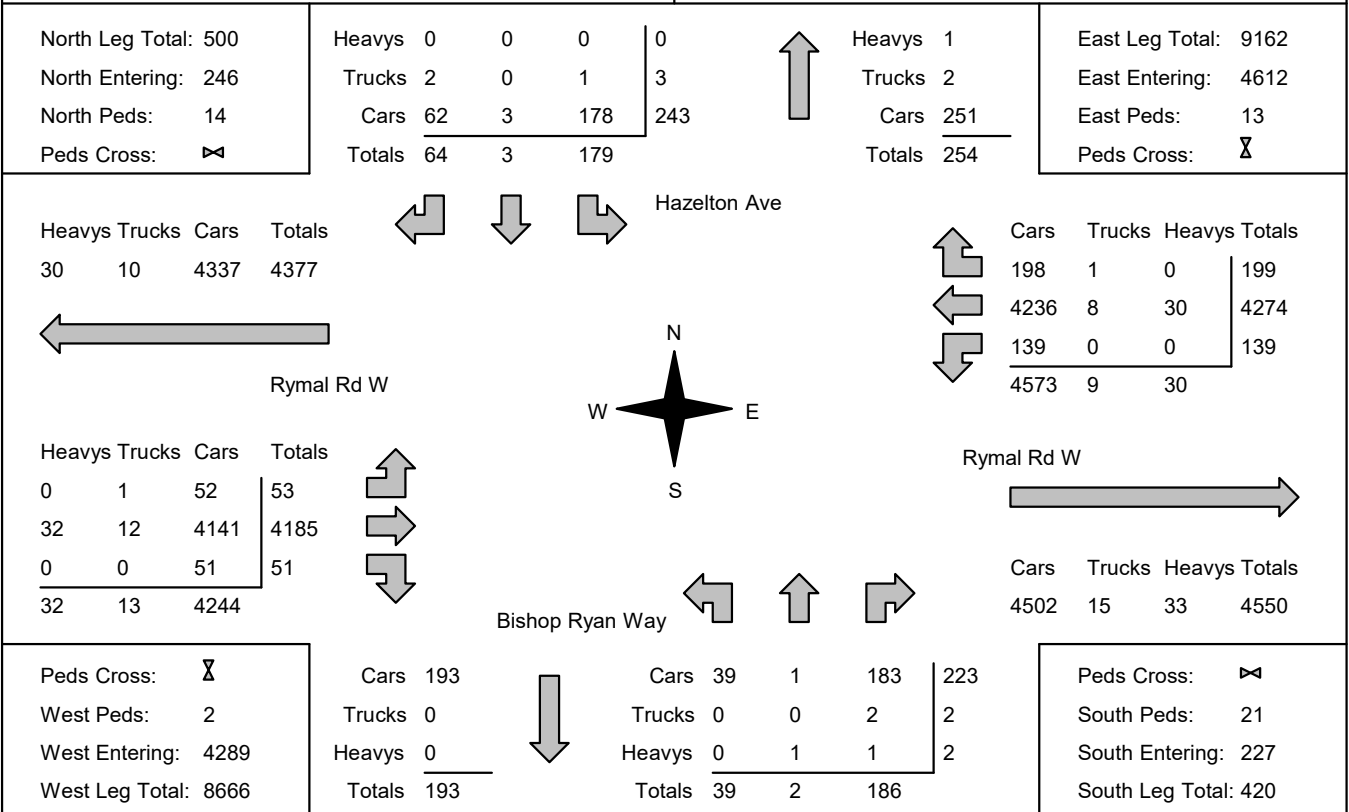
Municipality: Hamilton
Site #: 1910000002
Intersection: Rymal Rd W & Hazelton Ave
TFR File #: 1
Count date: 15-Jun-19

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Rymal Rd W runs W/E



Comments

Traffic Count Summary

Intersection: Rymal Rd W & Hazelton Ave

Count Date: 15-Jun-19

Municipality: Hamilton

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	12	1	1	14	2	25	8:00:00	1	0	10	11	1
9:00:00	15	0	5	20	1	40	9:00:00	6	0	14	20	2
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0
12:00:00	25	0	19	44	0	85	12:00:00	2	1	38	41	4
13:00:00	30	1	11	42	3	65	13:00:00	4	0	19	23	2
14:00:00	26	1	6	33	2	82	14:00:00	6	1	42	49	2
15:00:00	32	0	8	40	1	73	15:00:00	8	0	25	33	1
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	20	0	8	28	2	61	17:00:00	11	0	22	33	3
18:00:00	19	0	6	25	3	42	18:00:00	1	0	16	17	6
Totals:	179	3	64	246	14	473	S Totals:	39	2	186	227	21
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	4	153	3	160	1	339	8:00:00	1	176	2	179	0
9:00:00	10	265	12	287	3	618	9:00:00	2	327	2	331	1
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0
12:00:00	21	852	24	897	5	1763	12:00:00	11	837	18	866	0
13:00:00	25	663	34	722	0	1337	13:00:00	9	600	6	615	0
14:00:00	21	638	30	689	2	1396	14:00:00	7	693	7	707	0
15:00:00	27	565	37	629	1	1212	15:00:00	13	563	7	583	0
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	17	574	32	623	1	1179	17:00:00	3	546	7	556	0
18:00:00	14	564	27	605	0	1057	18:00:00	7	443	2	452	1
Totals:	139	4274	199	4612	13	8901	W Totals:	53	4185	51	4289	2
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	8:00	9:00	12:00	13:00		14:00	15:00	17:00	18:00			
Crossing Values:	15	25	33	35		35	41	32	21			



Count Date: 15-Jun-19 Site #: 191000002

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	1	25	25	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
7:30:00	1	0	63	38	1	1	0	0	1	0	0	0	0	0	1	1	0	0	0	0
7:45:00	2	1	96	33	2	1	0	0	1	0	0	0	0	0	2	1	0	0	1	1
8:00:00	4	2	150	54	3	1	0	0	1	0	0	0	0	0	2	0	0	0	1	0
8:15:00	6	2	197	47	5	2	0	0	3	2	0	0	0	0	3	1	0	0	1	0
8:30:00	9	3	253	56	9	4	0	0	3	0	0	0	0	0	4	1	0	0	4	3
8:45:00	12	3	331	78	11	2	0	0	3	0	0	0	0	0	5	1	0	0	4	0
9:00:00	14	2	408	77	15	4	0	0	4	1	0	0	0	0	6	1	0	0	4	0
9:15:00	14	0	408	0	15	0	0	0	4	0	0	0	0	0	6	0	0	0	4	0
11:00:00	14	0	408	0	15	0	0	0	4	0	0	0	0	0	6	0	0	0	4	0
11:15:00	20	6	686	278	21	6	0	0	4	0	0	0	0	0	7	1	0	0	4	0
11:30:00	22	2	982	296	31	10	0	0	4	0	0	0	0	0	8	1	0	0	8	4
11:45:00	29	7	1125	143	35	4	0	0	4	0	0	0	0	0	9	1	0	0	9	1
12:00:00	35	6	1256	131	39	4	0	0	4	0	0	0	0	0	10	1	0	0	9	0
12:15:00	46	11	1438	182	49	10	0	0	4	0	0	0	0	0	10	0	0	0	9	0
12:30:00	52	6	1622	184	56	7	0	0	4	0	0	0	0	0	12	2	0	0	9	0
12:45:00	57	5	1777	155	64	8	0	0	5	1	0	0	0	0	12	0	0	0	9	0
13:00:00	60	3	1914	137	73	9	0	0	5	0	0	0	0	0	14	2	0	0	9	0
13:15:00	66	6	2082	168	78	5	0	0	5	0	0	0	0	0	14	0	0	0	10	1
13:30:00	71	5	2252	170	84	6	0	0	5	0	0	0	0	0	15	1	0	0	11	1
13:45:00	75	4	2402	150	94	10	0	0	6	1	0	0	0	0	15	0	0	0	11	0
14:00:00	81	6	2547	145	103	9	0	0	7	1	0	0	0	0	17	2	0	0	11	0
14:15:00	90	9	2679	132	109	6	0	0	7	0	0	0	0	0	17	0	0	0	11	0
14:30:00	93	3	2827	148	117	8	0	0	7	0	1	1	0	0	19	2	0	0	11	0
14:45:00	98	5	2972	145	125	8	0	0	8	1	1	0	0	0	21	2	0	0	11	0
15:00:00	108	10	3105	133	139	14	0	0	8	0	1	0	0	0	23	2	0	0	12	1
15:15:00	108	0	3105	0	139	0	0	0	8	0	1	0	0	0	23	0	0	0	12	0
16:00:00	108	0	3105	0	139	0	0	0	8	0	1	0	0	0	23	0	0	0	12	0
16:15:00	114	6	3258	153	146	7	0	0	8	0	1	0	0	0	23	0	0	0	12	0
16:30:00	119	5	3395	137	153	7	0	0	8	0	1	0	0	0	25	2	0	0	12	0
16:45:00	123	4	3535	140	160	7	0	0	8	0	1	0	0	0	26	1	0	0	12	0
17:00:00	125	2	3675	140	171	11	0	0	8	0	1	0	0	0	27	1	0	0	13	1
17:15:00	129	4	3832	157	175	4	0	0	8	0	1	0	0	0	27	0	0	0	13	0
17:30:00	132	3	3950	118	179	4	0	0	8	0	1	0	0	0	28	1	0	0	13	0
17:45:00	134	2	4093	143	190	11	0	0	8	0	1	0	0	0	30	2	0	0	13	0
18:00:00	139	5	4236	143	198	8	0	0	8	0	1	0	0	0	30	0	0	0	13	0
18:15:00	139	0	4236	0	198	0	0	0	8	0	1	0	0	0	30	0	0	0	13	0
18:15:15	139	0	4236	0	198	0	0	0	8	0	1	0	0	0	30	0	0	0	13	0

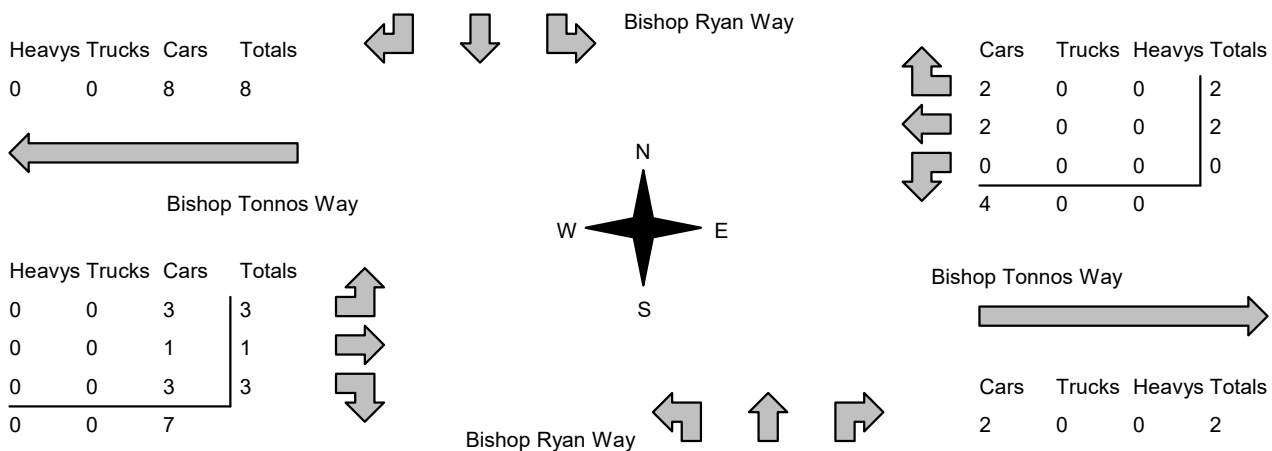
Count Date: 15-Jun-19 Site #: 191000002



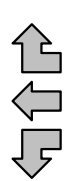
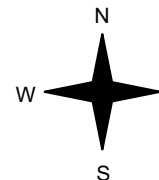




Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	8	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	1	1	0	0	10	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1
8:15:00	2	1	0	0	12	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:30:00	5	3	0	0	14	2	0	0	0	0	0	0	0	0	0	0	0	0	2	1
8:45:00	5	0	0	0	19	5	0	0	0	0	0	0	0	0	0	0	0	0	3	1
9:00:00	7	2	0	0	24	5	0	0	0	0	0	0	0	0	0	0	0	0	3	0
9:15:00	7	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
11:00:00	7	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
11:15:00	7	0	0	0	43	19	0	0	0	0	0	0	0	0	1	1	0	0	3	0
11:30:00	7	0	0	0	48	5	0	0	0	0	0	0	0	0	1	0	0	0	5	2
11:45:00	9	2	0	0	56	8	0	0	0	0	0	0	0	0	1	0	0	0	6	1
12:00:00	9	0	0	0	62	6	0	0	0	0	0	0	0	0	1	0	0	0	7	1
12:15:00	10	1	0	0	69	7	0	0	0	0	0	0	0	0	1	0	0	0	7	0
12:30:00	10	0	0	0	71	2	0	0	0	0	0	0	0	0	1	0	0	0	7	0
12:45:00	12	2	0	0	75	4	0	0	0	0	0	0	0	0	1	0	0	0	8	1
13:00:00	13	1	0	0	81	6	0	0	0	0	0	0	0	0	1	0	0	0	9	1
13:15:00	14	1	0	0	94	13	0	0	0	0	1	1	0	0	1	0	0	0	9	0
13:30:00	15	1	0	0	98	4	0	0	0	0	1	0	0	0	1	0	0	0	9	0
13:45:00	17	2	1	1	109	11	0	0	0	0	1	0	0	0	1	0	0	0	11	2
14:00:00	19	2	1	0	122	13	0	0	0	0	1	0	0	0	1	0	0	0	11	0
14:15:00	21	2	1	0	128	6	0	0	0	0	1	0	0	0	1	0	0	0	11	0
14:30:00	22	1	1	0	130	2	0	0	0	0	1	0	0	0	1	0	0	0	11	0
14:45:00	24	2	1	0	137	7	0	0	0	0	1	0	0	0	1	0	0	0	11	0
15:00:00	27	3	1	0	146	9	0	0	0	0	2	1	0	0	1	0	0	0	12	1
15:15:00	27	0	1	0	146	0	0	0	0	0	2	0	0	0	1	0	0	0	12	0
16:00:00	27	0	1	0	146	0	0	0	0	0	2	0	0	0	1	0	0	0	12	0
16:15:00	29	2	1	0	150	4	0	0	0	0	2	0	0	0	1	0	0	0	13	1
16:30:00	33	4	1	0	155	5	0	0	0	0	2	0	0	0	1	0	0	0	13	0
16:45:00	37	4	1	0	162	7	0	0	0	0	2	0	0	0	1	0	0	0	15	2
17:00:00	38	1	1	0	168	6	0	0	0	0	2	0	0	0	1	0	0	0	15	0
17:15:00	38	0	1	0	171	3	0	0	0	0	2	0	0	0	1	0	1	1	16	1
17:30:00	38	0	1	0	176	5	0	0	0	0	2	0	0	0	1	0	1	0	17	1
17:45:00	39	1	1	0	181	5	0	0	0	0	2	0	0	0	1	0	1	0	19	2
18:00:00	39	0	1	0	183	2	0	0	0	0	2	0	0	0	1	0	1	0	21	2
18:15:00	39	0	1	0	183	0	0	0	0	0	2	0	0	0	1	0	1	0	21	0
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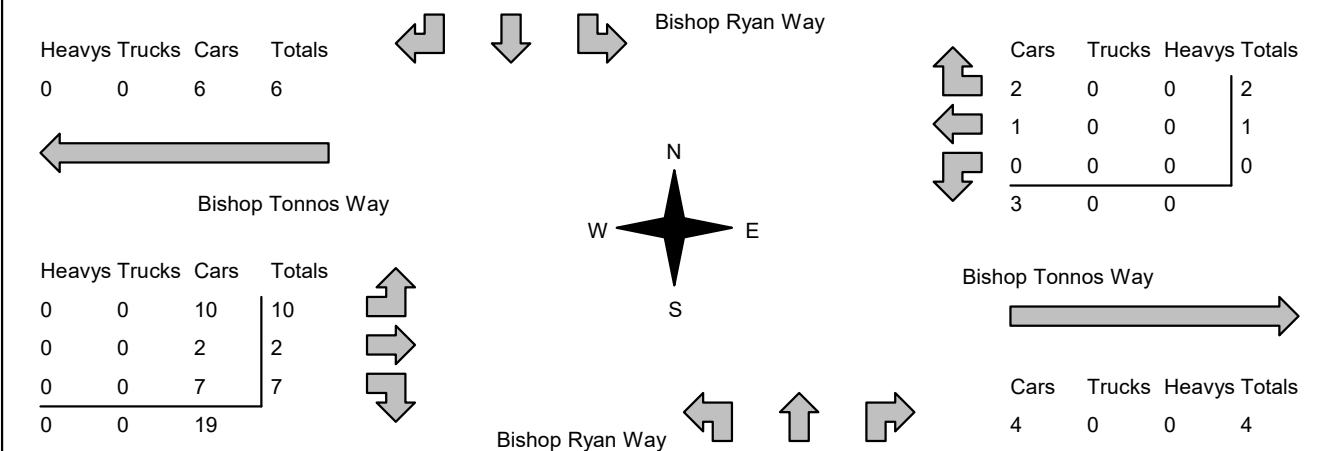


Count Date: 15-Jun-19 Site #: 191000002

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	30	30	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
7:30:00	1	1	66	36	1	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0
7:45:00	1	0	109	43	2	1	0	0	0	0	0	0	0	0	3	1	0	0	0	0
8:00:00	1	0	171	62	2	0	0	0	2	2	0	0	0	0	3	0	0	0	0	0
8:15:00	2	1	240	69	2	0	0	0	2	0	0	0	0	0	4	1	0	0	0	0
8:30:00	2	0	311	71	2	0	0	0	2	0	0	0	0	0	5	1	0	0	1	1
8:45:00	3	1	400	89	2	0	0	0	2	0	0	0	0	0	6	1	0	0	1	0
9:00:00	3	0	493	93	4	2	0	0	3	1	0	0	0	0	7	1	0	0	1	0
9:15:00	3	0	493	0	4	0	0	0	3	0	0	0	0	0	7	0	0	0	1	0
11:00:00	3	0	493	0	4	0	0	0	3	0	0	0	0	0	7	0	0	0	1	0
11:15:00	3	0	753	260	8	4	0	0	3	0	0	0	0	0	8	1	0	0	1	0
11:30:00	11	8	1012	259	18	10	0	0	4	1	0	0	0	0	10	2	0	0	1	0
11:45:00	12	1	1157	145	18	0	0	0	5	1	0	0	0	0	11	1	0	0	1	0
12:00:00	14	2	1321	164	22	4	0	0	7	2	0	0	0	0	12	1	0	0	1	0
12:15:00	16	2	1471	150	23	1	0	0	7	0	0	0	0	0	14	2	0	0	1	0
12:30:00	18	2	1597	126	24	1	0	0	7	0	0	0	0	0	14	0	0	0	1	0
12:45:00	20	2	1753	156	24	0	0	0	7	0	0	0	0	0	15	1	0	0	1	0
13:00:00	23	3	1917	164	28	4	0	0	7	0	0	0	0	0	16	1	0	0	1	0
13:15:00	26	3	2092	175	29	1	1	1	7	0	0	0	0	0	17	1	0	0	1	0
13:30:00	28	2	2264	172	30	1	1	0	7	0	0	0	0	0	18	1	0	0	1	0
13:45:00	29	1	2453	189	33	3	1	0	8	1	0	0	0	0	19	1	0	0	1	0
14:00:00	29	0	2606	153	35	2	1	0	8	0	0	0	0	0	19	0	0	0	1	0
14:15:00	33	4	2752	146	36	1	1	0	9	1	0	0	0	0	21	2	0	0	1	0
14:30:00	36	3	2883	131	37	1	1	0	9	0	0	0	0	0	21	0	0	0	1	0
14:45:00	38	2	3022	139	39	2	1	0	10	1	0	0	0	0	22	1	0	0	1	0
15:00:00	42	4	3163	141	42	3	1	0	10	0	0	0	0	0	23	1	0	0	1	0
15:15:00	42	0	3163	0	42	0	1	0	10	0	0	0	0	0	23	0	0	0	1	0
16:00:00	42	0	3163	0	42	0	1	0	10	0	0	0	0	0	23	0	0	0	1	0
16:15:00	43	1	3292	129	47	5	1	0	11	1	0	0	0	0	25	2	0	0	1	0
16:30:00	43	0	3437	145	47	0	1	0	12	1	0	0	0	0	25	0	0	0	1	0
16:45:00	45	2	3561	124	48	1	1	0	12	0	0	0	0	0	27	2	0	0	1	0
17:00:00	45	0	3702	141	49	1	1	0	12	0	0	0	0	0	28	1	0	0	1	0
17:15:00	46	1	3822	120	49	0	1	0	12	0	0	0	0	0	28	0	0	0	1	0
17:30:00	47	1	3927	105	50	1	1	0	12	0	0	0	0	0	30	2	0	0	2	1
17:45:00	49	2	4030	103	51	1	1	0	12	0	0	0	0	0	31	1	0	0	2	0
18:00:00	52	3	4141	111	51	0	1	0	12	0	0	0	0	0	32	1	0	0	2	0
18:15:00	52	0	4141	0	51	0	1	0	12	0	0	0	0	0	32	0	0	0	2	0
18:15:15	52	0	4141	0	51	0	1	0	12	0	0	0	0	0	32	0	0	0	2	0

<h2>Morning Peak Diagram</h2>	Specified Period From: 7:00:00 To: 9:00:00	One Hour Peak From: 8:00:00 To: 9:00:00																													
Municipality: Hamilton Site #: 1910000008 Intersection: Bishop Tonnos Way & Bishop Ryan TFR File #: 1 Count date: 13-Jun-19	Weather conditions: Person counted: Person prepared: Person checked:																														
** Non-Signalized Intersection **	Major Road: Bishop Tonnos Way runs W/E																														
<table style="width:100%; border-collapse: collapse;"> <tr><td>North Leg Total: 20</td></tr> <tr><td>North Entering: 10</td></tr> <tr><td>North Peds: 2</td></tr> <tr><td>Peds Cross: \boxtimes</td></tr> </table>	North Leg Total: 20	North Entering: 10	North Peds: 2	Peds Cross: \boxtimes	<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys 0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks 0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars 3</td><td>6</td><td>1</td><td>10</td></tr> <tr><td>Totals 3</td><td>6</td><td>1</td><td></td></tr> </table>	Heavys 0	0	0	0	Trucks 0	0	0	0	Cars 3	6	1	10	Totals 3	6	1		<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys 0</td></tr> <tr><td>Trucks 0</td></tr> <tr><td>Cars 10</td></tr> <tr><td>Totals 10</td></tr> </table>	Heavys 0	Trucks 0	Cars 10	Totals 10	<table style="width:100%; border-collapse: collapse;"> <tr><td>East Leg Total: 6</td></tr> <tr><td>East Entering: 4</td></tr> <tr><td>East Peds: 1</td></tr> <tr><td>Peds Cross: \boxtimes</td></tr> </table>	East Leg Total: 6	East Entering: 4	East Peds: 1	Peds Cross: \boxtimes
North Leg Total: 20																															
North Entering: 10																															
North Peds: 2																															
Peds Cross: \boxtimes																															
Heavys 0	0	0	0																												
Trucks 0	0	0	0																												
Cars 3	6	1	10																												
Totals 3	6	1																													
Heavys 0																															
Trucks 0																															
Cars 10																															
Totals 10																															
East Leg Total: 6																															
East Entering: 4																															
East Peds: 1																															
Peds Cross: \boxtimes																															
																															
<table style="width:100%; border-collapse: collapse;"> <tr><td>Peds Cross: \boxtimes</td></tr> <tr><td>West Peds: 0</td></tr> <tr><td>West Entering: 7</td></tr> <tr><td>West Leg Total: 15</td></tr> </table>	Peds Cross: \boxtimes	West Peds: 0	West Entering: 7	West Leg Total: 15	<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars 9</td><td>3</td><td>5</td><td>0</td><td>8</td></tr> <tr><td>Trucks 0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys 0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Totals 9</td><td>3</td><td>5</td><td>0</td><td></td></tr> </table>	Cars 9	3	5	0	8	Trucks 0	0	0	0	0	Heavys 0	0	0	0	0	Totals 9	3	5	0		<table style="width:100%; border-collapse: collapse;"> <tr><td>Peds Cross: \boxtimes</td></tr> <tr><td>South Peds: 1</td></tr> <tr><td>South Entering: 8</td></tr> <tr><td>South Leg Total: 17</td></tr> </table>	Peds Cross: \boxtimes	South Peds: 1	South Entering: 8	South Leg Total: 17	
Peds Cross: \boxtimes																															
West Peds: 0																															
West Entering: 7																															
West Leg Total: 15																															
Cars 9	3	5	0	8																											
Trucks 0	0	0	0	0																											
Heavys 0	0	0	0	0																											
Totals 9	3	5	0																												
Peds Cross: \boxtimes																															
South Peds: 1																															
South Entering: 8																															
South Leg Total: 17																															
<h3>Comments</h3>																															

<h2>Mid-day Peak Diagram</h2>	Specified Period From: 11:00:00 To: 15:00:00	One Hour Peak From: 11:30:00 To: 12:30:00																																																																																																																																								
Municipality: Hamilton Site #: 1910000008 Intersection: Bishop Tonnos Way & Bishop Ryan TFR File #: 1 Count date: 13-Jun-19	Weather conditions: Person counted: Person prepared: Person checked:																																																																																																																																									
** Non-Signalized Intersection **	Major Road: Bishop Tonnos Way runs W/E																																																																																																																																									
North Leg Total: 78 North Entering: 37 North Peds: 0 Peds Cross: ☒	<table style="border-collapse: collapse; margin: auto;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td style="border-left: 1px solid black;">0</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td style="border-left: 1px solid black;">0</td></tr> <tr><td>Cars</td><td>5</td><td>32</td><td>0</td><td style="border-left: 1px solid black;">37</td></tr> <tr><td>Totals</td><td>5</td><td>32</td><td>0</td><td style="border-left: 1px solid black;"></td></tr> </table>	Heavys	0	0	0	0	Trucks	0	0	0	0	Cars	5	32	0	37	Totals	5	32	0		 <table style="border-collapse: collapse; margin: auto;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>41</td></tr> <tr><td>Totals</td><td>41</td></tr> </table>	Heavys	0	Trucks	0	Cars	41	Totals	41	East Leg Total: 8 East Entering: 2 East Peds: 0 Peds Cross: ☒																																																																																																											
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Trucks	0	0	0	0																																																																																																																																						
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<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>0</td><td>0</td><td>15</td><td>15</td></tr> </table>	Heavys	Trucks	Cars	Totals	0	0	15	15	 <p>Bishop Ryan Way</p>	 <table style="border-collapse: collapse; margin: auto;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td style="border-left: 1px solid black;">Totals</td></tr> <tr><td>0</td><td>0</td><td>0</td><td style="border-left: 1px solid black;">0</td></tr> <tr><td>1</td><td>0</td><td>0</td><td style="border-left: 1px solid black;">1</td></tr> <tr><td>1</td><td>0</td><td>0</td><td style="border-left: 1px solid black;">1</td></tr> <tr><td>2</td><td>0</td><td>0</td><td style="border-left: 1px solid black;"></td></tr> </table>	Cars	Trucks	Heavys	Totals	0	0	0	0	1	0	0	1	1	0	0	1	2	0	0		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>0</td><td>0</td><td>12</td><td>12</td></tr> <tr><td>0</td><td>0</td><td>5</td><td>5</td></tr> <tr><td>0</td><td>0</td><td>8</td><td>8</td></tr> <tr><td>0</td><td>0</td><td>25</td><td></td></tr> </table>	Heavys	Trucks	Cars	Totals	0	0	12	12	0	0	5	5	0	0	8	8	0	0	25			<p>Bishop Tonnos Way</p> 	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>0</td><td>0</td><td>12</td><td>12</td></tr> <tr><td>0</td><td>0</td><td>5</td><td>5</td></tr> <tr><td>0</td><td>0</td><td>8</td><td>8</td></tr> <tr><td>0</td><td>0</td><td>25</td><td></td></tr> </table>	Heavys	Trucks	Cars	Totals	0	0	12	12	0	0	5	5	0	0	8	8	0	0	25		 <p>Bishop Ryan Way</p>	<p>Bishop Tonnos Way</p> 	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>0</td><td>0</td><td>12</td><td>12</td></tr> <tr><td>0</td><td>0</td><td>5</td><td>5</td></tr> <tr><td>0</td><td>0</td><td>8</td><td>8</td></tr> <tr><td>0</td><td>0</td><td>25</td><td></td></tr> </table>	Heavys	Trucks	Cars	Totals	0	0	12	12	0	0	5	5	0	0	8	8	0	0	25		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>41</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Totals</td><td>41</td></tr> </table>	Cars	41	Trucks	0	Heavys	0	Totals	41	 <table style="border-collapse: collapse; margin: auto;"> <tr><td>Cars</td><td>9</td><td>29</td><td>1</td><td style="border-left: 1px solid black;">39</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td style="border-left: 1px solid black;">0</td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td style="border-left: 1px solid black;">0</td></tr> <tr><td>Totals</td><td>9</td><td>29</td><td>1</td><td style="border-left: 1px solid black;"></td></tr> </table>	Cars	9	29	1	39	Trucks	0	0	0	0	Heavys	0	0	0	0	Totals	9	29	1		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>6</td><td>0</td><td>0</td><td>6</td></tr> </table>	Cars	Trucks	Heavys	Totals	6	0	0	6	Peds Cross: ☒ West Peds: 0 West Entering: 25 West Leg Total: 40	Peds Cross: ☒ South Peds: 0 South Entering: 39 South Leg Total: 80
Heavys	Trucks	Cars	Totals																																																																																																																																							
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6	0	0	6																																																																																																																																							
<h3>Comments</h3>																																																																																																																																										

<h2>Afternoon Peak Diagram</h2>	Specified Period From: 16:00:00 To: 18:00:00	One Hour Peak From: 16:00:00 To: 17:00:00																													
Municipality: Hamilton Site #: 1910000008 Intersection: Bishop Tonnos Way & Bishop Ryan TFR File #: 1 Count date: 13-Jun-19	Weather conditions: Person counted: Person prepared: Person checked:																														
** Non-Signalized Intersection **	Major Road: Bishop Tonnos Way runs W/E																														
North Leg Total: 55 North Entering: 25 North Peds: 2 Peds Cross: ☒	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>3</td><td>21</td><td>1</td><td>25</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>3</td><td>21</td><td>1</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	0	0	0	0	Cars	3	21	1	25	Totals	3	21	1		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>30</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>30</td></tr> </table>	Heavys	0	Trucks	0	Cars	30	Totals	30	East Leg Total: 7 East Entering: 3 East Peds: 0 Peds Cross: ☒
Heavys	0	0	0	0																											
Trucks	0	0	0	0																											
Cars	3	21	1	25																											
Totals	3	21	1																												
Heavys	0																														
Trucks	0																														
Cars	30																														
Totals	30																														
 <p style="text-align: center;">Bishop Ryan Way</p> <p style="text-align: center;">Bishop Tonnos Way</p> <p style="text-align: center;">Bishop Ryan Way</p> <p style="text-align: center;">Bishop Tonnos Way</p>																															
Peds Cross: ☒ West Peds: 0 West Entering: 19 West Leg Total: 25	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>28</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>28</td></tr> </table>	Cars	28	Trucks	0	Heavys	0	Totals	28	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>2</td><td>18</td><td>1</td><td>21</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>2</td><td>18</td><td>1</td><td></td></tr> </table>	Cars	2	18	1	21	Trucks	0	0	0	0	Heavys	0	0	0	0	Totals	2	18	1		Peds Cross: ☒ South Peds: 0 South Entering: 21 South Leg Total: 49
Cars	28																														
Trucks	0																														
Heavys	0																														
Totals	28																														
Cars	2	18	1	21																											
Trucks	0	0	0	0																											
Heavys	0	0	0	0																											
Totals	2	18	1																												
<h3>Comments</h3>																															

Total Count Diagram

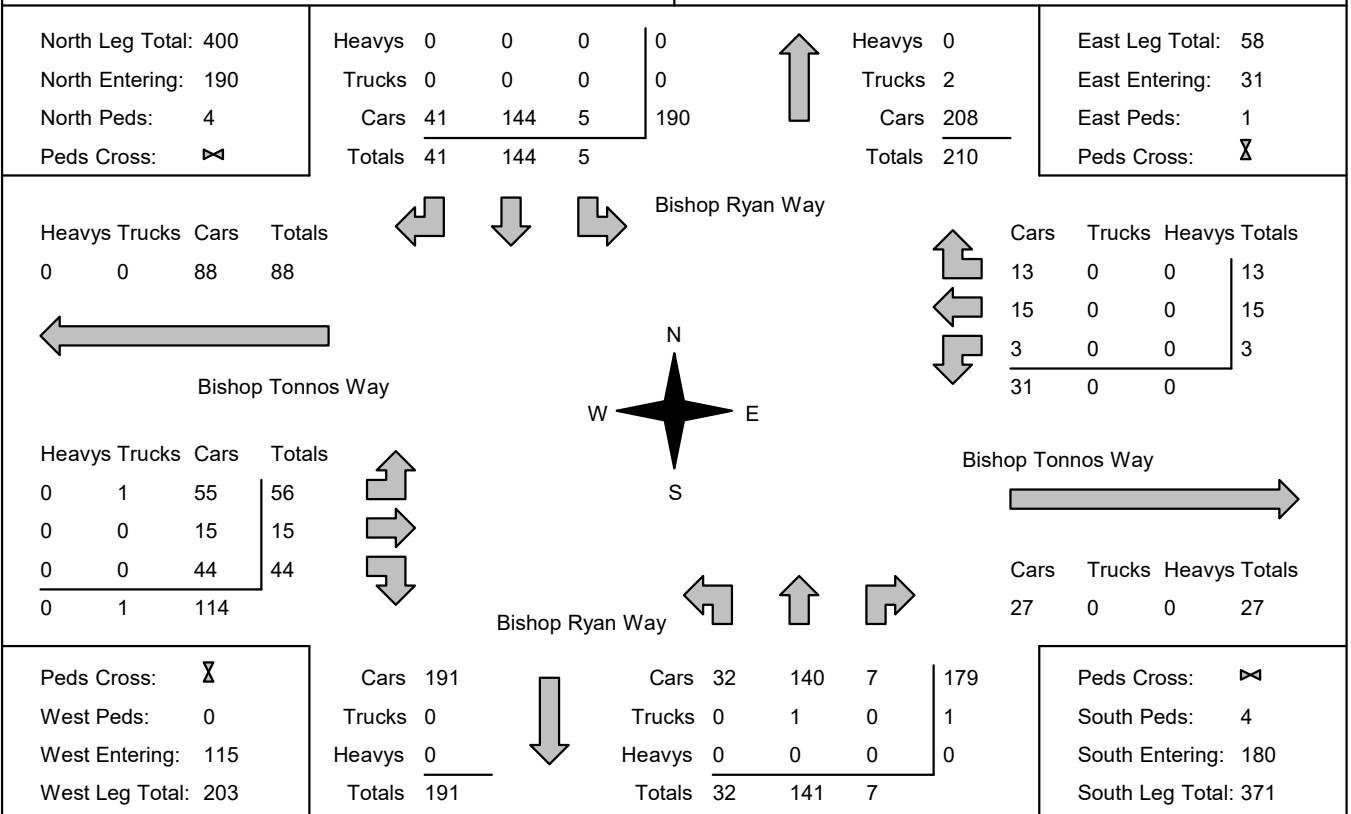
Municipality: Hamilton
Site #: 1910000008
Intersection: Bishop Tonnos Way & Bishop Ryan
TFR File #: 1
Count date: 13-Jun-19

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Bishop Tonnos Way runs W/E



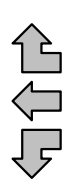
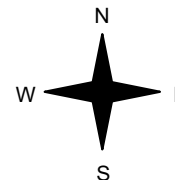





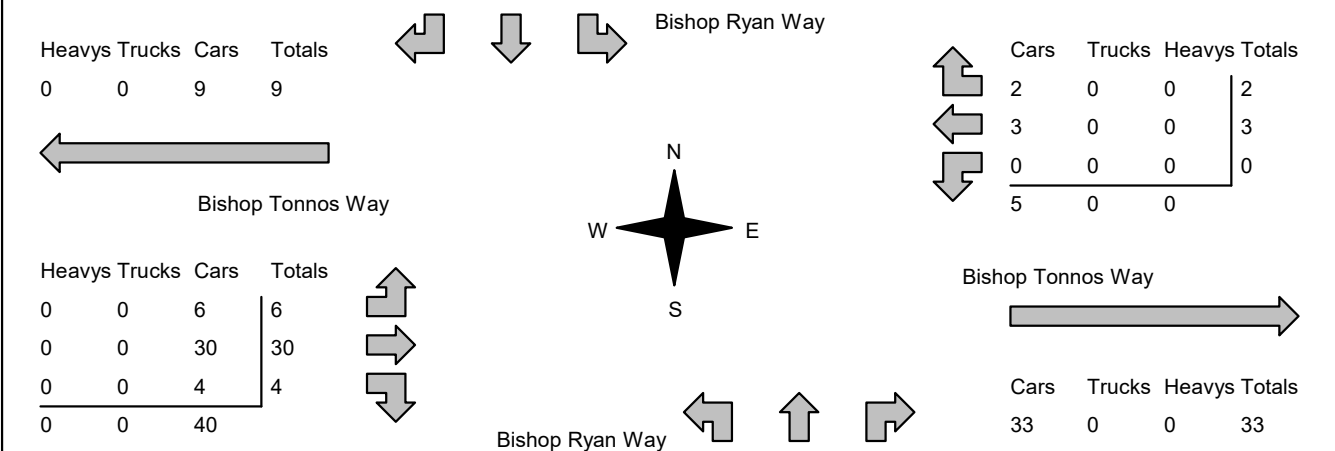
Comments



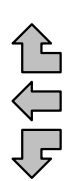

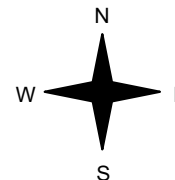
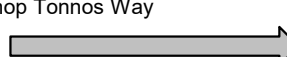



Traffic Count Summary

Intersection: Bishop Tonnos Way & Bishop Rya Count Date: 13-Jun-19 Municipality: Hamilton

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	2	3	0	5	0	16	8:00:00	1	9	1	11	0
9:00:00	1	6	3	10	2	18	9:00:00	3	5	0	8	1
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0
12:00:00	0	30	5	35	0	60	12:00:00	5	19	1	25	0
13:00:00	0	19	10	29	0	70	13:00:00	11	29	1	41	0
14:00:00	1	23	7	31	0	70	14:00:00	7	30	2	39	1
15:00:00	0	25	7	32	0	54	15:00:00	2	19	1	22	2
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	1	21	3	25	2	46	17:00:00	2	18	1	21	0
18:00:00	0	17	6	23	0	36	18:00:00	1	12	0	13	0
Totals:	5	144	41	190	4	370	S Totals:	32	141	7	180	4
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	0	0	1	1	0	12	8:00:00	3	0	8	11	0
9:00:00	0	2	2	4	1	11	9:00:00	3	1	3	7	0
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0
12:00:00	0	1	0	1	0	24	12:00:00	16	2	5	23	0
13:00:00	2	1	1	4	0	19	13:00:00	6	4	5	15	0
14:00:00	0	5	3	8	0	23	14:00:00	5	2	8	15	0
15:00:00	1	5	4	10	0	29	15:00:00	8	4	7	19	0
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	0	1	2	3	0	22	17:00:00	10	2	7	19	0
18:00:00	0	0	0	0	0	6	18:00:00	5	0	1	6	0
Totals:	3	15	13	31	1	146	W Totals:	56	15	44	115	0
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	8:00	9:00	12:00	13:00		14:00	15:00	17:00	18:00			
Crossing Values:	12	11	35	40		38	27	24	18			

<h2>Morning Peak Diagram</h2>	Specified Period From: 7:00:00 To: 9:00:00	One Hour Peak From: 8:00:00 To: 9:00:00																																																												
Municipality: Hamilton Site #: 1910000008 Intersection: Bishop Tonnos Way & Bishop Ryan TFR File #: 1 Count date: 15-Jun-19	Weather conditions: Person counted: Person prepared: Person checked:																																																													
** Non-Signalized Intersection **		Major Road: Bishop Tonnos Way runs W/E																																																												
North Leg Total: 33 North Entering: 14 North Peds: 1 Peds Cross: \boxtimes	<table style="margin: auto;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>0</td><td>13</td><td>1</td><td>14</td></tr> <tr><td>Totals</td><td>0</td><td>13</td><td>1</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	0	0	0	0	Cars	0	13	1	14	Totals	0	13	1		 <table style="margin: auto;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>19</td></tr> <tr><td>Totals</td><td>19</td></tr> </table>	Heavys	0	Trucks	0	Cars	19	Totals	19	East Leg Total: 8 East Entering: 3 East Peds: 1 Peds Cross: \boxtimes																															
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Cars	Trucks	Heavys	Totals																																																											
4	1	0	5																																																											
Peds Cross: \boxtimes West Peds: 1 West Entering: 10 West Leg Total: 14	 <table style="margin: auto;"> <tr><td>Cars</td><td>15</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Totals</td><td>15</td></tr> </table>	Cars	15	Trucks	0	Heavys	0	Totals	15	 <p>Bishop Ryan Way</p>	<table style="margin: auto;"> <tr><td>Cars</td><td>1</td><td>14</td><td>1</td><td>16</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Totals</td><td>1</td><td>14</td><td>1</td><td></td></tr> </table>	Cars	1	14	1	16	Trucks	0	0	0	0	Heavys	0	0	0	0	Totals	1	14	1		Peds Cross: \boxtimes South Peds: 0 South Entering: 16 South Leg Total: 31																														
Cars	15																																																													
Trucks	0																																																													
Heavys	0																																																													
Totals	15																																																													
Cars	1	14	1	16																																																										
Trucks	0	0	0	0																																																										
Heavys	0	0	0	0																																																										
Totals	1	14	1																																																											
<h3>Comments</h3>																																																														

<h2>Mid-day Peak Diagram</h2>	Specified Period From: 11:00:00 To: 15:00:00	One Hour Peak From: 14:00:00 To: 15:00:00																													
Municipality: Hamilton Site #: 1910000008 Intersection: Bishop Tonnos Way & Bishop Ryan TFR File #: 1 Count date: 15-Jun-19	Weather conditions: Person counted: Person prepared: Person checked:																														
** Non-Signalized Intersection **	Major Road: Bishop Tonnos Way runs W/E																														
North Leg Total: 60 North Entering: 28 North Peds: 0 Peds Cross: ☒	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>3</td><td>24</td><td>1</td><td>28</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>3</td><td>24</td><td>1</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	0	0	0	0	Cars	3	24	1	28	Totals	3	24	1		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>32</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>32</td></tr> </table>	Heavys	0	Trucks	0	Cars	32	Totals	32	East Leg Total: 38 East Entering: 5 East Peds: 0 Peds Cross: ☒
Heavys	0	0	0	0																											
Trucks	0	0	0	0																											
Cars	3	24	1	28																											
Totals	3	24	1																												
Heavys	0																														
Trucks	0																														
Cars	32																														
Totals	32																														
																															
Peds Cross: ☒ West Peds: 0 West Entering: 40 West Leg Total: 49	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>28</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>28</td></tr> </table>	Cars	28	Trucks	0	Heavys	0	Totals	28	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>3</td><td>24</td><td>2</td><td>29</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>3</td><td>24</td><td>2</td><td></td></tr> </table>	Cars	3	24	2	29	Trucks	0	0	0	0	Heavys	0	0	0	0	Totals	3	24	2		Peds Cross: ☒ South Peds: 0 South Entering: 29 South Leg Total: 57
Cars	28																														
Trucks	0																														
Heavys	0																														
Totals	28																														
Cars	3	24	2	29																											
Trucks	0	0	0	0																											
Heavys	0	0	0	0																											
Totals	3	24	2																												
<h3>Comments</h3>																															

<h2>Afternoon Peak Diagram</h2>	Specified Period From: 16:00:00 To: 18:00:00	One Hour Peak From: 16:00:00 To: 17:00:00																													
Municipality: Hamilton Site #: 1910000008 Intersection: Bishop Tonnos Way & Bishop Ryan TFR File #: 1 Count date: 15-Jun-19	Weather conditions: Person counted: Person prepared: Person checked:																														
** Non-Signalized Intersection **	Major Road: Bishop Tonnos Way runs W/E																														
North Leg Total: 52 North Entering: 24 North Peds: 0 Peds Cross: ☒	<table style="border-collapse: collapse; margin: auto;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>3</td><td>19</td><td>2</td><td>24</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>3</td><td>19</td><td>2</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	0	0	0	0	Cars	3	19	2	24	Totals	3	19	2		 <table style="border-collapse: collapse; margin: auto;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>28</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>28</td></tr> </table>	Heavys	0	Trucks	0	Cars	28	Totals	28	East Leg Total: 21 East Entering: 10 East Peds: 0 Peds Cross: ☒
Heavys	0	0	0	0																											
Trucks	0	0	0	0																											
Cars	3	19	2	24																											
Totals	3	19	2																												
Heavys	0																														
Trucks	0																														
Cars	28																														
Totals	28																														
<table style="border-collapse: collapse; margin: auto;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>1</td><td>0</td><td>11</td><td>12</td></tr> </table>	Heavys	Trucks	Cars	Totals	1	0	11	12	 <p>Bishop Ryan Way</p>	 <table style="border-collapse: collapse; margin: auto;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>4</td><td>0</td><td>0</td><td>4</td></tr> <tr><td>5</td><td>0</td><td>1</td><td>6</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>9</td><td>0</td><td>1</td><td></td></tr> </table>	Cars	Trucks	Heavys	Totals	4	0	0	4	5	0	1	6	0	0	0	0	9	0	1		
Heavys	Trucks	Cars	Totals																												
1	0	11	12																												
Cars	Trucks	Heavys	Totals																												
4	0	0	4																												
5	0	1	6																												
0	0	0	0																												
9	0	1																													
 <p>Bishop Tonnos Way</p>		<p>Bishop Tonnos Way</p> 																													
<table style="border-collapse: collapse; margin: auto;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>0</td><td>0</td><td>8</td><td>8</td></tr> <tr><td>0</td><td>0</td><td>5</td><td>5</td></tr> <tr><td>0</td><td>0</td><td>4</td><td>4</td></tr> <tr style="border-top: 1px solid black;"><td>0</td><td>0</td><td>17</td><td></td></tr> </table>	Heavys	Trucks	Cars	Totals	0	0	8	8	0	0	5	5	0	0	4	4	0	0	17		 <p>Bishop Ryan Way</p>		<table style="border-collapse: collapse; margin: auto;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>11</td><td>0</td><td>0</td><td>11</td></tr> </table>	Cars	Trucks	Heavys	Totals	11	0	0	11
Heavys	Trucks	Cars	Totals																												
0	0	8	8																												
0	0	5	5																												
0	0	4	4																												
0	0	17																													
Cars	Trucks	Heavys	Totals																												
11	0	0	11																												
Peds Cross: ☒ West Peds: 1 West Entering: 17 West Leg Total: 29	 <table style="border-collapse: collapse; margin: auto;"> <tr><td>Cars</td><td>23</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>23</td></tr> </table>	Cars	23	Trucks	0	Heavys	0	Totals	23	<table style="border-collapse: collapse; margin: auto;"> <tr><td>Cars</td><td>3</td><td>16</td><td>4</td><td>23</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>3</td><td>16</td><td>4</td><td></td></tr> </table>	Cars	3	16	4	23	Trucks	0	0	0	0	Heavys	0	0	0	0	Totals	3	16	4		Peds Cross: ☒ South Peds: 0 South Entering: 23 South Leg Total: 46
Cars	23																														
Trucks	0																														
Heavys	0																														
Totals	23																														
Cars	3	16	4	23																											
Trucks	0	0	0	0																											
Heavys	0	0	0	0																											
Totals	3	16	4																												
<h3>Comments</h3>																															

Total Count Diagram

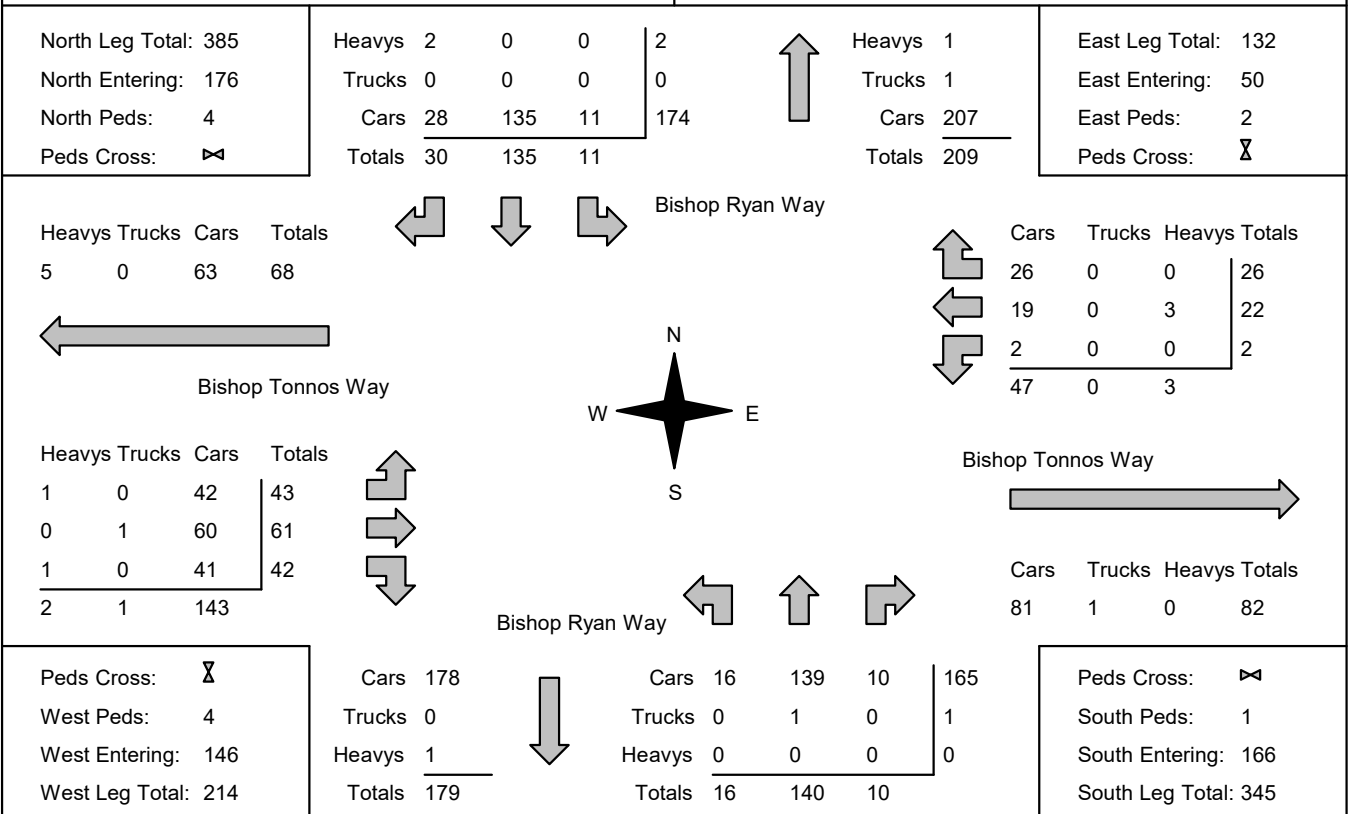
Municipality: Hamilton
Site #: 1910000008
Intersection: Bishop Tonnos Way & Bishop Ryan
TFR File #: 1
Count date: 15-Jun-19

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Bishop Tonnos Way runs W/E



Comments

Traffic Count Summary

Intersection: Bishop Tonnos Way & Bishop Rya Count Date: 15-Jun-19 Municipality: Hamilton

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	1	4	2	7	2	17	8:00:00	2	7	1	10	0
9:00:00	1	13	0	14	1	30	9:00:00	1	14	1	16	0
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0
12:00:00	1	33	4	38	0	65	12:00:00	4	23	0	27	0
13:00:00	2	26	4	32	0	54	13:00:00	1	19	2	22	0
14:00:00	1	10	8	19	0	51	14:00:00	2	30	0	32	1
15:00:00	1	24	3	28	0	57	15:00:00	3	24	2	29	0
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	2	19	3	24	0	47	17:00:00	3	16	4	23	0
18:00:00	2	6	6	14	1	21	18:00:00	0	7	0	7	0
Totals:	11	135	30	176	4	342	S Totals:	16	140	10	166	1
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	0	2	2	4	0	17	8:00:00	1	5	7	13	1
9:00:00	0	3	0	3	1	13	9:00:00	5	3	2	10	1
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0
12:00:00	0	0	12	12	1	27	12:00:00	5	4	6	15	0
13:00:00	1	3	1	5	0	21	13:00:00	5	1	10	16	1
14:00:00	0	1	4	5	0	24	14:00:00	6	7	6	19	0
15:00:00	0	3	2	5	0	45	15:00:00	6	30	4	40	0
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	0	6	4	10	0	27	17:00:00	8	5	4	17	1
18:00:00	1	4	1	6	0	22	18:00:00	7	6	3	16	0
Totals:	2	22	26	50	2	196	W Totals:	43	61	42	146	4
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	8:00	9:00	12:00	13:00		14:00	15:00	17:00	18:00			
Crossing Values:	11	18	39	30		33	28	25	9			



Count Date: 15-Jun-19 Site #: 191000008

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:30:00	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:45:00	0	0	3	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:00:00	1	1	4	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
8:15:00	1	0	6	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
8:30:00	2	1	10	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
8:45:00	2	0	13	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
9:00:00	2	0	17	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1
9:15:00	2	0	17	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
11:00:00	2	0	17	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
11:15:00	2	0	26	9	3	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0
11:30:00	2	0	36	10	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
11:45:00	2	0	41	5	4	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0
12:00:00	3	1	50	9	5	1	0	0	0	0	0	0	0	0	0	0	1	1	3	0
12:15:00	5	2	58	8	7	2	0	0	0	0	0	0	0	0	0	0	1	0	3	0
12:30:00	5	0	65	7	7	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0
12:45:00	5	0	70	5	8	1	0	0	0	0	0	0	0	0	0	0	1	0	3	0
13:00:00	5	0	76	6	9	1	0	0	0	0	0	0	0	0	0	0	1	0	3	0
13:15:00	6	1	80	4	10	1	0	0	0	0	0	0	0	0	0	0	1	0	3	0
13:30:00	6	0	80	0	14	4	0	0	0	0	0	0	0	0	0	0	2	1	3	0
13:45:00	6	0	82	2	15	1	0	0	0	0	0	0	0	0	0	0	2	0	3	0
14:00:00	6	0	86	4	16	1	0	0	0	0	0	0	0	0	0	0	2	0	3	0
14:15:00	6	0	93	7	17	1	0	0	0	0	0	0	0	0	0	0	2	0	3	0
14:30:00	6	0	99	6	17	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0
14:45:00	6	0	101	2	18	1	0	0	0	0	0	0	0	0	0	0	2	0	3	0
15:00:00	7	1	110	9	19	1	0	0	0	0	0	0	0	0	0	0	2	0	3	0
15:15:00	7	0	110	0	19	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0
16:00:00	7	0	110	0	19	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0
16:15:00	9	2	117	7	21	2	0	0	0	0	0	0	0	0	0	0	2	0	3	0
16:30:00	9	0	121	4	22	1	0	0	0	0	0	0	0	0	0	0	2	0	3	0
16:45:00	9	0	126	5	22	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0
17:00:00	9	0	129	3	22	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0
17:15:00	9	0	130	1	24	2	0	0	0	0	0	0	0	0	0	0	2	0	3	0
17:30:00	10	1	130	0	25	1	0	0	0	0	0	0	0	0	0	0	2	0	3	0
17:45:00	11	1	132	2	25	0	0	0	0	0	0	0	0	0	0	0	2	0	4	1
18:00:00	11	0	135	3	28	3	0	0	0	0	0	0	0	0	0	0	2	0	4	0
18:15:00	11	0	135	0	28	0	0	0	0	0	0	0	0	0	0	0	2	0	4	0
18:15:15	11	0	135	0	28	0	0	0	0	0	0	0	0	0	0	0	2	0	4	0



Count Date: 15-Jun-19 Site #: 191000008

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	1	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	2	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	3	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	3	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	4	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
9:15:00	0	0	5	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
11:00:00	0	0	5	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
11:15:00	0	0	5	0	12	10	0	0	0	0	0	0	0	0	0	0	0	0	1	0
11:30:00	0	0	5	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
11:45:00	0	0	5	0	13	1	0	0	0	0	0	0	0	0	0	0	0	0	2	1
12:00:00	0	0	5	0	14	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0
12:15:00	0	0	7	2	14	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
12:30:00	0	0	7	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
12:45:00	1	1	7	0	15	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0
13:00:00	1	0	7	0	15	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0
13:15:00	1	0	7	0	16	1	0	0	0	0	0	0	0	0	1	0	0	0	2	0
13:30:00	1	0	8	1	18	2	0	0	0	0	0	0	0	0	1	0	0	0	2	0
13:45:00	1	0	8	0	18	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
14:00:00	1	0	8	0	19	1	0	0	0	0	0	0	0	0	1	0	0	0	2	0
14:15:00	1	0	10	2	19	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
14:30:00	1	0	10	0	19	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
14:45:00	1	0	11	1	19	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
15:00:00	1	0	11	0	21	2	0	0	0	0	0	0	0	0	1	0	0	0	2	0
15:15:00	1	0	11	0	21	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
16:00:00	1	0	11	0	21	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
16:15:00	1	0	12	1	21	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
16:30:00	1	0	15	3	22	1	0	0	0	0	0	0	0	0	2	1	0	0	2	0
16:45:00	1	0	15	0	25	3	0	0	0	0	0	0	0	0	2	0	0	0	2	0
17:00:00	1	0	16	1	25	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
17:15:00	1	0	16	0	25	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
17:30:00	2	1	18	2	26	1	0	0	0	0	0	0	0	0	2	0	0	0	2	0
17:45:00	2	0	19	1	26	0	0	0	0	0	0	0	0	0	3	1	0	0	2	0
18:00:00	2	0	19	0	26	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0
18:15:00	2	0	19	0	26	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0
18:15:15	2	0	19	0	26	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0



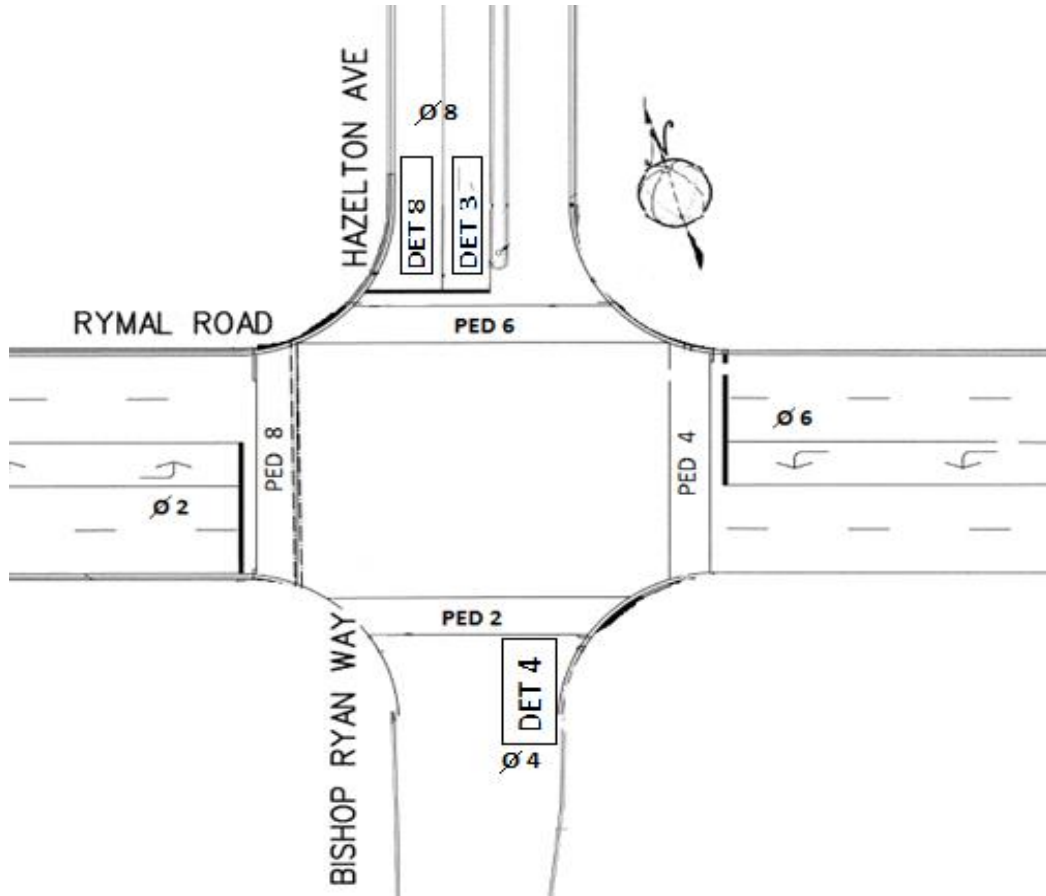
Count Date: 15-Jun-19 Site #: 191000008

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	7	5	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:45:00	0	0	1	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:00:00	1	1	5	4	7	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:15:00	2	1	5	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
8:30:00	4	2	5	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
8:45:00	4	0	5	0	7	0	0	0	1	1	0	0	0	0	0	0	0	0	2	0
9:00:00	6	2	7	2	9	2	0	0	1	0	0	0	0	0	0	0	0	0	2	0
9:15:00	6	0	7	0	9	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0
11:00:00	6	0	7	0	9	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0
11:15:00	7	1	8	1	11	2	0	0	1	0	0	0	0	0	0	0	0	0	2	0
11:30:00	7	0	10	2	13	2	0	0	1	0	0	0	0	0	0	0	0	0	2	0
11:45:00	10	3	10	0	14	1	0	0	1	0	0	0	0	0	0	0	0	0	2	0
12:00:00	11	1	11	1	15	1	0	0	1	0	0	0	0	0	0	0	0	0	2	0
12:15:00	12	1	11	0	18	3	0	0	1	0	0	0	0	0	0	0	0	0	3	1
12:30:00	13	1	12	1	20	2	0	0	1	0	0	0	0	0	0	0	0	0	3	0
12:45:00	15	2	12	0	25	5	0	0	1	0	0	0	0	0	0	0	0	0	3	0
13:00:00	16	1	12	0	25	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
13:15:00	17	1	14	2	26	1	0	0	1	0	0	0	0	0	0	0	0	0	3	0
13:30:00	18	1	14	0	27	1	0	0	1	0	0	0	0	0	0	0	0	0	3	0
13:45:00	21	3	16	2	30	3	0	0	1	0	0	0	0	0	0	0	0	0	3	0
14:00:00	22	1	19	3	31	1	0	0	1	0	0	0	0	0	0	0	0	0	3	0
14:15:00	23	1	23	4	32	1	0	0	1	0	0	0	0	0	0	0	0	0	3	0
14:30:00	23	0	26	3	32	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
14:45:00	26	3	36	10	35	3	0	0	1	0	0	0	0	0	0	0	0	0	3	0
15:00:00	28	2	49	13	35	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
15:15:00	28	0	49	0	35	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
16:00:00	28	0	49	0	35	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
16:15:00	29	1	50	1	39	4	0	0	1	0	0	0	0	0	0	0	0	0	3	0
16:30:00	32	3	50	0	39	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
16:45:00	35	3	50	0	39	0	0	0	1	0	0	0	0	0	0	0	0	0	4	1
17:00:00	36	1	54	4	39	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0
17:15:00	38	2	56	2	39	0	0	0	1	0	0	0	1	1	0	0	1	1	4	0
17:30:00	40	2	58	2	40	1	0	0	1	0	0	0	1	0	0	0	1	0	4	0
17:45:00	42	2	60	2	40	0	0	0	1	0	0	0	1	0	0	0	1	0	4	0
18:00:00	42	0	60	0	41	1	0	0	1	0	0	0	1	0	0	0	1	0	4	0
18:15:00	42	0	60	0	41	0	0	0	1	0	0	0	1	0	0	0	1	0	4	0
18:15:15	42	0	60	0	41	0	0	0	1	0	0	0	1	0	0	0	1	0	4	0

City of Hamilton - Traffic Traffic Signal Controller Timing Data

Intersection: **Bishop Ryan/Hazelton at Rymal**

Controller Type: **Intelight** Page 1 of 15
Programmed By: **DLB** Installed By: _____
Date: **08-Jan-18** Date: _____



- φ1:
- φ2: Rymal - EB, South Xwalk
- φ3:
- φ4: Hazelton - SB, West Xwalk
- φ5:
- φ6: Rymal - WB, North Xwalk
- φ7:
- φ8: Bishop Ryan - NB, East Xwalk

Flash Operation: Red: Rymal
Red: Bishop Ryan / Hazelton

SEQUENCE/START-UP (MM-3-1-1)

START-UP PHASES/INTERVAL/SEQUENCE

(X = Enable for start-up phases. Must be compatible if more than one)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
START-UP	Phases				X			X									
	Interval	0	(0=Red, 1=Yel, 2= Grn, determines color of selected phases above on start-up)														
	Flash	10	(0-255 seconds start-up flash time)														
	Red	5.0	(0-25.5 secs = length of first red after start-up if start-up in yellow or red)														
	Sequence	3	(2=single ring, 3=dual ring, 4=123/567+48, 5=12/56+3478, 6=1234/56+78, 7=1234/5678, 8=dual quad, 9=12ph)														

PHASE RING ASSIGNMENTS

X = Phase assigned to ring (if used). Phases in different rings but same co-phase group can time together.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
RING	Ring 1		X		X											
	Ring 2					X		X								
	Ring 3															
	Ring 4															

CO-PHASE GRP 1-4 ASSIGNMENTS

X = phase assigned to co-phase group. All ph's assigned to rings must be assigned to co-phase group.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CO-PHASE	CO PH 1		X			X										
	CO PH 2				X			X								
	CO PH 3															
	CO PH 4															

		(X = ENABLE)															
		TP1 PHASE RECALLS															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE RECALLS	MIN RCL																
	MAX RCL																
	PED RCL																
	SOFT REC																
	NON-LOCK				X				X								
	VEH OMIT																
	PED OMIT																
	WLK REST																
	MAX II																
	RED REST																
	NO SKIP																

		(X = ENABLE)															
		TP2 PHASE RECALLS															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE RECALLS	MIN RCL																
	MAX RCL																
	PED RCL																
	SOFT REC																
	NON-LOCK				X				X								
	VEH OMIT																
	PED OMIT																
	WLK REST																
	MAX II																
	RED REST																
	NO SKIP																

(X = ENABLE)

TP3 PHASE RECALLS

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE RECALLS	MIN RCL																
	MAX RCL																
	PED RCL																
	SOFT REC																
	NON-LOCK				X				X								
	VEH OMIT																
	PED OMIT																
	WLK REST																
	MAX II																
	RED REST																
	NO SKIP																

PHASE RECALLS/MODES; CNA, INH MAX, PED OPTIONS, etc. (MM-3-1-2-2)

ONLY 1 PLAN PER UNIT

(X = ENABLE)																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE RECALLS	CNA 1		X				X										
	CNA 2																
	CNA 3																
	CNA 4																
	WRM		X				X										
	INH MAX																
	PED RECY																
	FL WALK																
	FDW->YEL																
	FDW->RED																
	COND PED																

PHASE TIMES (MM-3-1-3-PGDN, etc.)

USE 1 TO ALL 4 TIMING PLANS

TP1																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE TIMES	Initial		30		10		30		10								
	Passage				2.0				2.0								
	Yellow		3.3		3.3		3.3		3.3								
	Red		3.0		2.4		3.0		2.4								
	Walk		9		7		9		7								
	Ped Clr		16		13		16		13								
	Max 1		50		25		50		25								
	Max 2																
	Mx 3 Lim																
	Mx 3 Adh																
	TBR																
	TTR																
	Min Gap																
	AI/Act																
Max In																	

		TP2															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE TIMES	Initial		30		10		30		10								
	Passage				2.0				2.0								
	Yellow		3.3		3.3		3.3		3.3								
	Red		3.0		2.4		3.0		2.4								
	Walk		9		7		9		7								
	Ped Clr		16		13		16		13								
	Max 1		50		25		50		25								
	Max 2																
	Mx 3 Lim																
	Mx 3 Adh																
	TBR																
	TTR																
	Min Gap																
	AI/Act																
Max In																	

		TP3															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE TIMES	Initial		30		10		30		10								
	Passage				2.0				2.0								
	Yellow		3.3		3.3		3.3		3.3								
	Red		3.0		2.4		3.0		2.4								
	Walk		9		7		9		7								
	Ped Clr		16		13		16		13								
	Max 1		50		25		50		25								
	Max 2																
	Mx 3 Lim																
	Mx 3 Adh																
	TBR																
	TTR																
	Min Gap																
	AI/Act																
Max In																	

Bishop Ryan / Hazelton at Rymal
VEHICLE DETECTOR ASSIGNMENTS (MM-3-1-4-1, PGDN etc.)

CONTROLLER DATA

January 2019

(X = ASSIGN VEH DETECTOR TO THAT PHASE)

	DET/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
VEH DET ASSIGN- MENTS	1																
	2																
	3								X								
	4				X												
	5																
	6																
	7																
	8								X								

PED DETECTOR ASSIGNMENTS (MM-3-1-4-2)

(X = ASSIGN PED DETECTOR TO THAT PHASE)

	DET/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED DET ASSIGN- MENTS	1																
	2																
	3																
	4				X				X								
	5																
	6																
	7																
	8					X			X								

	DET	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
VEH DET MODES	Mode	0	0	2	2	0	0	0	2								

DETECTOR TIMES (MM-3-1-4-4)

USE 1 TO ALL 3 DETECTOR TIMING PLANS

		TP1							
	DET	1	2	3	4	5	6	7	8
DET TIMES	Delay	0	0	1	1	0	0	0	1
	Str/Stp	0	0	0	0	0	0	0	0

DUAL ENTRY (MM-3-1-6)

DUAL ENTRY ENABLE:	Y	Y/N: Y=Enable Dual Entry. Note this is only one setting even though it appears on each controller screen.
--------------------	----------	---

PG1	PH/CALLS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DUAL ENTRY ASSIGNMENTS	1																
	2						X										
	3																
	4								X								
	5																
	6		X														
	7																
	8					X											

Dual Entry = Left column phase automatically places call on selected phase(s) if no other real calls within selected phases ring and co-phase group

SELECTION SOURCE (MM-3-2-2)

Entries determine how parameters get selected

Cycle Source:	1	0=TOD, 1=CL, 2=INT
Split Source:	1	0=TOD, 1=CL, 2=INT
Offset Source:	1	0=TOD, 1=CL, 2=INT

Free Source:	1	0=TOD, 1=CL, 2=INT
Flash Source:	0	0=TOD, 1=CL, 2=INT
Inter-TOD Revert:	255	0-255 SECS

TOD = Time of day control by internal clock, CL = Closed loop (comm), INT = Interconnect. Inter-TOD Revert is time allowed after failed interconnect before unit reverts to TOD (Time Base) control.

COORD BASIC OPTIONS (MM-3-2-3)

Reference to End (vs. begin) of Main St.:	N	Y/N: Y = Offset references to end of main st. green. N = Beginning of Main st. green.
Use % (vs. secs) for Phase Allocation:	N	Y/N: Y = Phase allocations loaded as percent of 100. N = Allocations in seconds.
Use % (vs. secs) for Offset Entry:	N	Y/N: Y = Offset loaded as percent of 100. N = Offset loaded in seconds.
Use Fixed (vs. floating) Force Offs:	Y	Y/N: Y = Force offs are fixed to cycle. N=Force offs like max times, begin with green.
Permissive Type:	1	0-2: 0=Yield, 1= Single, 2= Multiple. See Permissives note below

C/S TO TIMING PLAN (MM-3-2-9-6)

USE THIS CHART WHEN 4 SPLITS/CYCLE = Y

SPLIT TO TIME PLAN	CYCLE	1	2	3	4	5	6
	SPLIT 1	1	2	3			
	SPLIT 2						
	SPLIT 3						
	SPLIT 4						

(0-4 = TIME PLAN IMPLEMENTED
WHEN SPLIT IN EFFECT)

CYCLES & OFFSETS (MM-3-2-4)

NOTE: FIRST SPECIFY OFSET SEEKING MODE AND 4 SPLITS CYCLE MODE (ENHANCED OPTIONS, OPERATING MODES)

CYCLE & OFFSETS	Cycle #	1/1	2/1	3/1	4/1		
	Length	90	90	90			
	Offset 1	0	0	0			
	Offset 2						
	Offset 3						
	Offset 4						
	Offset 5						
	Max Dwell	32	32	32			

COORD PHASES (MM-3-2-5)

COORD PHASES	CYCLE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
	1-1		X				X											
	2-1		X				X											
	3-1		X				X											

ENTRY IN:	Secs	% or Secs: Not a controller entry--for reference only. Controller entry is under
-----------	-------------	--

PHASE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE ALLO- CATION	C1 S1		64		26		64		26								
	C1 S2																
	C1 S3																
	C1 S4																
	C2 S1		64		26		64		26								
	C2 S2																
	C2 S3																
	C2 S4																
	C3 S1		64		26		64		26								
	C3 S2																
	C3 S3																
	C3 S4																
	C4 S1																
	C4 S2																
	C4 S3																
	C4 S4																

Bishop Ryan / Hazelton at Rymal
OFFSET SEEKING MODE (MM-3-2-7)

CONTROLLER DATA

January 2019

Offset Seeking Mode:	0
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Mode

- 0 Add only, cycle times 20% slow only to get in sync
- 1 Dwell, cycle timer stops at cycle 0 up to max dwell time to get in step
- 2 Short Route, cycle times 20% fast or slow--whichever gets in step fastest

ENHANCED OPTIONS

OPERATING OPTIONS (MM-3-2-9-1)

Enhanced Perm:	Y	Y/N: See note	Invert Free In:	N	Y/N: See note
Central Override:	N	Y/N: See note	Split Matrix:	N	Y/N: See note
No PCL Offset Adjust:	N	Y/N: See note	4 Splits/Cycle:	Y	Y/N: See note
			No Early Coord Ped:	N	Y/N: See note

Yeil Percent	1	0-10%: See note
EGB%	0	0-100%: See note
RGB%	0	0-100%: See note
# Cycles to out of step:	0	0-255: 0=Disable

CYCLE SYNC OPTIONS (MM-3-2-9-2)

Sync Source:	0	0-2, 0=TOD/CL/Interconnect, 1= City Zero, 2= Absolute
--------------	----------	---

Charts below only For City Zero offsets or Absolute (0's). These are not daily reference times for Sync Source Option 0 (see TOD).

Cycle 1:	0	Cycle 2:	0	Cycle 3:	0
Cycle 4:	0	Cycle 5:	0	Cycle 6:	0

MANUAL/AUTO FORCE OFFS & PERMS

SET MANUAL MODE (MM-3-2-9-3-1)

Auto Perm and FO:	Y	Y/N: Y = Perms & Force offs auto-calculated from phase allocations. N = Manually entered
Ped Perm:	0	0-255: 0 = Auto calculated. 1-255 = secs each ped perm, starting with vehicle permissives

CONTROLLER DATA

	HH	MM	CIRCUIT PLAN	C	O	S	CKT	ON/OFF
1	00	00					11(FRE)	ON
	06	30					11(FRE)	OFF
	06	30		1	1	1		
	23	00					11(FRE)	ON
2	00	00					11(FRE)	ON
	06	30					11(FRE)	OFF
	06	30		2	1	1		
	09	30		1	1	1		
	15	30		3	1	1		
	18	00		1	1	1		
	23	00					11(FRE)	ON

WEEK PLANS (MM-3-3-3)

Plan	SUN	MON	TUE	WED	THU	FRI	SAT
1	1	2	2	2	2	2	1
2							
3							
4							
5							

Bishop Ryan / Hazelton at Rymal
CIRCUIT OVERRIDES (MM-3-3-6)

CONTROLLER DATA

January 2019

For each circuit specify TOD (time of day controlled), or manually ON or OFF. Default = TOD

CIRCUIT OVER- RIDES	Circuit	73	74	75	76	77	78	78	80
	Function	CN1	CN2	CN3	CN4	WRM	MIN	DIM	CVS
	State	ON				ON			
	Circuit	89	90	91	92	93	94	95	96
	Function	OR1	OR2	RR1	RR2	M21	M22	DM3	GR2
	State								
CIRCUIT OVER- RIDES	Circuit	113	114	115	116	117	118	119	120
	Function	UD1	UD2	UD3	UD4	UD5	UD6	UD7	UD8
	State								
	Circuit	121	122	123	124	125	126	127	128
	Function	PH2	DP2	DP3	3CD	EVL	EML	ASC	DCP
	State					ON	ON		

DAYLIGHT SAVINGS (MM-3-3-7)

DAY LIGHT SAVINGS	Spring		Fall	
	(0-12)	(0-5)	(0-12)	(0-5)
	Month	WOM	Month	WOM
	3	2	11	1

Enter Month and Week of Month for Spring Forward and Fall Back days (typical 4 - 1 and 10 - 5). Unit will adjust at 2AM on Sunday of week specified. Enter zero (or leave blank) if Daylight Savings not used.

SYNC REFERENCE MODE (MM-3-3-8)

Mode:	0	0 = Time dependent, 1 = C/O/S Event
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Time Clock Reset:	HH: 00	MM: 00	TOD clock reset to by TBC input
Interrupter:	N Y/N; Y = Interrupter pulses provided		
Pulses:	0 0-6 = Number of interrupter pulses		

TIME DEPENDENT CYCLE REFERENCES

	HH	MM
CYC 1:	00	00
CYC 4:	00	00

	HH	MM
CYC 2:	00	00
CYC 5:	00	00

	HH	MM
CYC 3:	00	00
CYC 6:	00	00

When mode = Time dependent, enter reference times of day for each cycle. Default = 00:00 = midnight = most commonly used reference. When mode = C/O/S Event, cycle restarts on each COS change. Only use this mode for specific reasons. Time dependent most common used mode.

CLOSED LOOP ID	Master Type:	1	0 = None, 1 = 3000 Series Master, 2 = 3800 EL master
	Intersection ID		0-255
	Master Identification		0-255
	Allow Comm Xfer Between Ports 2 & 3		Y/N: Y = Incoming signal on Master port (2 or 3), gets echo'd on other port

COMM SET-UP (MM-3-5-2)

PG1 PORT ASSIGN	Master (CL) Port:		0 = None, 2 = Port 2, 3 = Port 3 (Port to be used to receive Master Comm)
	Monitor Port		0 = None, 2 = Port 2, 3 = Port 3 (Port to be used for Monitor Data Upload)
	Central Port:		0 = None, 2 = Port 2, 3 = Port 3 (Port to be used for Direct Dial-up Modem)

PG2 PORT 2 SETUP	Data Rate:	9600	1200, 2400, 4800, 9600, 14400, 19200
	Parity	0	0 = None, 1 = Odd, 2=Even
	Data bits	1	0 = 7 bits, 1 = 8 bits

PG3 PORT 3 SETUP	Data Rate:	9600	1200, 2400, 4800, 9600, 14400, 19200
	Parity	0	0 = None, 1 = Odd, 2=Even
	Data bits	1	0 = 7 bits, 1 = 8 bits


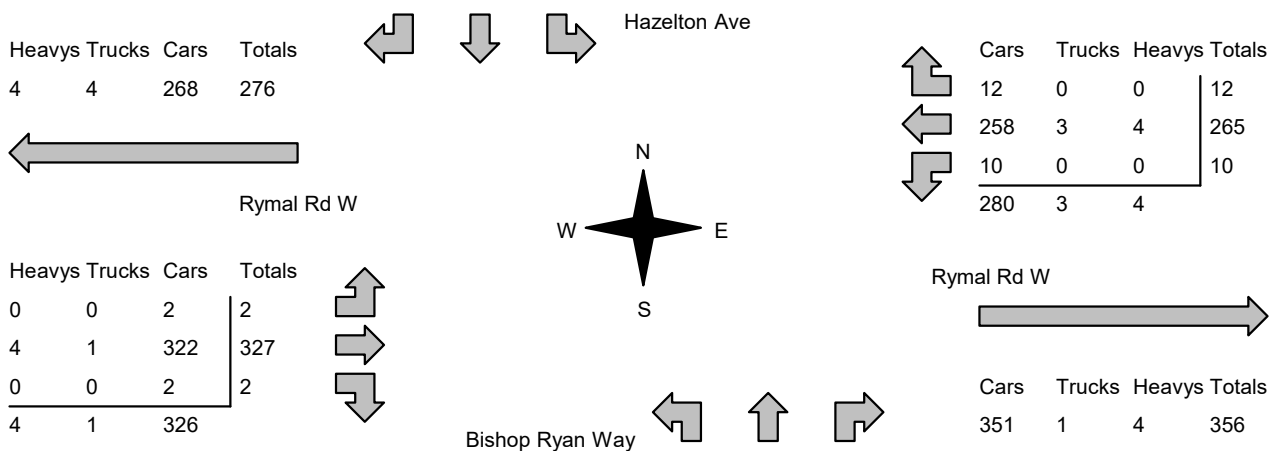

PG4	Modem Set-up String:		Up to 40 charaters; A-Z, or # @ = , ! ; % \ &
-----	----------------------	--	---

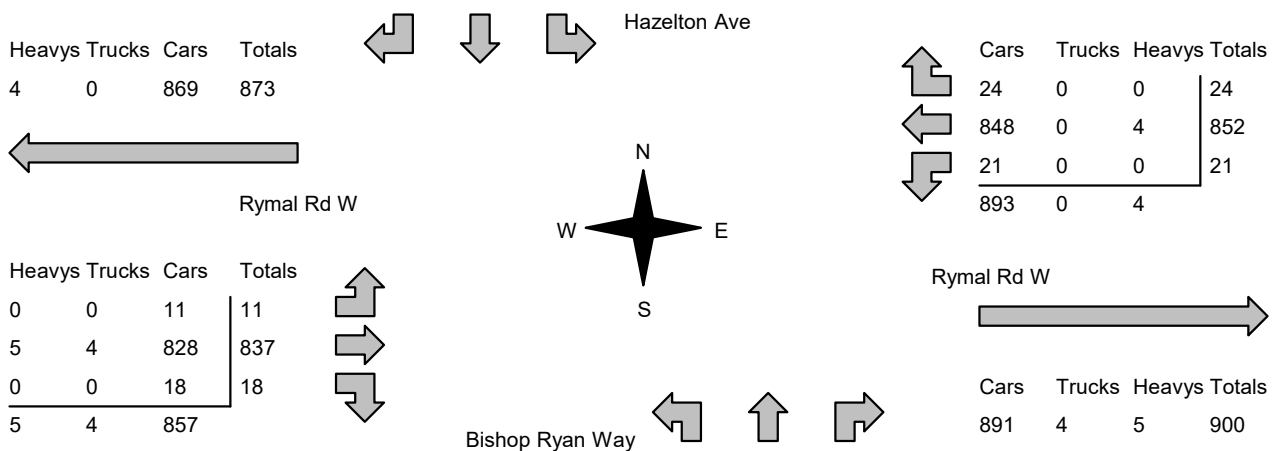
PHONE NUMBERS (MM-3-5-3)


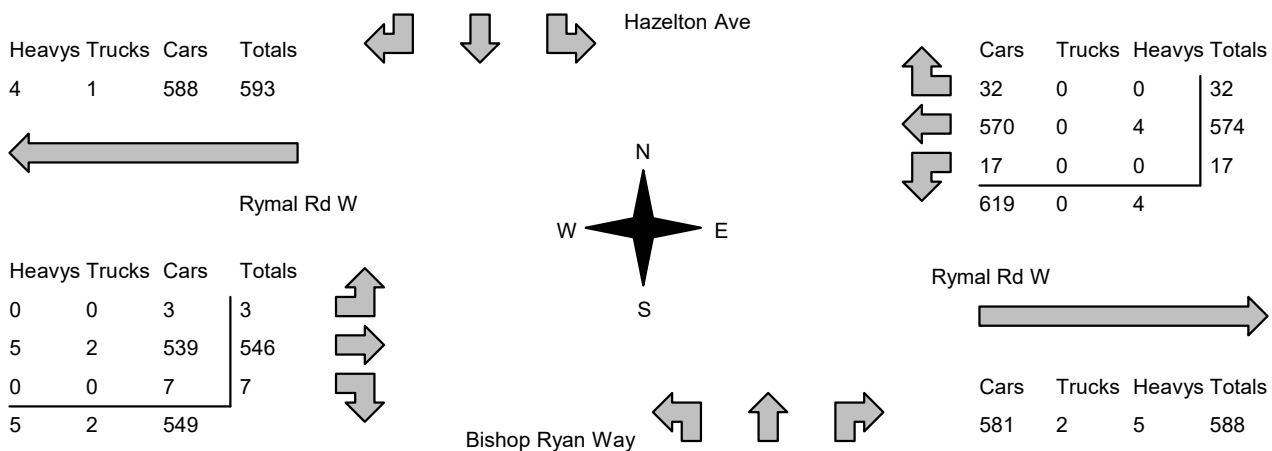

PHONE NUMBERS	Tone:		Y/N
	Phone 1:		Number & control characters (W , ; # ' / T P) if used
	Phone 2:		Number & control characters (W , ; # ' / T P) if used

LOG DATA (MM-3-5-5)

PG1 SAMPLE	Volume Log Sample period:	60	0, 6, 10, 15, 20, 30, 60 minutes, Enabled by TOD Ckt. 125 (EVL)
	MOE Log Sample period:	60	0, 6, 10, 15, 20, 30, 60 minutes, Enabled by TOD Ckt. 126 (EML)

Morning Peak Diagram		Specified Period From: 7:00:00 To: 9:00:00	One Hour Peak From: 8:00:00 To: 9:00:00																													
Municipality: Hamilton Site #: 1910000002 Intersection: Rymal Rd W & Hazelton Ave TFR File #: 1 Count date: 15-Jun-19		Weather conditions: Person counted: Person prepared: Person checked:																														
** Signalized Intersection **		Major Road: Rymal Rd W runs W/E																														
North Leg Total: 34 North Entering: 20 North Peds: 1 Peds Cross: ☒	<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>1</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>Cars</td><td>4</td><td>0</td><td>15</td><td>19</td></tr> <tr><td>Totals</td><td>5</td><td>0</td><td>15</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	1	0	0	1	Cars	4	0	15	19	Totals	5	0	15			<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>14</td></tr> <tr><td>Totals</td><td>14</td></tr> </table>	Heavys	0	Trucks	0	Cars	14	Totals	14	East Leg Total: 643 East Entering: 287 East Peds: 3 Peds Cross: ☒
Heavys	0	0	0	0																												
Trucks	1	0	0	1																												
Cars	4	0	15	19																												
Totals	5	0	15																													
Heavys	0																															
Trucks	0																															
Cars	14																															
Totals	14																															
																																
<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>4</td><td>4</td><td>268</td><td>276</td></tr> </table>	Heavys	Trucks	Cars	Totals	4	4	268	276			<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>12</td><td>0</td><td>0</td><td>12</td></tr> <tr><td>258</td><td>3</td><td>4</td><td>265</td></tr> <tr><td>10</td><td>0</td><td>0</td><td>10</td></tr> <tr><td>280</td><td>3</td><td>4</td><td></td></tr> </table>	Cars	Trucks	Heavys	Totals	12	0	0	12	258	3	4	265	10	0	0	10	280	3	4		
Heavys	Trucks	Cars	Totals																													
4	4	268	276																													
Cars	Trucks	Heavys	Totals																													
12	0	0	12																													
258	3	4	265																													
10	0	0	10																													
280	3	4																														
<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>0</td><td>0</td><td>2</td><td>2</td></tr> <tr><td>4</td><td>1</td><td>322</td><td>327</td></tr> <tr><td>0</td><td>0</td><td>2</td><td>2</td></tr> <tr><td>4</td><td>1</td><td>326</td><td></td></tr> </table>	Heavys	Trucks	Cars	Totals	0	0	2	2	4	1	322	327	0	0	2	2	4	1	326				<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>351</td><td>1</td><td>4</td><td>356</td></tr> </table>	Cars	Trucks	Heavys	Totals	351	1	4	356	
Heavys	Trucks	Cars	Totals																													
0	0	2	2																													
4	1	322	327																													
0	0	2	2																													
4	1	326																														
Cars	Trucks	Heavys	Totals																													
351	1	4	356																													
Peds Cross: ☒ West Peds: 1 West Entering: 331 West Leg Total: 607	<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>12</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Totals</td><td>12</td></tr> </table>	Cars	12	Trucks	0	Heavys	0	Totals	12		<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>6</td><td>0</td><td>14</td><td>20</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Totals</td><td>6</td><td>0</td><td>14</td><td></td></tr> </table>	Cars	6	0	14	20	Trucks	0	0	0	0	Heavys	0	0	0	0	Totals	6	0	14		Peds Cross: ☒ South Peds: 2 South Entering: 20 South Leg Total: 32
Cars	12																															
Trucks	0																															
Heavys	0																															
Totals	12																															
Cars	6	0	14	20																												
Trucks	0	0	0	0																												
Heavys	0	0	0	0																												
Totals	6	0	14																													
Comments																																

Mid-day Peak Diagram		Specified Period From: 11:00:00 To: 15:00:00	One Hour Peak From: 11:00:00 To: 12:00:00																												
Municipality: Hamilton Site #: 1910000002 Intersection: Rymal Rd W & Hazelton Ave TFR File #: 1 Count date: 15-Jun-19		Weather conditions: Person counted: Person prepared: Person checked:																													
** Signalized Intersection **		Major Road: Rymal Rd W runs W/E																													
North Leg Total: 80 North Entering: 44 North Peds: 0 Peds Cross: \times	<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>19</td><td>0</td><td>25</td><td>44</td></tr> <tr><td>Totals</td><td>19</td><td>0</td><td>25</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	0	0	0	0	Cars	19	0	25	44	Totals	19	0	25		<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>1</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>35</td></tr> <tr><td>Totals</td><td>36</td></tr> </table>	Heavys	1	Trucks	0	Cars	35	Totals	36	East Leg Total: 1797 East Entering: 897 East Peds: 5 Peds Cross: \times
Heavys	0	0	0	0																											
Trucks	0	0	0	0																											
Cars	19	0	25	44																											
Totals	19	0	25																												
Heavys	1																														
Trucks	0																														
Cars	35																														
Totals	36																														
																															
Peds Cross: \times West Peds: 0 West Entering: 866 West Leg Total: 1739	<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>39</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Totals</td><td>39</td></tr> </table>	Cars	39	Trucks	0	Heavys	0	Totals	39	<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>2</td><td>0</td><td>38</td><td>40</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td><td>1</td><td>0</td><td>1</td></tr> <tr><td>Totals</td><td>2</td><td>1</td><td>38</td><td></td></tr> </table>	Cars	2	0	38	40	Trucks	0	0	0	0	Heavys	0	1	0	1	Totals	2	1	38		Peds Cross: \times South Peds: 4 South Entering: 41 South Leg Total: 80
Cars	39																														
Trucks	0																														
Heavys	0																														
Totals	39																														
Cars	2	0	38	40																											
Trucks	0	0	0	0																											
Heavys	0	1	0	1																											
Totals	2	1	38																												
Comments																															

Afternoon Peak Diagram		Specified Period From: 16:00:00 To: 18:00:00	One Hour Peak From: 16:00:00 To: 17:00:00																													
Municipality: Hamilton Site #: 1910000002 Intersection: Rymal Rd W & Hazelton Ave TFR File #: 1 Count date: 15-Jun-19		Weather conditions: Person counted: Person prepared: Person checked:																														
** Signalized Intersection **		Major Road: Rymal Rd W runs W/E																														
North Leg Total: 63 North Entering: 28 North Peds: 2 Peds Cross: \boxtimes	<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>1</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>Cars</td><td>7</td><td>0</td><td>20</td><td>27</td></tr> <tr><td>Totals</td><td>8</td><td>0</td><td>20</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	1	0	0	1	Cars	7	0	20	27	Totals	8	0	20			<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>35</td></tr> <tr><td>Totals</td><td>35</td></tr> </table>	Heavys	0	Trucks	0	Cars	35	Totals	35	East Leg Total: 1211 East Entering: 623 East Peds: 1 Peds Cross: \boxtimes
Heavys	0	0	0	0																												
Trucks	1	0	0	1																												
Cars	7	0	20	27																												
Totals	8	0	20																													
Heavys	0																															
Trucks	0																															
Cars	35																															
Totals	35																															
																																
<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>4</td><td>1</td><td>588</td><td>593</td></tr> </table>	Heavys	Trucks	Cars	Totals	4	1	588	593			<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>32</td><td>0</td><td>0</td><td>32</td></tr> <tr><td>570</td><td>0</td><td>4</td><td>574</td></tr> <tr><td>17</td><td>0</td><td>0</td><td>17</td></tr> <tr><td>619</td><td>0</td><td>4</td><td></td></tr> </table>	Cars	Trucks	Heavys	Totals	32	0	0	32	570	0	4	574	17	0	0	17	619	0	4		
Heavys	Trucks	Cars	Totals																													
4	1	588	593																													
Cars	Trucks	Heavys	Totals																													
32	0	0	32																													
570	0	4	574																													
17	0	0	17																													
619	0	4																														
<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>0</td><td>0</td><td>3</td><td>3</td></tr> <tr><td>5</td><td>2</td><td>539</td><td>546</td></tr> <tr><td>0</td><td>0</td><td>7</td><td>7</td></tr> <tr><td>5</td><td>2</td><td>549</td><td></td></tr> </table>	Heavys	Trucks	Cars	Totals	0	0	3	3	5	2	539	546	0	0	7	7	5	2	549					<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>581</td><td>2</td><td>5</td><td>588</td></tr> </table>	Cars	Trucks	Heavys	Totals	581	2	5	588
Heavys	Trucks	Cars	Totals																													
0	0	3	3																													
5	2	539	546																													
0	0	7	7																													
5	2	549																														
Cars	Trucks	Heavys	Totals																													
581	2	5	588																													
Peds Cross: \boxtimes West Peds: 0 West Entering: 556 West Leg Total: 1149	<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>24</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Totals</td><td>24</td></tr> </table>	Cars	24	Trucks	0	Heavys	0	Totals	24		<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>11</td><td>0</td><td>22</td><td>33</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Totals</td><td>11</td><td>0</td><td>22</td><td></td></tr> </table>	Cars	11	0	22	33	Trucks	0	0	0	0	Heavys	0	0	0	0	Totals	11	0	22		Peds Cross: \boxtimes South Peds: 3 South Entering: 33 South Leg Total: 57
Cars	24																															
Trucks	0																															
Heavys	0																															
Totals	24																															
Cars	11	0	22	33																												
Trucks	0	0	0	0																												
Heavys	0	0	0	0																												
Totals	11	0	22																													
Comments																																

Total Count Diagram

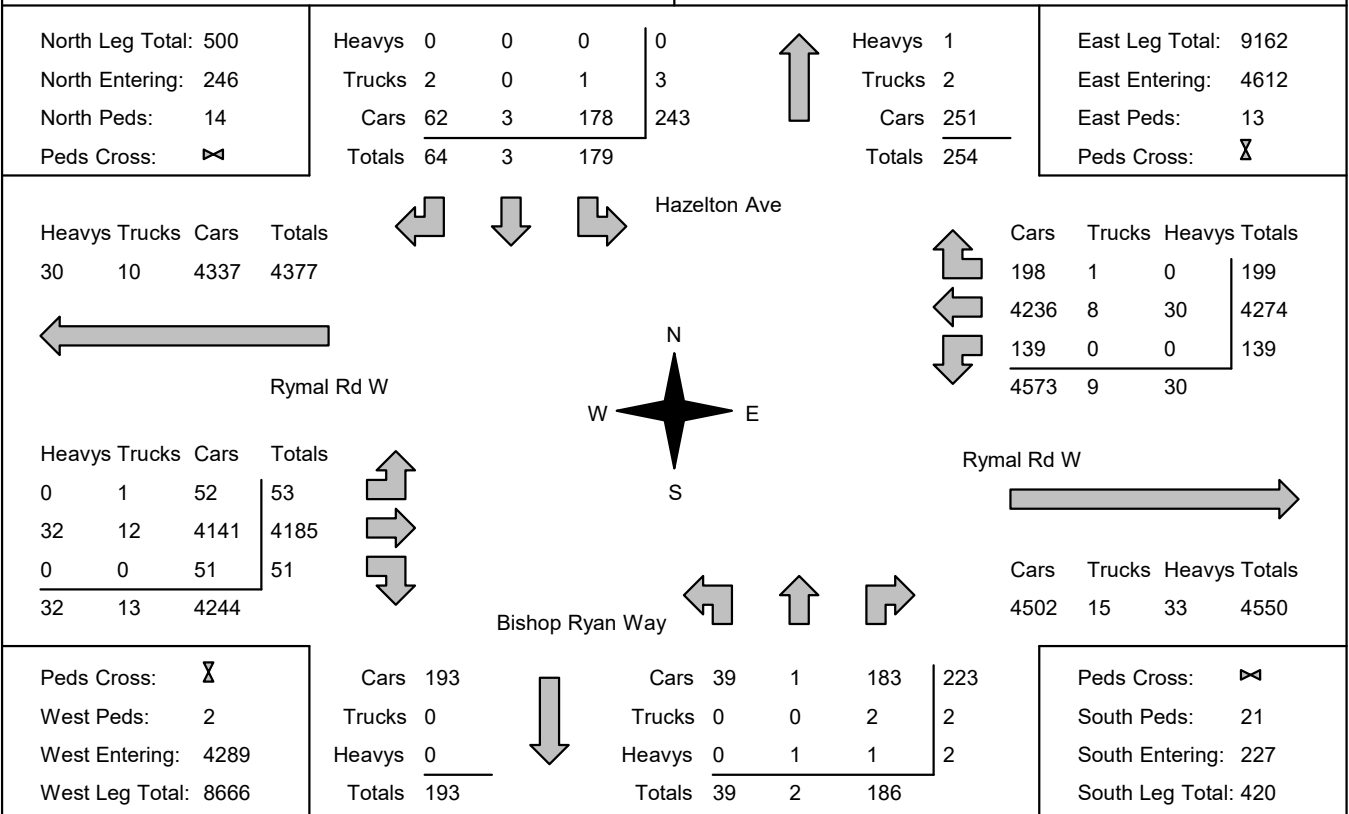
Municipality: Hamilton
Site #: 1910000002
Intersection: Rymal Rd W & Hazelton Ave
TFR File #: 1
Count date: 15-Jun-19

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Rymal Rd W runs W/E



Comments

Traffic Count Summary

Intersection: Rymal Rd W & Hazelton Ave

Count Date: 15-Jun-19

Municipality: Hamilton

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	12	1	1	14	2	25	8:00:00	1	0	10	11	1
9:00:00	15	0	5	20	1	40	9:00:00	6	0	14	20	2
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0
12:00:00	25	0	19	44	0	85	12:00:00	2	1	38	41	4
13:00:00	30	1	11	42	3	65	13:00:00	4	0	19	23	2
14:00:00	26	1	6	33	2	82	14:00:00	6	1	42	49	2
15:00:00	32	0	8	40	1	73	15:00:00	8	0	25	33	1
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	20	0	8	28	2	61	17:00:00	11	0	22	33	3
18:00:00	19	0	6	25	3	42	18:00:00	1	0	16	17	6
Totals:	179	3	64	246	14	473	S Totals:	39	2	186	227	21
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	4	153	3	160	1	339	8:00:00	1	176	2	179	0
9:00:00	10	265	12	287	3	618	9:00:00	2	327	2	331	1
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0
12:00:00	21	852	24	897	5	1763	12:00:00	11	837	18	866	0
13:00:00	25	663	34	722	0	1337	13:00:00	9	600	6	615	0
14:00:00	21	638	30	689	2	1396	14:00:00	7	693	7	707	0
15:00:00	27	565	37	629	1	1212	15:00:00	13	563	7	583	0
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	17	574	32	623	1	1179	17:00:00	3	546	7	556	0
18:00:00	14	564	27	605	0	1057	18:00:00	7	443	2	452	1
Totals:	139	4274	199	4612	13	8901	W Totals:	53	4185	51	4289	2
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	8:00	9:00	12:00	13:00		14:00	15:00	17:00	18:00			
Crossing Values:	15	25	33	35		35	41	32	21			



Count Date: 15-Jun-19 Site #: 191000002

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	1	25	25	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
7:30:00	1	0	63	38	1	1	0	0	1	0	0	0	0	0	1	1	0	0	0	0
7:45:00	2	1	96	33	2	1	0	0	1	0	0	0	0	0	2	1	0	0	1	1
8:00:00	4	2	150	54	3	1	0	0	1	0	0	0	0	0	2	0	0	0	1	0
8:15:00	6	2	197	47	5	2	0	0	3	2	0	0	0	0	3	1	0	0	1	0
8:30:00	9	3	253	56	9	4	0	0	3	0	0	0	0	0	4	1	0	0	4	3
8:45:00	12	3	331	78	11	2	0	0	3	0	0	0	0	0	5	1	0	0	4	0
9:00:00	14	2	408	77	15	4	0	0	4	1	0	0	0	0	6	1	0	0	4	0
9:15:00	14	0	408	0	15	0	0	0	4	0	0	0	0	0	6	0	0	0	4	0
11:00:00	14	0	408	0	15	0	0	0	4	0	0	0	0	0	6	0	0	0	4	0
11:15:00	20	6	686	278	21	6	0	0	4	0	0	0	0	0	7	1	0	0	4	0
11:30:00	22	2	982	296	31	10	0	0	4	0	0	0	0	0	8	1	0	0	8	4
11:45:00	29	7	1125	143	35	4	0	0	4	0	0	0	0	0	9	1	0	0	9	1
12:00:00	35	6	1256	131	39	4	0	0	4	0	0	0	0	0	10	1	0	0	9	0
12:15:00	46	11	1438	182	49	10	0	0	4	0	0	0	0	0	10	0	0	0	9	0
12:30:00	52	6	1622	184	56	7	0	0	4	0	0	0	0	0	12	2	0	0	9	0
12:45:00	57	5	1777	155	64	8	0	0	5	1	0	0	0	0	12	0	0	0	9	0
13:00:00	60	3	1914	137	73	9	0	0	5	0	0	0	0	0	14	2	0	0	9	0
13:15:00	66	6	2082	168	78	5	0	0	5	0	0	0	0	0	14	0	0	0	10	1
13:30:00	71	5	2252	170	84	6	0	0	5	0	0	0	0	0	15	1	0	0	11	1
13:45:00	75	4	2402	150	94	10	0	0	6	1	0	0	0	0	15	0	0	0	11	0
14:00:00	81	6	2547	145	103	9	0	0	7	1	0	0	0	0	17	2	0	0	11	0
14:15:00	90	9	2679	132	109	6	0	0	7	0	0	0	0	0	17	0	0	0	11	0
14:30:00	93	3	2827	148	117	8	0	0	7	0	1	1	0	0	19	2	0	0	11	0
14:45:00	98	5	2972	145	125	8	0	0	8	1	1	0	0	0	21	2	0	0	11	0
15:00:00	108	10	3105	133	139	14	0	0	8	0	1	0	0	0	23	2	0	0	12	1
15:15:00	108	0	3105	0	139	0	0	0	8	0	1	0	0	0	23	0	0	0	12	0
16:00:00	108	0	3105	0	139	0	0	0	8	0	1	0	0	0	23	0	0	0	12	0
16:15:00	114	6	3258	153	146	7	0	0	8	0	1	0	0	0	23	0	0	0	12	0
16:30:00	119	5	3395	137	153	7	0	0	8	0	1	0	0	0	25	2	0	0	12	0
16:45:00	123	4	3535	140	160	7	0	0	8	0	1	0	0	0	26	1	0	0	12	0
17:00:00	125	2	3675	140	171	11	0	0	8	0	1	0	0	0	27	1	0	0	13	1
17:15:00	129	4	3832	157	175	4	0	0	8	0	1	0	0	0	27	0	0	0	13	0
17:30:00	132	3	3950	118	179	4	0	0	8	0	1	0	0	0	28	1	0	0	13	0
17:45:00	134	2	4093	143	190	11	0	0	8	0	1	0	0	0	30	2	0	0	13	0
18:00:00	139	5	4236	143	198	8	0	0	8	0	1	0	0	0	30	0	0	0	13	0
18:15:00	139	0	4236	0	198	0	0	0	8	0	1	0	0	0	30	0	0	0	13	0
18:15:15	139	0	4236	0	198	0	0	0	8	0	1	0	0	0	30	0	0	0	13	0

Count Date: 15-Jun-19 Site #: 191000002

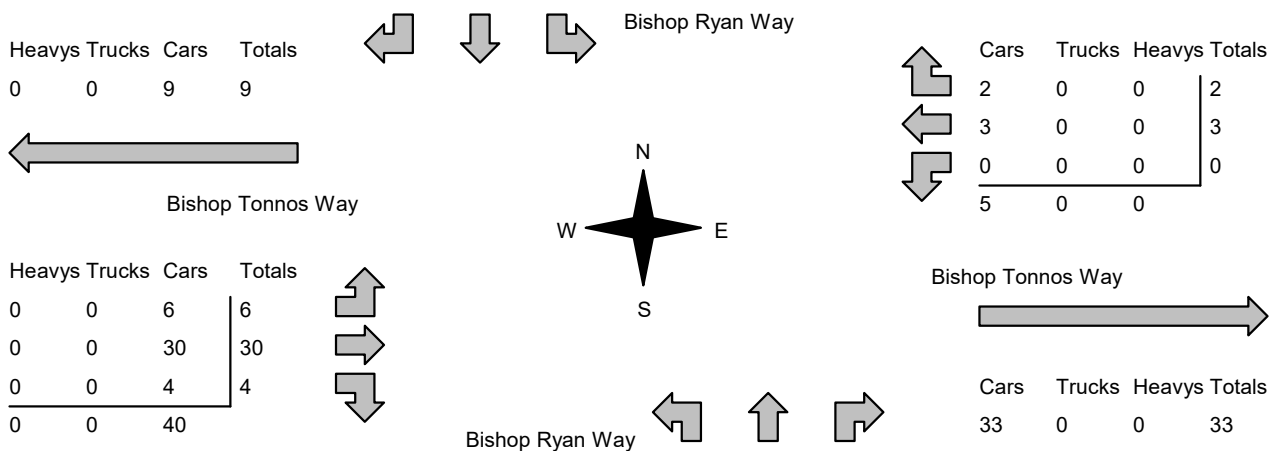
Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	8	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	1	1	0	0	10	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1
8:15:00	2	1	0	0	12	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:30:00	5	3	0	0	14	2	0	0	0	0	0	0	0	0	0	0	0	0	2	1
8:45:00	5	0	0	0	19	5	0	0	0	0	0	0	0	0	0	0	0	0	3	1
9:00:00	7	2	0	0	24	5	0	0	0	0	0	0	0	0	0	0	0	0	3	0
9:15:00	7	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
11:00:00	7	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
11:15:00	7	0	0	0	43	19	0	0	0	0	0	0	0	0	1	1	0	0	3	0
11:30:00	7	0	0	0	48	5	0	0	0	0	0	0	0	0	1	0	0	0	5	2
11:45:00	9	2	0	0	56	8	0	0	0	0	0	0	0	0	1	0	0	0	6	1
12:00:00	9	0	0	0	62	6	0	0	0	0	0	0	0	0	1	0	0	0	7	1
12:15:00	10	1	0	0	69	7	0	0	0	0	0	0	0	0	1	0	0	0	7	0
12:30:00	10	0	0	0	71	2	0	0	0	0	0	0	0	0	1	0	0	0	7	0
12:45:00	12	2	0	0	75	4	0	0	0	0	0	0	0	0	1	0	0	0	8	1
13:00:00	13	1	0	0	81	6	0	0	0	0	0	0	0	0	1	0	0	0	9	1
13:15:00	14	1	0	0	94	13	0	0	0	0	1	1	0	0	1	0	0	0	9	0
13:30:00	15	1	0	0	98	4	0	0	0	0	1	0	0	0	1	0	0	0	9	0
13:45:00	17	2	1	1	109	11	0	0	0	0	1	0	0	0	1	0	0	0	11	2
14:00:00	19	2	1	0	122	13	0	0	0	0	1	0	0	0	1	0	0	0	11	0
14:15:00	21	2	1	0	128	6	0	0	0	0	1	0	0	0	1	0	0	0	11	0
14:30:00	22	1	1	0	130	2	0	0	0	0	1	0	0	0	1	0	0	0	11	0
14:45:00	24	2	1	0	137	7	0	0	0	0	1	0	0	0	1	0	0	0	11	0
15:00:00	27	3	1	0	146	9	0	0	0	0	2	1	0	0	1	0	0	0	12	1
15:15:00	27	0	1	0	146	0	0	0	0	0	2	0	0	0	1	0	0	0	12	0
16:00:00	27	0	1	0	146	0	0	0	0	0	2	0	0	0	1	0	0	0	12	0
16:15:00	29	2	1	0	150	4	0	0	0	0	2	0	0	0	1	0	0	0	13	1
16:30:00	33	4	1	0	155	5	0	0	0	0	2	0	0	0	1	0	0	0	13	0
16:45:00	37	4	1	0	162	7	0	0	0	0	2	0	0	0	1	0	0	0	15	2
17:00:00	38	1	1	0	168	6	0	0	0	0	2	0	0	0	1	0	0	0	15	0
17:15:00	38	0	1	0	171	3	0	0	0	0	2	0	0	0	1	0	1	1	16	1
17:30:00	38	0	1	0	176	5	0	0	0	0	2	0	0	0	1	0	1	0	17	1
17:45:00	39	1	1	0	181	5	0	0	0	0	2	0	0	0	1	0	1	0	19	2
18:00:00	39	0	1	0	183	2	0	0	0	0	2	0	0	0	1	0	1	0	21	2
18:15:00	39	0	1	0	183	0	0	0	0	0	2	0	0	0	1	0	1	0	21	0
18:15:15	39	0	1	0	183	0	0	0	0	0	2	0	0	0	1	0	1	0	21	0



Count Date: 15-Jun-19 Site #: 191000002

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	30	30	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
7:30:00	1	1	66	36	1	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0
7:45:00	1	0	109	43	2	1	0	0	0	0	0	0	0	0	3	1	0	0	0	0
8:00:00	1	0	171	62	2	0	0	0	2	2	0	0	0	0	3	0	0	0	0	0
8:15:00	2	1	240	69	2	0	0	0	2	0	0	0	0	0	4	1	0	0	0	0
8:30:00	2	0	311	71	2	0	0	0	2	0	0	0	0	0	5	1	0	0	1	1
8:45:00	3	1	400	89	2	0	0	0	2	0	0	0	0	0	6	1	0	0	1	0
9:00:00	3	0	493	93	4	2	0	0	3	1	0	0	0	0	7	1	0	0	1	0
9:15:00	3	0	493	0	4	0	0	0	3	0	0	0	0	0	7	0	0	0	1	0
11:00:00	3	0	493	0	4	0	0	0	3	0	0	0	0	0	7	0	0	0	1	0
11:15:00	3	0	753	260	8	4	0	0	3	0	0	0	0	0	8	1	0	0	1	0
11:30:00	11	8	1012	259	18	10	0	0	4	1	0	0	0	0	10	2	0	0	1	0
11:45:00	12	1	1157	145	18	0	0	0	5	1	0	0	0	0	11	1	0	0	1	0
12:00:00	14	2	1321	164	22	4	0	0	7	2	0	0	0	0	12	1	0	0	1	0
12:15:00	16	2	1471	150	23	1	0	0	7	0	0	0	0	0	14	2	0	0	1	0
12:30:00	18	2	1597	126	24	1	0	0	7	0	0	0	0	0	14	0	0	0	1	0
12:45:00	20	2	1753	156	24	0	0	0	7	0	0	0	0	0	15	1	0	0	1	0
13:00:00	23	3	1917	164	28	4	0	0	7	0	0	0	0	0	16	1	0	0	1	0
13:15:00	26	3	2092	175	29	1	1	1	7	0	0	0	0	0	17	1	0	0	1	0
13:30:00	28	2	2264	172	30	1	1	0	7	0	0	0	0	0	18	1	0	0	1	0
13:45:00	29	1	2453	189	33	3	1	0	8	1	0	0	0	0	19	1	0	0	1	0
14:00:00	29	0	2606	153	35	2	1	0	8	0	0	0	0	0	19	0	0	0	1	0
14:15:00	33	4	2752	146	36	1	1	0	9	1	0	0	0	0	21	2	0	0	1	0
14:30:00	36	3	2883	131	37	1	1	0	9	0	0	0	0	0	21	0	0	0	1	0
14:45:00	38	2	3022	139	39	2	1	0	10	1	0	0	0	0	22	1	0	0	1	0
15:00:00	42	4	3163	141	42	3	1	0	10	0	0	0	0	0	23	1	0	0	1	0
15:15:00	42	0	3163	0	42	0	1	0	10	0	0	0	0	0	23	0	0	0	1	0
16:00:00	42	0	3163	0	42	0	1	0	10	0	0	0	0	0	23	0	0	0	1	0
16:15:00	43	1	3292	129	47	5	1	0	11	1	0	0	0	0	25	2	0	0	1	0
16:30:00	43	0	3437	145	47	0	1	0	12	1	0	0	0	0	25	0	0	0	1	0
16:45:00	45	2	3561	124	48	1	1	0	12	0	0	0	0	0	27	2	0	0	1	0
17:00:00	45	0	3702	141	49	1	1	0	12	0	0	0	0	0	28	1	0	0	1	0
17:15:00	46	1	3822	120	49	0	1	0	12	0	0	0	0	0	28	0	0	0	1	0
17:30:00	47	1	3927	105	50	1	1	0	12	0	0	0	0	0	30	2	0	0	2	1
17:45:00	49	2	4030	103	51	1	1	0	12	0	0	0	0	0	31	1	0	0	2	0
18:00:00	52	3	4141	111	51	0	1	0	12	0	0	0	0	0	32	1	0	0	2	0
18:15:00	52	0	4141	0	51	0	1	0	12	0	0	0	0	0	32	0	0	0	2	0
18:15:15	52	0	4141	0	51	0	1	0	12	0	0	0	0	0	32	0	0	0	2	0

<h2>Morning Peak Diagram</h2>	Specified Period From: 7:00:00 To: 9:00:00	One Hour Peak From: 8:00:00 To: 9:00:00																																																										
Municipality: Hamilton Site #: 1910000008 Intersection: Bishop Tonnos Way & Bishop Ryan TFR File #: 1 Count date: 15-Jun-19	Weather conditions: Person counted: Person prepared: Person checked:																																																											
** Non-Signalized Intersection **	Major Road: Bishop Tonnos Way runs W/E																																																											
North Leg Total: 33 North Entering: 14 North Peds: 1 Peds Cross: \boxtimes	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>0</td><td>13</td><td>1</td><td>14</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>0</td><td>13</td><td>1</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	0	0	0	0	Cars	0	13	1	14	Totals	0	13	1		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>19</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>19</td></tr> </table>	Heavys	0	Trucks	0	Cars	19	Totals	19	East Leg Total: 8 East Entering: 3 East Peds: 1 Peds Cross: \boxtimes																													
Heavys	0	0	0	0																																																								
Trucks	0	0	0	0																																																								
Cars	0	13	1	14																																																								
Totals	0	13	1																																																									
Heavys	0																																																											
Trucks	0																																																											
Cars	19																																																											
Totals	19																																																											
<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>0</td><td>0</td><td>4</td><td>4</td></tr> </table>	Heavys	Trucks	Cars	Totals	0	0	4	4	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>3</td><td>0</td><td>0</td><td>3</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>3</td><td>0</td><td>0</td><td></td></tr> </table>	Cars	Trucks	Heavys	Totals	0	0	0	0	3	0	0	3	0	0	0	0	3	0	0		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>0</td><td>0</td><td>5</td><td>5</td></tr> <tr><td>0</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>0</td><td>0</td><td>2</td><td>2</td></tr> <tr style="border-top: 1px solid black;"><td>0</td><td>1</td><td>9</td><td></td></tr> </table>		Heavys	Trucks	Cars	Totals	0	0	5	5	0	1	2	3	0	0	2	2	0	1	9		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>4</td><td>1</td><td>0</td><td>5</td></tr> </table>	Cars	Trucks	Heavys	Totals	4	1	0	5
Heavys	Trucks	Cars	Totals																																																									
0	0	4	4																																																									
Cars	Trucks	Heavys	Totals																																																									
0	0	0	0																																																									
3	0	0	3																																																									
0	0	0	0																																																									
3	0	0																																																										
Heavys	Trucks	Cars	Totals																																																									
0	0	5	5																																																									
0	1	2	3																																																									
0	0	2	2																																																									
0	1	9																																																										
Cars	Trucks	Heavys	Totals																																																									
4	1	0	5																																																									
Peds Cross: \boxtimes West Peds: 1 West Entering: 10 West Leg Total: 14	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>15</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>15</td></tr> </table>	Cars	15	Trucks	0	Heavys	0	Totals	15	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>1</td><td>14</td><td>1</td><td>16</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>1</td><td>14</td><td>1</td><td></td></tr> </table>	Cars	1	14	1	16	Trucks	0	0	0	0	Heavys	0	0	0	0	Totals	1	14	1		Peds Cross: \boxtimes South Peds: 0 South Entering: 16 South Leg Total: 31																													
Cars	15																																																											
Trucks	0																																																											
Heavys	0																																																											
Totals	15																																																											
Cars	1	14	1	16																																																								
Trucks	0	0	0	0																																																								
Heavys	0	0	0	0																																																								
Totals	1	14	1																																																									
<h3>Comments</h3>																																																												

<h2>Mid-day Peak Diagram</h2>	Specified Period From: 11:00:00 To: 15:00:00	One Hour Peak From: 14:00:00 To: 15:00:00																																																													
Municipality: Hamilton Site #: 1910000008 Intersection: Bishop Tonnos Way & Bishop Ryan TFR File #: 1 Count date: 15-Jun-19	Weather conditions: Person counted: Person prepared: Person checked:																																																														
** Non-Signalized Intersection **	Major Road: Bishop Tonnos Way runs W/E																																																														
North Leg Total: 60 North Entering: 28 North Peds: 0 Peds Cross: ☒	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>3</td><td>24</td><td>1</td><td>28</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>3</td><td>24</td><td>1</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	0	0	0	0	Cars	3	24	1	28	Totals	3	24	1		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>32</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>32</td></tr> </table>	Heavys	0	Trucks	0	Cars	32	Totals	32	East Leg Total: 38 East Entering: 5 East Peds: 0 Peds Cross: ☒																																
Heavys	0	0	0	0																																																											
Trucks	0	0	0	0																																																											
Cars	3	24	1	28																																																											
Totals	3	24	1																																																												
Heavys	0																																																														
Trucks	0																																																														
Cars	32																																																														
Totals	32																																																														
																																																															
<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>9</td><td>9</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td></td><td></td></tr> <tr><td>Cars</td><td></td><td></td><td></td><td></td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td></td><td></td><td></td><td></td></tr> </table>	Heavys	0	0	9	9	Trucks	0	0			Cars					Totals					<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>2</td><td>0</td><td>0</td><td>2</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td></td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td></td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>2</td><td>0</td><td>0</td><td></td></tr> </table>	Cars	2	0	0	2	Trucks	0	0	0		Heavys	0	0	0		Totals	2	0	0		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>3</td><td>0</td><td>0</td><td>3</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td></td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td></td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>3</td><td>0</td><td>0</td><td></td></tr> </table>		Cars	3	0	0	3	Trucks	0	0	0		Heavys	0	0	0		Totals	3	0	0	
Heavys	0	0	9	9																																																											
Trucks	0	0																																																													
Cars																																																															
Totals																																																															
Cars	2	0	0	2																																																											
Trucks	0	0	0																																																												
Heavys	0	0	0																																																												
Totals	2	0	0																																																												
Cars	3	0	0	3																																																											
Trucks	0	0	0																																																												
Heavys	0	0	0																																																												
Totals	3	0	0																																																												
<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>6</td><td>6</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>30</td><td>30</td></tr> <tr><td>Cars</td><td>0</td><td>0</td><td>4</td><td>4</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>0</td><td>0</td><td>40</td><td></td></tr> </table>	Heavys	0	0	6	6	Trucks	0	0	30	30	Cars	0	0	4	4	Totals	0	0	40		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>28</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>28</td></tr> </table>	Cars	28	Trucks	0	Heavys	0	Totals	28	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>3</td><td>24</td><td>2</td><td>29</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>3</td><td>24</td><td>2</td><td></td></tr> </table>	Cars	3	24	2	29	Trucks	0	0	0	0	Heavys	0	0	0	0	Totals	3	24	2		Peds Cross: ☒ South Peds: 0 South Entering: 29 South Leg Total: 57												
Heavys	0	0	6	6																																																											
Trucks	0	0	30	30																																																											
Cars	0	0	4	4																																																											
Totals	0	0	40																																																												
Cars	28																																																														
Trucks	0																																																														
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Totals	28																																																														
Cars	3	24	2	29																																																											
Trucks	0	0	0	0																																																											
Heavys	0	0	0	0																																																											
Totals	3	24	2																																																												
<h3>Comments</h3>																																																															

<h2>Afternoon Peak Diagram</h2>	Specified Period From: 16:00:00 To: 18:00:00	One Hour Peak From: 16:00:00 To: 17:00:00																																																										
Municipality: Hamilton Site #: 1910000008 Intersection: Bishop Tonnos Way & Bishop Ryan TFR File #: 1 Count date: 15-Jun-19	Weather conditions: Person counted: Person prepared: Person checked:																																																											
** Non-Signalized Intersection **	Major Road: Bishop Tonnos Way runs W/E																																																											
North Leg Total: 52 North Entering: 24 North Peds: 0 Peds Cross: ☒	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>3</td><td>19</td><td>2</td><td>24</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>3</td><td>19</td><td>2</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	0	0	0	0	Cars	3	19	2	24	Totals	3	19	2		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>28</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>28</td></tr> </table>	Heavys	0	Trucks	0	Cars	28	Totals	28	East Leg Total: 21 East Entering: 10 East Peds: 0 Peds Cross: ☒																													
Heavys	0	0	0	0																																																								
Trucks	0	0	0	0																																																								
Cars	3	19	2	24																																																								
Totals	3	19	2																																																									
Heavys	0																																																											
Trucks	0																																																											
Cars	28																																																											
Totals	28																																																											
<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>1</td><td>0</td><td>11</td><td>12</td></tr> </table>	Heavys	Trucks	Cars	Totals	1	0	11	12	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>4</td><td>0</td><td>0</td><td>4</td></tr> <tr><td>5</td><td>0</td><td>1</td><td>6</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>9</td><td>0</td><td>1</td><td></td></tr> </table>	Cars	Trucks	Heavys	Totals	4	0	0	4	5	0	1	6	0	0	0	0	9	0	1		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>0</td><td>0</td><td>8</td><td>8</td></tr> <tr><td>0</td><td>0</td><td>5</td><td>5</td></tr> <tr><td>0</td><td>0</td><td>4</td><td>4</td></tr> <tr style="border-top: 1px solid black;"><td>0</td><td>0</td><td>17</td><td></td></tr> </table>		Heavys	Trucks	Cars	Totals	0	0	8	8	0	0	5	5	0	0	4	4	0	0	17		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>11</td><td>0</td><td>0</td><td>11</td></tr> </table>	Cars	Trucks	Heavys	Totals	11	0	0	11
Heavys	Trucks	Cars	Totals																																																									
1	0	11	12																																																									
Cars	Trucks	Heavys	Totals																																																									
4	0	0	4																																																									
5	0	1	6																																																									
0	0	0	0																																																									
9	0	1																																																										
Heavys	Trucks	Cars	Totals																																																									
0	0	8	8																																																									
0	0	5	5																																																									
0	0	4	4																																																									
0	0	17																																																										
Cars	Trucks	Heavys	Totals																																																									
11	0	0	11																																																									
Peds Cross: ☒ West Peds: 1 West Entering: 17 West Leg Total: 29	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>23</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>23</td></tr> </table>	Cars	23	Trucks	0	Heavys	0	Totals	23	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>3</td><td>16</td><td>4</td><td>23</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr style="border-top: 1px solid black;"><td>Totals</td><td>3</td><td>16</td><td>4</td><td></td></tr> </table>	Cars	3	16	4	23	Trucks	0	0	0	0	Heavys	0	0	0	0	Totals	3	16	4		Peds Cross: ☒ South Peds: 0 South Entering: 23 South Leg Total: 46																													
Cars	23																																																											
Trucks	0																																																											
Heavys	0																																																											
Totals	23																																																											
Cars	3	16	4	23																																																								
Trucks	0	0	0	0																																																								
Heavys	0	0	0	0																																																								
Totals	3	16	4																																																									
<h2>Comments</h2>																																																												

Total Count Diagram

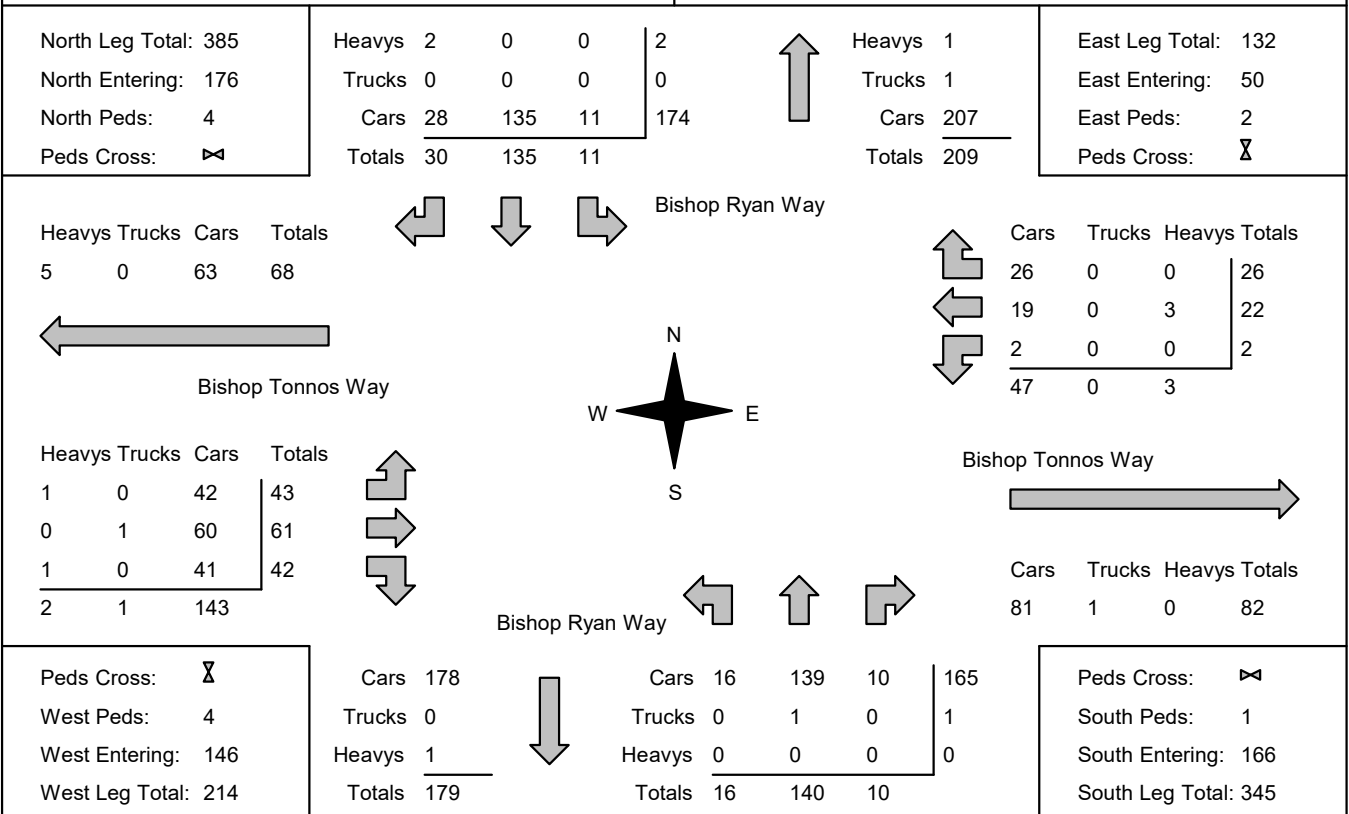
Municipality: Hamilton
Site #: 1910000008
Intersection: Bishop Tonnos Way & Bishop Ryan
TFR File #: 1
Count date: 15-Jun-19

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Bishop Tonnos Way runs W/E



Comments

Traffic Count Summary

Intersection: Bishop Tonnos Way & Bishop Rya Count Date: 15-Jun-19 Municipality: Hamilton

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	1	4	2	7	2	17	8:00:00	2	7	1	10	0
9:00:00	1	13	0	14	1	30	9:00:00	1	14	1	16	0
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0
12:00:00	1	33	4	38	0	65	12:00:00	4	23	0	27	0
13:00:00	2	26	4	32	0	54	13:00:00	1	19	2	22	0
14:00:00	1	10	8	19	0	51	14:00:00	2	30	0	32	1
15:00:00	1	24	3	28	0	57	15:00:00	3	24	2	29	0
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	2	19	3	24	0	47	17:00:00	3	16	4	23	0
18:00:00	2	6	6	14	1	21	18:00:00	0	7	0	7	0
Totals:	11	135	30	176	4	342	S Totals:	16	140	10	166	1
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	0	2	2	4	0	17	8:00:00	1	5	7	13	1
9:00:00	0	3	0	3	1	13	9:00:00	5	3	2	10	1
11:00:00	0	0	0	0	0	0	11:00:00	0	0	0	0	0
12:00:00	0	0	12	12	1	27	12:00:00	5	4	6	15	0
13:00:00	1	3	1	5	0	21	13:00:00	5	1	10	16	1
14:00:00	0	1	4	5	0	24	14:00:00	6	7	6	19	0
15:00:00	0	3	2	5	0	45	15:00:00	6	30	4	40	0
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	0	6	4	10	0	27	17:00:00	8	5	4	17	1
18:00:00	1	4	1	6	0	22	18:00:00	7	6	3	16	0
Totals:	2	22	26	50	2	196	W Totals:	43	61	42	146	4
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	8:00	9:00	12:00	13:00		14:00	15:00	17:00	18:00			
Crossing Values:	11	18	39	30		33	28	25	9			



Count Date: 15-Jun-19 Site #: 191000008

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:30:00	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:45:00	0	0	3	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:00:00	1	1	4	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
8:15:00	1	0	6	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
8:30:00	2	1	10	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
8:45:00	2	0	13	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
9:00:00	2	0	17	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1
9:15:00	2	0	17	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
11:00:00	2	0	17	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
11:15:00	2	0	26	9	3	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0
11:30:00	2	0	36	10	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
11:45:00	2	0	41	5	4	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0
12:00:00	3	1	50	9	5	1	0	0	0	0	0	0	0	0	0	0	1	1	3	0
12:15:00	5	2	58	8	7	2	0	0	0	0	0	0	0	0	0	0	1	0	3	0
12:30:00	5	0	65	7	7	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0
12:45:00	5	0	70	5	8	1	0	0	0	0	0	0	0	0	0	0	1	0	3	0
13:00:00	5	0	76	6	9	1	0	0	0	0	0	0	0	0	0	0	1	0	3	0
13:15:00	6	1	80	4	10	1	0	0	0	0	0	0	0	0	0	0	1	0	3	0
13:30:00	6	0	80	0	14	4	0	0	0	0	0	0	0	0	0	0	2	1	3	0
13:45:00	6	0	82	2	15	1	0	0	0	0	0	0	0	0	0	0	2	0	3	0
14:00:00	6	0	86	4	16	1	0	0	0	0	0	0	0	0	0	0	2	0	3	0
14:15:00	6	0	93	7	17	1	0	0	0	0	0	0	0	0	0	0	2	0	3	0
14:30:00	6	0	99	6	17	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0
14:45:00	6	0	101	2	18	1	0	0	0	0	0	0	0	0	0	0	2	0	3	0
15:00:00	7	1	110	9	19	1	0	0	0	0	0	0	0	0	0	0	2	0	3	0
15:15:00	7	0	110	0	19	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0
16:00:00	7	0	110	0	19	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0
16:15:00	9	2	117	7	21	2	0	0	0	0	0	0	0	0	0	0	2	0	3	0
16:30:00	9	0	121	4	22	1	0	0	0	0	0	0	0	0	0	0	2	0	3	0
16:45:00	9	0	126	5	22	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0
17:00:00	9	0	129	3	22	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0
17:15:00	9	0	130	1	24	2	0	0	0	0	0	0	0	0	0	0	2	0	3	0
17:30:00	10	1	130	0	25	1	0	0	0	0	0	0	0	0	0	0	2	0	3	0
17:45:00	11	1	132	2	25	0	0	0	0	0	0	0	0	0	0	0	2	0	4	1
18:00:00	11	0	135	3	28	3	0	0	0	0	0	0	0	0	0	0	2	0	4	0
18:15:00	11	0	135	0	28	0	0	0	0	0	0	0	0	0	0	0	2	0	4	0
18:15:15	11	0	135	0	28	0	0	0	0	0	0	0	0	0	0	0	2	0	4	0



Count Date: 15-Jun-19 Site #: 191000008

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	1	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	2	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	3	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	3	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	4	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
9:15:00	0	0	5	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
11:00:00	0	0	5	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
11:15:00	0	0	5	0	12	10	0	0	0	0	0	0	0	0	0	0	0	0	1	0
11:30:00	0	0	5	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
11:45:00	0	0	5	0	13	1	0	0	0	0	0	0	0	0	0	0	0	0	2	1
12:00:00	0	0	5	0	14	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0
12:15:00	0	0	7	2	14	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
12:30:00	0	0	7	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
12:45:00	1	1	7	0	15	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0
13:00:00	1	0	7	0	15	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0
13:15:00	1	0	7	0	16	1	0	0	0	0	0	0	0	0	1	0	0	0	2	0
13:30:00	1	0	8	1	18	2	0	0	0	0	0	0	0	0	1	0	0	0	2	0
13:45:00	1	0	8	0	18	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
14:00:00	1	0	8	0	19	1	0	0	0	0	0	0	0	0	1	0	0	0	2	0
14:15:00	1	0	10	2	19	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
14:30:00	1	0	10	0	19	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
14:45:00	1	0	11	1	19	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
15:00:00	1	0	11	0	21	2	0	0	0	0	0	0	0	0	1	0	0	0	2	0
15:15:00	1	0	11	0	21	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
16:00:00	1	0	11	0	21	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
16:15:00	1	0	12	1	21	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
16:30:00	1	0	15	3	22	1	0	0	0	0	0	0	0	0	2	1	0	0	2	0
16:45:00	1	0	15	0	25	3	0	0	0	0	0	0	0	0	2	0	0	0	2	0
17:00:00	1	0	16	1	25	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
17:15:00	1	0	16	0	25	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
17:30:00	2	1	18	2	26	1	0	0	0	0	0	0	0	0	2	0	0	0	2	0
17:45:00	2	0	19	1	26	0	0	0	0	0	0	0	0	0	3	1	0	0	2	0
18:00:00	2	0	19	0	26	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0
18:15:00	2	0	19	0	26	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0
18:15:15	2	0	19	0	26	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0

Count Date: 15-Jun-19 Site #: 191000008

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	7	5	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:45:00	0	0	1	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:00:00	1	1	5	4	7	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:15:00	2	1	5	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
8:30:00	4	2	5	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
8:45:00	4	0	5	0	7	0	0	0	1	1	0	0	0	0	0	0	0	0	2	0
9:00:00	6	2	7	2	9	2	0	0	1	0	0	0	0	0	0	0	0	0	2	0
9:15:00	6	0	7	0	9	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0
11:00:00	6	0	7	0	9	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0
11:15:00	7	1	8	1	11	2	0	0	1	0	0	0	0	0	0	0	0	0	2	0
11:30:00	7	0	10	2	13	2	0	0	1	0	0	0	0	0	0	0	0	0	2	0
11:45:00	10	3	10	0	14	1	0	0	1	0	0	0	0	0	0	0	0	0	2	0
12:00:00	11	1	11	1	15	1	0	0	1	0	0	0	0	0	0	0	0	0	2	0
12:15:00	12	1	11	0	18	3	0	0	1	0	0	0	0	0	0	0	0	0	3	1
12:30:00	13	1	12	1	20	2	0	0	1	0	0	0	0	0	0	0	0	0	3	0
12:45:00	15	2	12	0	25	5	0	0	1	0	0	0	0	0	0	0	0	0	3	0
13:00:00	16	1	12	0	25	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
13:15:00	17	1	14	2	26	1	0	0	1	0	0	0	0	0	0	0	0	0	3	0
13:30:00	18	1	14	0	27	1	0	0	1	0	0	0	0	0	0	0	0	0	3	0
13:45:00	21	3	16	2	30	3	0	0	1	0	0	0	0	0	0	0	0	0	3	0
14:00:00	22	1	19	3	31	1	0	0	1	0	0	0	0	0	0	0	0	0	3	0
14:15:00	23	1	23	4	32	1	0	0	1	0	0	0	0	0	0	0	0	0	3	0
14:30:00	23	0	26	3	32	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
14:45:00	26	3	36	10	35	3	0	0	1	0	0	0	0	0	0	0	0	0	3	0
15:00:00	28	2	49	13	35	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
15:15:00	28	0	49	0	35	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
16:00:00	28	0	49	0	35	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
16:15:00	29	1	50	1	39	4	0	0	1	0	0	0	0	0	0	0	0	0	3	0
16:30:00	32	3	50	0	39	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
16:45:00	35	3	50	0	39	0	0	0	1	0	0	0	0	0	0	0	0	0	4	1
17:00:00	36	1	54	4	39	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0
17:15:00	38	2	56	2	39	0	0	0	1	0	0	0	1	1	0	0	1	1	4	0
17:30:00	40	2	58	2	40	1	0	0	1	0	0	0	1	0	0	0	1	0	4	0
17:45:00	42	2	60	2	40	0	0	0	1	0	0	0	1	0	0	0	1	0	4	0
18:00:00	42	0	60	0	41	1	0	0	1	0	0	0	1	0	0	0	1	0	4	0
18:15:00	42	0	60	0	41	0	0	0	1	0	0	0	1	0	0	0	1	0	4	0
18:15:15	42	0	60	0	41	0	0	0	1	0	0	0	1	0	0	0	1	0	4	0

Appendix C

Base Year Synchro/SimTraffic Reports



Lanes, Volumes, Timings
3: Bishop Ryan Way & Bishop Reding Trail/Street A

HCM Unsignalized Intersection Capacity Analysis
3: Bishop Ryan Way & Bishop Reding Trail/Street A

Base Year - 2023
AM Peak Hour

Base Year - 2023
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	11	0	0	0	12
Future Volume (vph)	0	0	0	0	0	0	0	11	0	0	0	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt												
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	1863	0	0	1863	0	0	0	1863
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	1863	0	0	1863	0	0	0	1863
Link Speed (k/h)	50			50				50				50
Link Distance (m)	64.3			135.1				88.8				64.6
Travel Time (s)	4.6			9.7				6.4				4.7
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
Adj. Flow (vph)	0	0	0	0	0	0	0	12	0	0	0	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	12	0	0	0	13
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
Median Width (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8			4.8				4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15				25				15
Sign Control	Stop			Stop				Free				Free
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	6.7%											
Analysis Period (min)	15											
ICU Level of Service A												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	11	0	0	0	12
Future Volume (Veh/h)	0	0	0	0	0	0	0	11	0	0	0	12
Sign Control	Stop			Stop				Free				Free
Grade	0%			0%				0%				0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0	0	12	0	0	0	13
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None				None
Median storage (veh)												
Upstream signal (m)												65
pX platoon unblocked												
vC, conflicting volume	25	25	13	25	25	12	13					12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	25	25	13	25	25	12	13					12
iC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1					4.1
iC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2					2.2
p0 queue free %	100	100	100	100	100	100	100	100	100	100	100	100
p0 capacity (veh/h)	986	868	1067	986	868	1069	1606					1607
Direction_Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	0	12	13								
Volume Left	0	0	0	0								
Volume Right	0	0	0	0								
cSH	1700	1700	1606	1607								
Volume to Capacity	0.00	0.00	0.00	0.00								
Queue Length 95th (m)	0.0	0.0	0.0	0.0								
Control Delay (s)	0.0	0.0	0.0	0.0								
Lane LOS	A	A	A	A								
Approach Delay (s)	0.0	0.0	0.0	0.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Average Delay	0.0											
Intersection Capacity Utilization	6.7%											
ICU Level of Service	A											
Analysis Period (min)	15											

Lanes, Volumes, Timings
6: Bishop Ryan Way & Bishop Tonnos Way

HCM Unsignalized Intersection Capacity Analysis
6: Bishop Ryan Way & Bishop Tonnos Way

Base Year - 2023
AM Peak Hour

EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group											
3	1	3	0	2	2	3	6	0	1	7	4
Traffic Volume (vph)											
3	1	3	0	2	2	3	6	0	1	7	4
Future Volume (vph)											
1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)											
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor											
Frt											
FIT Protected											
0.942											
0.979											
Satd. Flow (prot)											
0	1718	0	0	1736	0	0	1835	0	0	1777	0
FIT Permitted											
0.979											
Satd. Flow (perm)											
0	1718	0	0	1736	0	0	1835	0	0	1777	0
Link Speed (k/h)											
50											
Link Distance (m)											
147.2											
Travel Time (s)											
10.6											
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
Adj. Flow (vph)											
3	1	3	0	2	2	3	7	0	1	8	4
Shared Lane Traffic (%)											
0	7	0	0	4	0	0	10	0	0	13	0
Enter Blocked Intersection											
No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment											
Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)											
0.0											
Link Offset(m)											
0.0											
Crosswalk Width(m)											
4.8											
Two way Left Turn Lane											
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Headway Factor											
25											
Turning Speed (k/h)											
15	25	25	15	25	15	25	15	25	15	25	15
Sign Control											
Stop											
Intersection Summary											
Area Type: Other											
Control Type: Unsignalized											
Intersection Capacity Utilization 13.3%											
Analysis Period (min) 15											
ICU Level of Service A											

EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement											
3	1	3	0	2	2	3	6	0	1	7	4
Lane Configurations											
3	1	3	0	2	2	3	6	0	1	7	4
Traffic Volume (vph)											
3	1	3	0	2	2	3	6	0	1	7	4
Future Volume (vph)											
0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
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
Hourly flow rate (vph)											
3	1	3	0	2	2	3	7	0	1	8	4
Direction_Lane #											
EB 1	WB 1	NB 1	SB 1								
7	4	10	13								
Volume Total (vph)											
3	0	3	1								
Volume Left (vph)											
3	2	0	4								
Volume Right (vph)											
-0.14	-0.27	0.09	-0.14								
Head (s)											
3.8	3.7	4.0	3.8								
Departure Headway (s)											
0.01	0.00	0.01	0.01								
Degree Utilization, x											
931	964	887	940								
Capacity (veh/h)											
6.8	6.7	7.1	6.8								
Control Delay (s)											
6.8	6.7	7.1	6.8								
Approach Delay (s)											
A	A	A	A								
Approach LOS											
Intersection Summary											
Delay											
Level of Service											
Intersection Capacity Utilization											
Analysis Period (min)											
ICU Level of Service A											

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Base Year - 2023
All Peak Hour

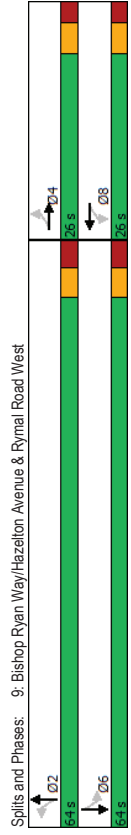
Base Year - 2023
All Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	2	2	2	2	2	2
Traffic Volume (vph)	539	539	1900	394	394	1900	17	17	10	11	1	23
Future Volume (vph)	539	539	1900	394	394	1900	17	17	10	11	1	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0
Storage Lanes	1	0	1	0	0	0	0	0	0	1	0	0
Taper Length (m)	30.0	30.0	0.0	0.0	0.0	0.0	7.5	7.5	1.0	1.0	1.0	1.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	1.00	0.99	1.00	0.99
Frt	0.999	0.999	0.999	0.999	0.999	0.999	0.876	0.876	0.950	0.856	0.856	0.856
FIT Protected	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (prot)	1444	3403	0	1805	3336	0	0	1638	0	1641	1606	0
FIT Permitted	0.494	0.430	0.430	0.430	0.367	0.367	0.367	0.367	0.750	0.750	0.750	0
Satd. Flow (perm)	749	3403	0	815	3336	0	0	1590	0	1294	1606	0
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	4	4	4	4	4	4	3.3	3.3	3.0	3.0	3.0	2.5
Link Speed (km/h)	50	50	50	50	50	50	50	50	50	50	50	50
Link Distance (m)	494.9	784.1	784.1	784.1	784.1	784.1	64.6	64.6	64.6	308.6	308.6	308.6
Travel Time (s)	35.6	35.6	35.6	35.6	35.6	35.6	4.7	4.7	4.7	22.2	22.2	22.2
Confl. Peds. (#/hr)	3	4	4	4	4	4	3	3	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	25%	0%	0%	7%	18%	0%	0%	0%	0%	10%	0%	0%
Adj. Flow (vph)	4	586	2	10	428	18	1	0	11	12	1	25
Shared Lane Traffic (%)	4	588	0	10	446	0	0	12	0	12	26	0
Lane Group Flow (vph)	No	No	No	No	No	No	No	No	No	No	No	No
Enter Blocked Intersection	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (km/h)	25	15	25	15	25	15	25	15	25	15	25	15
Number of Detectors	1	2	1	2	1	2	1	2	1	2	1	2
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Detector 2 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 2 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SEV - Village Square TIS Update, Hamilton
PTSL (230019)
Page 5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	INA	4	Perm	INA	8	Perm	INA	2	Perm	INA	6
Protected Phases	4	4	4	8	8	8	2	2	2	6	6	6
Permitted Phases	4	4	4	8	8	8	2	2	2	6	6	6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase	10.0	10.0	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0	30.0
Minimum Initial (s)	25.7	25.7	25.7	25.7	25.7	25.7	36.3	36.3	36.3	36.3	36.3	36.3
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0	64.0	64.0	64.0	64.0	64.0	64.0
Total Split (s)	28.9%	28.9%	28.9%	28.9%	28.9%	28.9%	71.1%	71.1%	71.1%	71.1%	71.1%	71.1%
Total Split (%)	20.3	20.3	20.3	20.3	20.3	20.3	57.7	57.7	57.7	57.7	57.7	57.7
Maximum Green (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Yellow Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-2.3	-2.3	-2.3	-2.3	-2.3	-2.3
Lost Time Adjust (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost Time (s)	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead-Lag Optimize?	None	None	None	Min	Min	Min	None	None	None	None	None	None
Vehicle Extension (s)	7.0	7.0	7.0	7.0	7.0	7.0	9.0	9.0	9.0	9.0	9.0	9.0
Recall Mode	13.0	13.0	13.0	13.0	13.0	13.0	16.0	16.0	16.0	16.0	16.0	16.0
Flash Dont Walk (s)	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Calls (#/hr)	31.6	31.6	31.6	31.6	31.6	31.6	33.1	33.1	33.1	33.1	33.1	33.1
Act Effct Green (s)	0.87	0.87	0.87	0.87	0.87	0.87	0.91	0.91	0.91	0.91	0.91	0.91
Actuated g/C Ratio	0.01	0.20	0.01	0.01	0.15	0.01	0.01	0.01	0.01	0.01	0.02	0.02
v/c Ratio	8.0	5.3	7.7	5.2	1.0	5.2	1.0	3.5	2.2	0.0	0.0	0.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	8.0	5.3	7.7	5.2	1.0	5.2	1.0	3.5	2.2	0.0	0.0	0.0
Total Delay	A	A	A	A	A	A	A	A	A	A	A	A
LOS	5.3	5.3	5.2	5.2	1.0	5.2	1.0	2.6	2.6	2.6	2.6	2.6
Approach Delay	A	A	A	A	A	A	A	A	A	A	A	A
Approach LOS	5.3	5.3	5.2	5.2	1.0	5.2	1.0	2.6	2.6	2.6	2.6	2.6
Intersection Summary	Other											
Area Type:	Other											
Cycle Length:	90											
Actuated Cycle Length:	36.5											
Natural Cycle:	65											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	0.20											
Intersection Signal Delay:	5.1											
Intersection Capacity Utilization:	46.8%											
Intersection LOS:	A											
ICU Level of Service:	A											
Analysis Period (min):	15											

SEV - Village Square TIS Update, Hamilton
PTSL (230019)
Page 6



Queues
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Base Year - 2023
AM Peak Hour

	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group	4	588	10	446	12	12	26
Lane Group Flow (vph)	0.01	0.20	0.01	0.15	0.01	0.01	0.02
v/c Ratio	8.0	5.3	7.7	5.2	1.0	3.5	2.2
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	8.0	5.3	7.7	5.2	1.0	3.5	2.2
Total Delay	2.2	42.5	3.6	31.7	0.8	2.5	2.8
Queue Length 50th (m)	25.0	470.9	30.0	760.1	40.6	284.6	
Queue Length 95th (m)	654	2973	712	2915	1590	1294	1606
Internal Link Dist (m)	0	0	0	0	0	0	0
Turn Bay Length (m)	0	0	0	0	0	0	0
Base Capacity (vph)	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0.01	0.20	0.01	0.15	0.01	0.01	0.02
Reduced v/c Ratio							
Intersection Summary							

HCM Signalized Intersection Capacity Analysis
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Base Year - 2023
AM Peak Hour

Movement	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT	SBR
Lane Configurations	4	539	2	9	394	17	1	0	10
Traffic Volume (vph)	4	539	2	9	394	17	1	0	10
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpb)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00
Fpb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fibb. ped/bikes	1.00	1.00	1.00	0.99	1.00	0.88	1.00	0.86	1.00
Frt	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Flt Protected	1442	3404	1802	3336	1639	1640	1606	1606	1606
Satd. Flow (prot)	0.49	1.00	0.43	1.00	0.97	0.75	1.00	1.00	1.00
Flt Permitted	749	3404	616	3336	1591	1294	1606	1606	1606
Satd. Flow (perm)	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Peak-Hour factor, PHF	4	586	2	10	428	18	1	0	11
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0
RTOR Reduction (vph)	4	588	0	10	445	0	2	0	12
Lane Group Flow (vph)	3	4	4	4	3	1	1	1	1
Confl. Peds. (#/hr)	25%	6%	0%	7%	18%	0%	10%	0%	0%
Heavy Vehicles (%)	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Turn Type	4	8	2	2	6	6	6	6	6
Protected Phases	4	8	2	2	6	6	6	6	6
Permitted Phases	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Actuated Green, G (s)	27.7	27.7	27.7	27.7	27.7	27.7	27.7	27.7	27.7
Effective Green, g (s)	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Actuated g/C Ratio	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Clearance Time (s)	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	497	2261	542	2216	228	186	231	231	231
Lane Grp Cap (vph)	c0.17	0.17	0.13	0.13	0.13	0.13	0.13	0.13	0.13
v/s Ratio Prot	0.01	0.26	0.02	0.20	0.01	0.01	0.06	0.02	0.02
v/c Ratio	2.4	2.8	2.4	2.7	15.3	15.3	15.4	15.3	15.3
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
Incremental Delay, d2	2.4	2.9	2.4	2.8	15.3	15.3	15.4	15.4	15.4
Delay (s)	A	A	A	A	B	B	B	B	B
Level of Service	2.9	2.7	2.7	2.7	15.3	15.3	15.4	15.4	15.4
Approach Delay (s)	A	A	A	A	B	B	B	B	B
Approach LOS	A	A	A	A	B	B	B	B	B
Intersection Summary									
HCM 2000 Control Delay	3.4	HCM 2000 Level of Service	A						
HCM 2000 Volume to Capacity ratio	0.23								
Actuated Cycle Length (s)	41.7	Sum of lost time (s)	8.0						
Intersection Capacity Utilization	46.8%	ICU Level of Service	A						
Analysis Period (min)	15								
c. Critical Lane Group									

Intersection: 3: Bishop Ryan Way & Bishop Reding Trail/Street A

Movement	EB	WB	NB	SB
Directions Served	L TR	L TR	L TR	L TR
Maximum Queue (m)	9.2	8.9	10.6	9.2
Average Queue (m)	1.3	0.9	2.5	2.9
95th Queue (m)	6.4	5.4	9.3	9.8
Link Distance (m)	138.7 125.4 112.5 71.7			
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Bishop Ryan Way & Bishop Tonnos Way

Movement	EB	WB	NB	SB
Directions Served	L TR	L TR	L TR	L TR
Maximum Queue (m)	9.2	8.9	10.6	9.2
Average Queue (m)	1.3	0.9	2.5	2.9
95th Queue (m)	6.4	5.4	9.3	9.8
Link Distance (m)	138.7 125.4 112.5 71.7			
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Bishop Ryan Way/Hazleton Avenue & Rymal Road West

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR
Maximum Queue (m)	11.7	52.4	47.3	8.4	35.1	39.1	9.2	15.4
Average Queue (m)	0.8	23.0	19.4	1.1	14.7	17.0	2.5	2.7
95th Queue (m)	5.4	44.4	41.6	6.0	29.6	34.5	9.1	10.2
Link Distance (m)	485.0 485.0 773.0 773.0 42.2 294.1							
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)	25.0 30.0 30.0 30.0							
Storage Blk Time (%)	7 0 0 0							
Queuing Penalty (veh)	0 0 0 0							

Network Summary

Network wide Queuing Penalty: 0

Intersection: 3: Bishop Ryan Way & Bishop Reding Trail/Street A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	26	0	0	28	0
Future Volume (vph)	0	0	0	0	0	0	0	26	0	0	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	1863	0	0	1863	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	1863	0	0	1863	0	0	1863	0
Link Speed (k/h)		50		50			50		50			50
Link Distance (m)		64.3		135.1			88.8		64.6			64.6
Travel Time (s)		4.6		9.7			6.4		4.7			4.7
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
Adj. Flow (vph)	0	0	0	0	0	0	28	0	0	0	30	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	28	0	0	0	30	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
Median Width(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	25	15	25	25	15	25	25	15	25
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Intersection Summary	Other											
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 6.7%	ICU Level of Service A											
Analysis Period (min) 15												

3: Bishop Ryan Way & Bishop Reding Trail/Street A

Base - 2023
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	0	0	0	0	0	0	0	0
Traffic Volume (veh/h)	0	0	0	0	0	0	0	26	0	0	28	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	26	0	0	28	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	0%	0%	Free	0%	0%
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0	0	28	0	0	30	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)							None					
Median type							None					
Median storage (veh)												
Upstream signal (m)											65	
pX platoon unblocked												
VC, conflicting volume	58	58	30	58	58	28	30				28	
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
VCU, unblocked vol	58	58	30	58	58	28	30				28	
IC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
IC, 2 stage (s)												
p0 queue free %	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
IF (s)	100	100	100	100	100	100	100				100	
CM capacity (veh/h)	939	833	1044	939	833	1047	1583				1585	
Direction_Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	0	28	30								
Volume Left	0	0	0	0								
Volume Right	0	0	0	0								
cSH	1700	1700	1583	1585								
Volume to Capacity	0.00	0.00	0.00	0.00								
Queue Length 95th (m)	0.0	0.0	0.0	0.0								
Control Delay (s)	0.0	0.0	0.0	0.0								
Lane LOS	A	A	A	A								
Approach Delay (s)	0.0	0.0	0.0	0.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Average Delay	0.0											
Intersection Capacity Utilization	6.7%											
Analysis Period (min)	15											
	ICU Level of Service A											

6: Bishop Ryan Way & Bishop Tonnos Way

Base - 2023
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	8	2	7	0	1	2	2	2	16	1	1	24
Traffic Volume (vph)	8	2	7	0	1	2	2	2	16	1	1	24
Future Volume (vph)	8	2	7	0	1	2	2	2	16	1	1	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Ft	0.943			0.910				0.993				0.986
Flt Protected	0.977							0.995				0.998
Satd. Flow (prot)	0	1750	0	0	1729	0	0	1877	0	0	0	1870
Flt Permitted	0.977							0.995				0.998
Satd. Flow (perm)	0	1750	0	0	1729	0	0	1877	0	0	0	1870
Link Speed (k/h)	50			50				50				50
Link Distance (m)	147.2			133.8				121.0				88.8
Travel Time (s)	10.6			9.6				8.7				6.4
Conf. Peds. (#/hr)	2						2					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	9	2	8	0	1	2	2	17	1	1	26	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	19	0	0	3	0	0	20	0	0	30	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Left	Left	Left	Right	Left	Left	Right
Median Width(m)	0.0			0.0			0.0		0.0		0.0	0.0
Link Offset(m)	0.0			0.0			0.0		0.0		0.0	0.0
Crosswalk Width(m)	4.8			4.8			4.8		4.8		4.8	4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			25			25		25		25	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	17.6%											
Analysis Period (min)	15											
	ICU Level of Service A											

HCM Unsignalized Intersection Capacity Analysis
 6: Bishop Ryan Way & Bishop Tonnos Way

Base - 2023
 PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume (vph)	8	2	7	0	1	2	2	2	16	1	1	24
Future Volume (vph)	8	2	7	0	1	2	2	2	16	1	1	24
Ideal Flow (vphpl)	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
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
Hourly flow rate (vph)	9	2	8	0	1	2	2	2	17	1	1	26
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	19	3	20	30								
Volume Left (vph)	9	0	2	1								
Volume Right (vph)	8	2	1	3								
Head (s)	-0.16	-0.40	-0.01	-0.05								
Departure Headway (s)	3.8	3.6	4.0	3.9								
Degree Utilization, x	0.02	0.00	0.02	0.03								
Capacity (veh/h)	917	974	889	910								
Control Delay (s)	6.9	6.6	7.1	7.0								
Approach Delay (s)	6.9	6.6	7.1	7.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay	7.0											
Level of Service	A											
Intersection Capacity Utilization	17.6%											
Analysis Period (min)	15											
ICU Level of Service	A											

Lanes, Volumes, Timings
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Base - 2023
 PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	7	703	7	21	709	40	3	0	23	21	0	13
Future Volume (vph)	7	703	7	21	709	40	3	0	23	21	0	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0	0.0
Storage Lanes	1	0	1	0	0	0	0	0	0	1	0	0
Taper Length (m)	30.0	0.0	30.0	0.0	0.0	0.0	7.5	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.998	0.992	0.992	0.992	0.992	0.879	0.995	0.950	0.850	0.850	0.850
Frt	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (prot)	1805	3567	0	1805	3543	0	0	1842	0	1805	1594	0
Flt Permitted	0.340	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358
Satd. Flow (perm)	645	3567	0	680	3543	0	0	1583	0	1403	1594	0
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	1	6	6	6	6	6	3	1	1	1	1	1
Link Speed (k/h)	50	50	50	50	50	50	50	50	50	50	50	50
Link Distance (m)	494.9	784.1	784.1	784.1	784.1	784.1	64.6	64.6	308.6	308.6	308.6	308.6
Travel Time (s)	35.6	56.5	56.5	56.5	56.5	56.5	4.7	4.7	22.2	22.2	22.2	22.2
Confl. Peds. (#/hr)	3	3	3	3	3	3	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	8	764	8	23	771	43	3	0	25	23	0	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	772	0	23	814	0	0	28	0	23	14	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Right	Left	Right
Median Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	25	25	25	15	25	15	25	25	15
Number of Detectors	1	2	1	1	2	1	1	2	1	2	1	2
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Detector 2 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

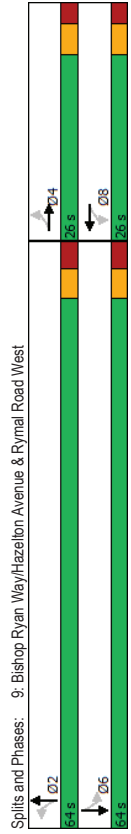
Lanes, Volumes, Timings
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Queues
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Base - 2023
 PM Peak Hour

Base - 2023
 PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perim	NA	4	Perim	NA	8	Perim	NA	2	Perim	NA	6
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases	4	4		8	8		2	2		6	6	
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0		30.0	30.0	
Minimum Split (s)	25.7	25.7		25.7	25.7		36.3	36.3		36.3	36.3	
Total Split (s)	26.0	26.0		26.0	26.0		64.0	64.0		64.0	64.0	
Total Split (%)	28.9%	28.9%		28.9%	28.9%		71.1%	71.1%		71.1%	71.1%	
Maximum Green (s)	20.3	20.3		20.3	20.3		57.7	57.7		57.7	57.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.4	2.4		2.4	2.4		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.7	-1.7		-1.7	-1.7		-2.3	-2.3		-2.3	-2.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		Min	Min		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		9.0	9.0		9.0	9.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effr Green (s)	32.6	32.6		32.6	32.6		33.8	33.8		33.8	33.8	
Actuated g/C Ratio	0.87	0.87		0.87	0.87		0.90	0.90		0.90	0.90	
v/c Ratio	0.01	0.25		0.04	0.26		0.02	0.02		0.02	0.01	
Control Delay	7.6	5.2		7.4	5.3		2.2	2.2		3.8	1.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.6	5.2		7.4	5.3		2.2	2.2		3.8	1.3	
LOS	A	A		A	A		A	A		A	A	
Approach Delay	5.3			5.4			2.2			2.9		
Approach LOS	A			A			A			A		
Intersection Summary												
Area Type:	Other											
Cycle Length:	90											
Actuated Cycle Length:	37.4											
Natural Cycle:	65											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	0.26											
Intersection Signal Delay:	5.2											
Intersection Capacity Utilization:	52.6%											
Analysis Period (min):	15											



SEV - Village Square Update
 PTSL (230019)
 Synchro 11 Report
 Page 6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	8	772	23	814	28	23	14					
v/c Ratio	0.01	0.25	0.04	0.26	0.02	0.02	0.01					
Control Delay	7.6	5.2	7.4	5.3	2.2	3.8	1.3					
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
Total Delay	7.6	5.2	7.4	5.3	2.2	3.8	1.3					
Queue Length 50th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
Queue Length 95th (m)	3.2	56.2	6.4	59.8	2.9	4.2	1.2					
Internal Link Dist (m)	25.0	470.9	30.0	760.1	40.6	284.6						
Turn Bay Length (m)	561	3106	592	3085	1571	1393	1582					
Base Capacity (vph)	0	0	0	0	0	0	0					
Starvation Cap Reductn	0	0	0	0	0	0	0					
Spillback Cap Reductn	0	0	0	0	0	0	0					
Storage Cap Reductn	0	0	0	0	0	0	0					
Reduced v/c Ratio	0.01	0.25	0.04	0.26	0.02	0.02	0.01					

SEV - Village Square Update
 PTSL (230019)
 Synchro 11 Report
 Page 7

Queuing and Blocking Report

Intersection: 3: Bishop Ryan Way & Bishop Reding Trail/Street A

Movement	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Directions Served	W	W	W	W	W	W	W	W	W	W	W	W
Maximum Queue (m)	7	703	7	21	709	40	3	0	23	21	0	13
Average Queue (m)	7	703	7	21	709	40	3	0	23	21	0	13
95th Queue (m)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Link Distance (m)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Upstream Blk Time (%)	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Queuing Penalty (veh)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Storage Blk Time (m)	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	0.88	1.00	0.85	1.00
Storage Blk Time (%)	0.95	1.00	0.95	1.00	0.99	1.00	0.99	1.00	0.95	1.00	0.95	1.00
Queuing Penalty (veh)	1803	3569	1805	3543	1643	1804	1595					
Storage Blk Time (m)	0.34	1.00	0.36	1.00	0.96	0.74	1.00					
Queuing Penalty (veh)	646	3569	681	3543	1585	1403	1595					

Intersection: 6: Bishop Ryan Way & Bishop Tonnos Way

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	13.6	8.8	10.5	10.7
Average Queue (m)	4.2	0.8	3.5	5.7
95th Queue (m)	12.0	4.8	10.8	13.0
Link Distance (m)	138.7	125.4	112.5	71.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Blk Time (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Movement	EB	EB	WB	NB	SB
Directions Served	L	T	TR	L	TR
Maximum Queue (m)	9.1	50.0	44.4	15.1	54.0
Average Queue (m)	1.6	28.2	24.7	4.5	25.5
95th Queue (m)	7.3	50.2	47.2	12.4	47.9
Link Distance (m)	485.0	485.0	485.0	773.0	773.0
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Blk Time (m)	25.0			30.0	
Storage Blk Time (%)	12			4	
Queuing Penalty (veh)	1			1	

Network Summary

Network wide Queuing Penalty: 2

HCM Signalized Intersection Capacity Analysis

9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	W	W	W	W	W	W	W	W	W	W	W	W
Traffic Volume (vph)	7	703	7	21	709	40	3	0	23	21	0	13
Future Volume (vph)	7	703	7	21	709	40	3	0	23	21	0	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	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	1.00	1.00	1.00	0.99	1.00	1.00	1.00	0.88	1.00	0.85	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.99	1.00	0.99	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1803	3569	1805	3543	1643	1804	1595					
Flt Permitted	0.34	1.00	0.36	1.00	0.96	0.74	1.00					
Satd. Flow (perm)	646	3569	681	3543	1585	1403	1595					
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	764	8	23	771	43	3	0	25	23	0	14
RTOR Reduction (vph)	0	0	0	2	0	0	24	0	0	0	12	0
Lane Group Flow (vph)	8	772	0	23	812	0	4	0	23	2	0	0
Confl. Peds. (#/hr)	3			3	1		1		1	1		1
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases	4			8		2		2		6		6
Permitted Phases	4			8		2		2		6		6
Actuated Green, G (s)	26.8	26.8	26.8	26.8	26.8	3.6		3.6		3.6		3.6
Effective Green, g (s)	28.5	28.5	28.5	28.5	28.5	5.9		5.9		5.9		5.9
Actuated G/C Ratio	0.67	0.67	0.67	0.67	0.67	0.14		0.14		0.14		0.14
Clearance Time (s)	5.7	5.7	5.7	5.7	5.7	6.3		6.3		6.3		6.3
Vehicle Extension (s)	2.0	2.0	2.0	3.0	3.0	3.0		3.0		3.0		3.0
Lane Grp Cap (vph)	434	2398		457	2381		220		185		221	
v/s Ratio Prot	0.22			c0.23								
v/s Ratio Perm	0.01			0.03		0.00		0.00		c0.02		0.00
v/c Ratio	0.02	0.32	0.05	0.34		0.02		0.12		0.01		0.01
Uniform Delay, d1	2.3	2.9	2.4	3.0		15.7		16.0		15.7		15.7
Progression Factor	1.00	1.00	1.00	1.00		1.00		1.00		1.00		1.00
Incremental Delay, d2	0.0	0.0	0.0	0.1		0.0		0.3		0.0		0.0
Delay (s)	2.3	2.9	2.4	3.0		15.8		16.2		15.7		15.7
Level of Service	A	A	A	A		B		B		B		B
Approach Delay (s)	2.9			3.0		15.8		16.1		15.7		15.7
Approach LOS	A			A		B		B		B		B
Intersection Summary												
HCM 2000 Control Delay	3.5 HCM 2000 Level of Service											
HCM 2000 Volume to Capacity ratio	0.30											
Actuated Cycle Length (s)	42.4 Sum of lost time (s)											
Intersection Capacity Utilization	52.6% ICU Level of Service											
Analysis Period (min)	15											
c Critical Lane Group												

Network Summary

Network wide Queuing Penalty: 2

Lanes, Volumes, Timings
3: Bishop Ryan Way & Bishop Reding Trail/Street A

HCM Unsignalized Intersection Capacity Analysis
3: Bishop Ryan Way & Bishop Reding Trail/Street A

Base Year - 2023
SAT Peak Hour

Base Year - 2023
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	42	0	0	0	39
Future Volume (vph)	0	0	0	0	0	0	0	42	0	0	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected												
Satd. Flow (prot)	0	1900	0	0	1900	0	0	1900	0	0	0	1900
Flt Permitted												
Satd. Flow (perm)	0	1900	0	0	1900	0	0	1900	0	0	0	1900
Link Speed (k/h)	50			50				50				50
Link Distance (m)	64.3			135.1				88.8				64.6
Travel Time (s)	4.6			9.7				6.4				4.7
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 (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	0	0	0	0	0	46	0	0	0	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	46	0	0	0	42
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8			4.8				4.8				4.8
Two way Left Turn Lane	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Headway Factor	25	15	15	25	25	15	25	25	15	25	25	15
Turning Speed (k/h)	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Sign Control												

Intersection Summary	Area Type:	Other
Control Type:	Unsignalized	
Intersection Capacity Utilization	6.7%	ICU Level of Service A
Analysis Period (min)	15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	42	0	0	0	39
Future Volume (Veh/h)	0	0	0	0	0	0	0	42	0	0	0	39
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0	0	46	0	0	0	42
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (m)												65
pK, platoon unblocked												
vC, conflicting volume	88	88	42	88	88	46	42	42	46			
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	88	88	42	88	88	46	42	42	46			
IC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1	4.1	4.1			
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2	2.2	2.2			
p0 queue free %	100	100	100	100	100	100	100	100	100			
p0 capacity (veh/h)	902	806	1034	902	806	1029	1580	1580	1575			
Direction_Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	0	46	42								
Volume Left	0	0	0	0								
Volume Right	0	0	0	0								
cSH	1700	1700	1580	1575								
Volume to Capacity	0.00	0.00	0.00	0.00								
Queue Length 95th (m)	0.0	0.0	0.0	0.0								
Control Delay (s)	0.0	0.0	0.0	0.0								
Lane LOS	A	A	A	A								
Approach Delay (s)	0.0	0.0	0.0	0.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Average Delay												
Intersection Capacity Utilization												
Analysis Period (min)												

Lanes, Volumes, Timings
6: Bishop Ryan Way & Bishop Tonnos Way

HCM Unsignalized Intersection Capacity Analysis
6: Bishop Ryan Way & Bishop Tonnos Way

Base Year - 2023
SAT Peak Hour

Base Year - 2023
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	8	31	4	0	3	2	3	32	2	1	33	5
Traffic Volume (vph)	8	31	4	0	3	2	3	32	2	1	33	5
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	0.989	0.991	0.996	0.946	0.993	0.993	0.993	0.993	0.993	0.984	0.984	0.999
Flt Protected	0	1862	0	0	1797	0	0	1879	0	0	1868	0
Satd. Flow (prot)	0.991	0.991	0.991	0.991	0.996	0.996	0.996	0.996	0.996	0.999	0.999	0.999
Flt Permitted	0	1862	0	0	1797	0	0	1879	0	0	1868	0
Satd. Flow (perm)	50	50	50	50	50	50	50	50	50	50	50	50
Link Speed (k/h)	147.2	147.2	147.2	147.2	147.2	147.2	147.2	147.2	147.2	147.2	147.2	147.2
Link Distance (m)	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6
Travel Time (s)	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Peak Hour Factor	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Heavy Vehicles (%)	9	34	4	0	3	2	3	35	2	1	36	5
Adj. Flow (vph)	0	47	0	0	5	0	0	40	0	0	42	0
Shared Lane Traffic (%)	No	No	No	No	No	No	No	No	No	No	No	No
Lane Group Flow (vph)	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Enter Blocked Intersection	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Alignment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Median Width (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset (m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Crosswalk Width (m)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Two way Left Turn Lane	25	15	15	25	25	15	25	25	15	25	15	15
Headway Factor	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Turning Speed (k/h)	15	15	15	15	15	15	15	15	15	15	15	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop

Intersection Summary	Area Type:	Control Type:	Intersection Capacity Utilization	Analysis Period (min)
Other	Unsignalized	ICU Level of Service A	18.8%	15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	8	31	4	0	3	2	3	32	2	1	33	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume (vph)	8	31	4	0	3	2	3	32	2	1	33	5
Future Volume (vph)	8	31	4	0	3	2	3	32	2	1	33	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	34	4	0	3	2	3	35	2	1	36	5
Direction_Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	47	5	40	42								
Volume Left (vph)	9	0	3	1								
Volume Right (vph)	4	2	2	5								
Head (s)	-0.01	-0.24	-0.01	-0.07								
Departure Headway (s)	4.1	3.9	4.0	4.0								
Degree Utilization, x	0.05	0.01	0.04	0.05								
Capacity (veh/h)	863	902	867	866								
Control Delay (s)	7.3	6.9	7.2	7.2								
Approach Delay (s)	7.3	6.9	7.2	7.2								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.2									
Level of Service			A									A
Intersection Capacity Utilization			18.8%									
Analysis Period (min)			15									

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Base Year - 2023
SAT Peak Hour

Base Year - 2023
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	4	4	1	1	1	2	2	1	39	25	0
Traffic Volume (vph)	11	851	18	21	866	24	2	1	39	25	0	19
Future Volume (vph)	11	851	18	21	866	24	2	1	39	25	0	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0	0.0
Storage Lanes	1	0	1	0	0	0	0	0	1	0	0	0
Taper Length (m)	30.0	30.0	1.0	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	1.00	0.99	1.00	0.99
Frt	0.997	0.997	0.996	0.996	0.996	0.996	0.874	0.998	0.950	0.850	0.850	0.850
FIT Protected	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (prot)	1444	3397	0	1805	3349	0	0	1637	0	1641	1594	0
FIT Permitted	0.263	0.271	0.271	0.271	0.271	0.271	0.271	0.271	0.271	0.271	0.271	0.271
Satd. Flow (perm)	400	3397	0	515	3349	0	0	1622	0	1256	1594	0
Right Turn on Red		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	2	50	3	50	50	50	50	50	50	50	50	50
Link Speed (km/h)	494.9	784.1	784.1	784.1	784.1	784.1	784.1	784.1	784.1	784.1	784.1	784.1
Link Distance (m)	35.6	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5
Travel Time (s)	3	4	4	4	4	4	4	4	4	4	4	4
Confli. Peds. (#/hr)	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Peak Hour Factor	25%	6%	0%	7%	18%	0%	0%	0%	10%	0%	0%	0%
Heavy Vehicles (%)	12	925	20	23	941	26	2	1	42	27	0	21
Adj. Flow (vph)												
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	945	0	23	967	0	0	45	0	27	21	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (km/h)	25	15	25	15	25	15	25	15	25	15	25	15
Number of Detectors	1	2	1	2	1	2	1	2	1	2	1	2
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Detector 2 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SEV - Village Square Update, Hamilton
PTSL (230019)
Synchro 11 Report
Page 5

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Base Year - 2023
SAT Peak Hour

Base Year - 2023
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	INA	4	4	8	8	2	2	2	6	6	6
Protected Phases												
Permitted Phases	4	4	4	4	8	8	2	2	2	6	6	6
Detector Phase												
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	25.7	25.7	25.7	25.7	25.7	25.7	36.3	36.3	36.3	36.3	36.3	36.3
Total Split (s)	26.0	26.0	26.0	26.0	26.0	26.0	64.0	64.0	64.0	64.0	64.0	64.0
Total Split (%)	28.9%	28.9%	28.9%	28.9%	28.9%	28.9%	71.1%	71.1%	71.1%	71.1%	71.1%	71.1%
Maximum Green (s)	20.3	20.3	20.3	20.3	20.3	20.3	57.7	57.7	57.7	57.7	57.7	57.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-2.3	-2.3	-2.3	-2.3	-2.3	-2.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Min	Min	None	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	9.0	9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	36.5	36.5	36.5	36.5	36.5	36.5	33.7	33.7	33.7	33.7	33.7	33.7
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.74	0.74	0.68	0.68	0.68	0.68	0.68	0.68
v/c Ratio	0.04	0.38	0.06	0.39	0.04	0.04	0.04	0.04	0.04	0.03	0.02	0.02
Control Delay	12.6	10.6	12.5	11.0	12.5	11.0	5.7	5.7	5.7	6.4	2.3	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	10.6	12.5	11.0	12.5	11.0	5.7	5.7	5.7	6.4	2.3	2.3
LOS	B	B	B	B	B	B	A	A	A	A	A	A
Approach Delay	10.6	10.6	11.0	11.0	11.0	11.0	5.7	5.7	5.7	6.4	4.6	4.6
Approach LOS	B	B	B	B	B	B	A	A	A	A	A	A
Intersection Summary	Other											
Area Type	Other											
Cycle Length	90											
Actuated Cycle Length	49.3											
Natural Cycle	65											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.39											
Intersection Signal Delay	10.6											
Intersection Capacity Utilization	56.4%											
Analysis Period (min)	15											

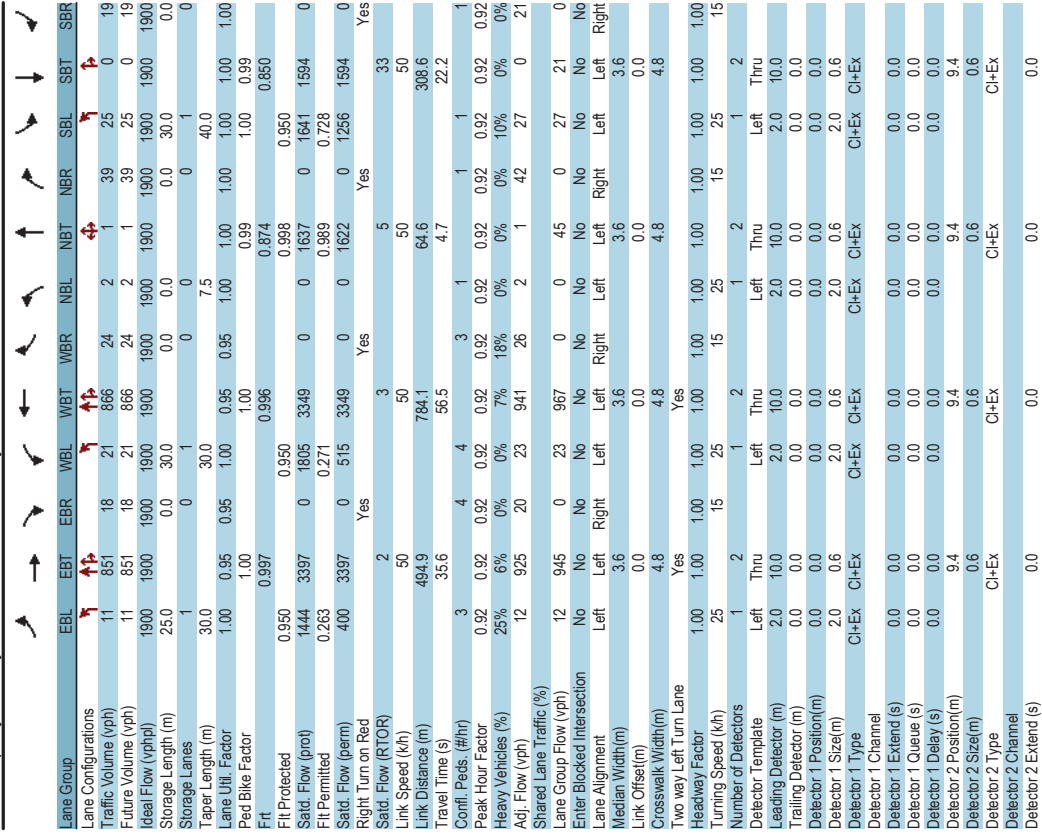
SEV - Village Square Update, Hamilton
PTSL (230019)
Synchro 11 Report
Page 6

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Base Year - 2023
SAT Peak Hour

Base Year - 2023
SAT Peak Hour



SEV - Village Square Update, Hamilton
PTSL (230019)
Synchro 11 Report
Page 6

Queues
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Base Year - 2023
SAT Peak Hour

	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group	12	945	23	967	45	27	21
v/c Ratio	0.04	0.38	0.06	0.39	0.04	0.03	0.02
Control Delay	12.6	10.6	12.5	11.0	5.7	6.4	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	10.6	12.5	11.0	5.7	6.4	2.3
Queue Length 50th (m)	0.0	0.0	0.0	0.0	0.2	0.1	0.0
Queue Length 95th (m)	4.4	74.0	6.7	#61.0	6.4	4.8	2.0
Internal Link Dist (m)	470.9			760.1	40.6		284.6
Turn Bay Length (m)	25.0		30.0			30.0	
Base Capacity (vph)	296	2518	381	2483	1598	1237	1571
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.38	0.06	0.39	0.03	0.02	0.01
Intersection Summary							
#	95th percentile volume exceeds capacity, queue may be longer.						
	Queue shown is maximum after two cycles.						

HCM Signalized Intersection Capacity Analysis
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Base Year - 2023
SAT Peak Hour

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	11	851	18	21	866	24	2	1	39
Traffic Volume (vph)	11	851	18	21	866	24	2	1	39
Future Volume (vph)	11	851	18	21	866	24	2	1	39
Ideal Flow (vphpb)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Fpb. ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	0.99
Fibb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	1.00	1.00	0.87	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1443	3397	1803	3349	1637	1637	1640	1595	1595
Flt Permitted	0.26	1.00	0.27	1.00	0.99	0.99	0.73	1.00	1.00
Satd. Flow (perm)	389	3397	514	3349	1623	1623	1256	1595	1595
Peak-Hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	925	20	23	941	26	2	1	42
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	0
Lane Group Flow (vph)	12	944	0	23	966	0	0	41	0
Confl. Peds. (#/hr)	3	4	4	4	3	1	1	1	1
Heavy Vehicles (%)	25%	0%	0%	7%	18%	0%	0%	10%	0%
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases	4		8		8		2		6
Permitted Phases	4		8		8		2		6
Actuated Green, G (s)	31.9	31.9	31.9	31.9	31.9	9.5	9.5	9.5	9.5
Effective Green, g (s)	33.6	33.6	33.6	33.6	33.6	11.8	11.8	11.8	11.8
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.63	0.22	0.22	0.22	0.22
Clearance Time (s)	5.7	5.7	5.7	5.7	5.7	6.3	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	251	2137	323	2107	368	277	352	352	352
v/s Ratio Prot	0.28		0.29		0.29		0.02		0.00
v/c Ratio Perm	0.03		0.04		0.03		0.02		0.00
v/c Ratio	0.05	0.44	0.07	0.46	0.11	0.10	0.10	0.01	0.01
Uniform Delay, d1	3.8	5.1	3.8	5.2	16.6	16.6	16.6	16.3	16.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.1	0.1	0.2	0.1	0.2	0.2	0.0	0.0
Delay (s)	3.8	5.1	3.9	5.3	16.8	16.8	16.7	16.3	16.3
Level of Service	A	A	A	A	B	B	B	B	B
Approach Delay (s)	5.1		5.3		16.8		16.5		16.5
Approach LOS	A		A		B		B		B
Intersection Summary									
HCM 2000 Control Delay	5.7								
HCM 2000 Level of Service	A								
HCM 2000 Volume to Capacity ratio	0.37								
Actuated Cycle Length (s)	53.4								
Sum of lost time (s)	8.0								
Intersection Capacity Utilization	56.4%								
ICU Level of Service	B								
Analysis Period (min)	15								
c. Critical Lane Group									

Intersection: 3: Bishop Ryan Way & Bishop Reding Trail/Street A

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	13.3	9.2	10.7	14.8
Average Queue (m)	7.3	1.4	6.6	6.8
95th Queue (m)	14.0	6.8	13.4	14.0
Link Distance (m)	138.7	125.4	112.5	71.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Bishop Ryan Way & Bishop Tonnos Way

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	13.3	9.2	10.7	14.8
Average Queue (m)	7.3	1.4	6.6	6.8
95th Queue (m)	14.0	6.8	13.4	14.0
Link Distance (m)	138.7	125.4	112.5	71.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Bishop Ryan Way/Hazleton Avenue & Rymal Road West

Movement	EB	WB	NB	SB
Directions Served	L	T	TR	L
Maximum Queue (m)	22.7	74.5	68.4	25.4
Average Queue (m)	2.9	42.1	38.7	5.6
95th Queue (m)	14.4	66.9	67.0	16.9
Link Distance (m)	485.0	485.0	773.0	773.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	0	21	0	12
Storage Blk Time (%)	0	2	0	3
Queuing Penalty (veh)	0	2	0	3

Network Summary

Network wide Queuing Penalty: 5

Appendix D

Gate Operations





BARRIER GATE OPERATORS

Models BGU & BGU-D

COMMON FEATURES

- Top mountable, easily accessible APeX controller
- Lockable galvanized steel cabinet with white or yellow powder coat finish
- 10', 12', or 14' wood arm included
- Heavy-duty right-angle oil bath gear reducer
- Heavy-duty harmonic link with bronze bushings
- UL325/UL991 compliant 24VDC control board

BGU-D FEATURES:

- Full time DC powered battery backup with seamless transition
- Full-time ½ HP DC motor
- Selectable fail safe or fail secure modes of operation
- Solar power capable
- Batteries included



BGU
115 VAC



BGU-D
Full-time DC powered
battery backup



All Models ETL Listed;
UL325 Compliant



Supporters and Proud Members of



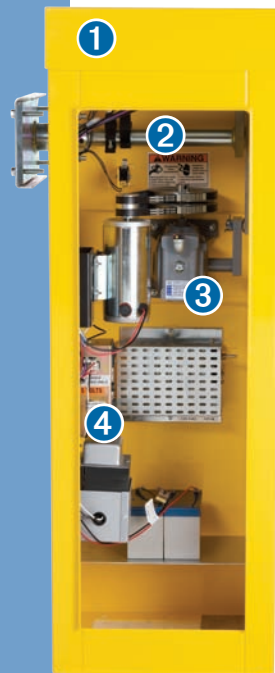
BGU & BGU-D SERIES OPERATOR SPECIFICATIONS						
	Model	HP	Voltage	Arm Length	Seconds to Open	Maximum Cycles
BGU	BGU-10-3	1/3	115	10'	2	Continuous
	BGU-12-3	1/3	115	12'	2.5	Continuous
	BGU-14-3	1/3	115	14'	2.5	Continuous
BGU-D	BGU-D-10-2	1/2	115 / 24 VDC Solar Optional	10'	2.8	Continuous
	BGU-D-12-2	1/2	115 / 24 VDC Solar Optional	12'	2.8	Continuous
	BGU-D-14-2	1/2	115 / 24 VDC Solar Optional	14'	2.8	Continuous

ELECTRICAL

- Solid state 24V control board UL325/UL991 compliant
- Diagnostic LED display for ease of setup and trouble shooting
- Integral entrapment sensing system with digital set point for accurate adjustment and enhanced safety
- Integrated maximum run and auto close timers
- Built-in dual gate capability using 3-wire shielded cable
- 24V DC power available for access control accessories

MECHANICAL

- Conveniently located top mounted controller
- Lockable powder coated cabinet available in yellow or white
- 10', 12', or 14' wood gate arm included, painted white with yellow and black warning tape on both sides
- Heavy-duty gate arm clamp with integrated cutting bracket



Model BGU-D shown with optional thermostatically controlled heater

1 APeX Controller

- UL325/UL991 compliant 24VDC control module
- Full featured for access control, security, and entrapment protection
- Integral MegaCode receiver
- On-board 3-button station

2 Cam operated limits

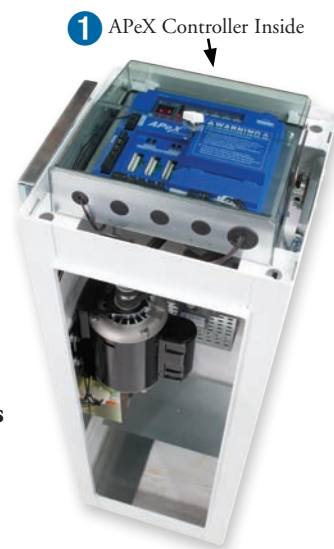
- Easily accessible through access door

3 Heavy-duty drive components

- Oil bath gear reduction
- Harmonic link with oil impregnated bronze bushings
- Dual V-belt drive

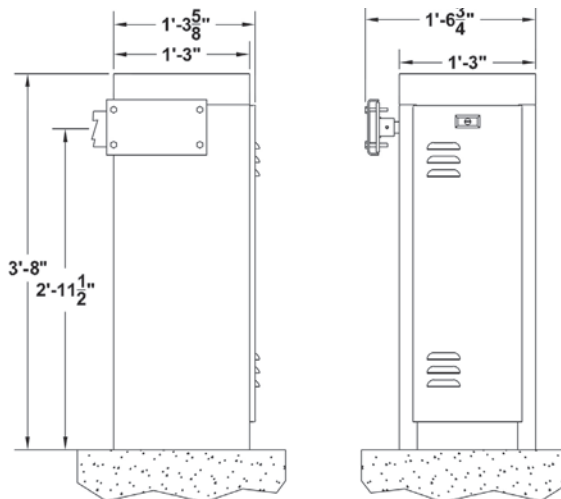
4 Standard convenience features

- Power on/off button
- Accessory power outlet on 115V operators



Model BGU top view

Dimensions



CAUTIONS



- Automatic gates are not for pedestrians
- Automatic gate operators are designed for vehicular traffic only; operators are powerful and can cause serious injury or death; DIRECT ALL PEDESTRIAN TRAFFIC TO A SEPARATE PEDESTRIAN GATE
- UL325 requires use of contact or non-contact anti-entrapment devices
- ASTM F2200 requires that all exposed rollers are covered

Appendix E

TTS Trip Distribution



Mon Oct 28 2019 10:40:47 GMT-0400 (Eastern Daylight Time) - Run Time: 2400ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

RowG:
ColG:(5058)
TblG:

Filters:
No Filters

Trip 2016
ROW : gta06_orig
COLUMN : gta06_dest
gta06_orig gta06_dest total

79	1	18
90	1	37
2083	1	55
2406	1	4
3425	1	14
3464	1	7
3633	1	53
3696	1	66
3821	1	35
4002	1	37
4052	1	37
4056	1	46
4059	1	15
4068	1	22
4077	1	150
4079	1	6
4083	1	12
5005	1	54
5009	1	113
5010	1	8
5033	1	171
5036	1	89
5038	1	36
5040	1	102
5041	1	16
5043	1	86
5044	1	37
5045	1	33
5046	1	77
5047	1	358
5048	1	39
5050	1	123
5051	1	129
5052	1	48
5053	1	11
5055	1	16
5056	1	132
5058	1	639
5059	1	91
5060	1	98
5061	1	17
5065	1	61
5066	1	462
5067	1	75
5069	1	50
5073	1	41
5075	1	156
5084	1	158
5086	1	51

5087	1	158
5089	1	48
5091	1	113
5092	1	117
5094	1	67
5097	1	25
5098	1	175
5099	1	37
5102	1	87
5103	1	7
5104	1	135
5105	1	33
5107	1	75
5109	1	22
5112	1	152
5113	1	78
5114	1	31
5115	1	26
5116	1	39
5119	1	76
5121	1	95
5122	1	49
5123	1	52
5125	1	79
5126	1	82
5129	1	34
5130	1	39
5132	1	79
5133	1	82
5139	1	151
5140	1	105
5142	1	266
5143	1	59
5144	1	93
5149	1	64
5150	1	39
5151	1	184
5155	1	63
5159	1	133
5163	1	24
5167	1	24
5170	1	54
5178	1	20
5180	1	83
5181	1	14
5186	1	107
5194	1	126
5197	1	88
5199	1	63
5212	1	18
5216	1	16
5237	1	15
5242	1	37
5250	1	43
6012	1	46
6050	1	12
6146	1	11
6359	1	21
6360	1	52
7375	1	37
7379	1	12
8087	1	50
8310	1	16
8649	1	42
8905	1	60
8907	1	19
8910	1	378
8911	1	340
8916	1	20
8956	1	21
9068	1	48

Mon Oct 28 2019 10:41:59 GMT-0400 (Eastern Daylight Time) - Run Time: 2575ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

RowG:(5058)

ColG:

TblG:

Filters:

No Filters

Trip 2016

ROW : gta06_orig

COLUMN : gta06_dest

gta06_orig gta06_dest total

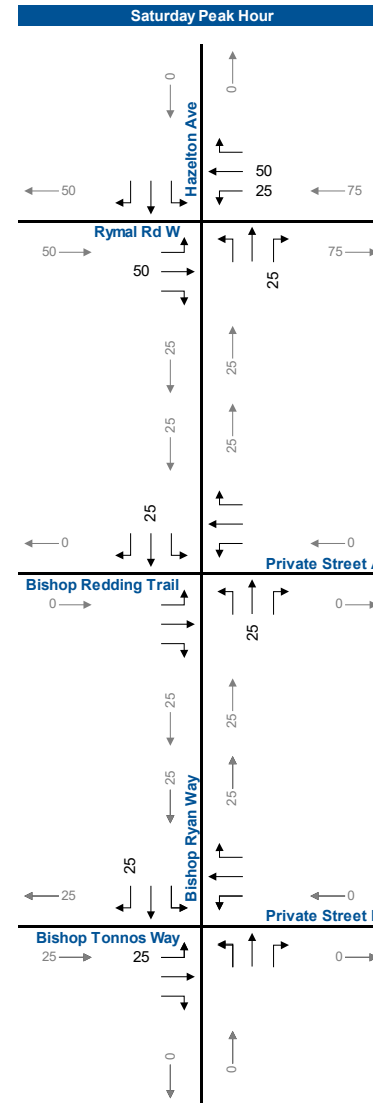
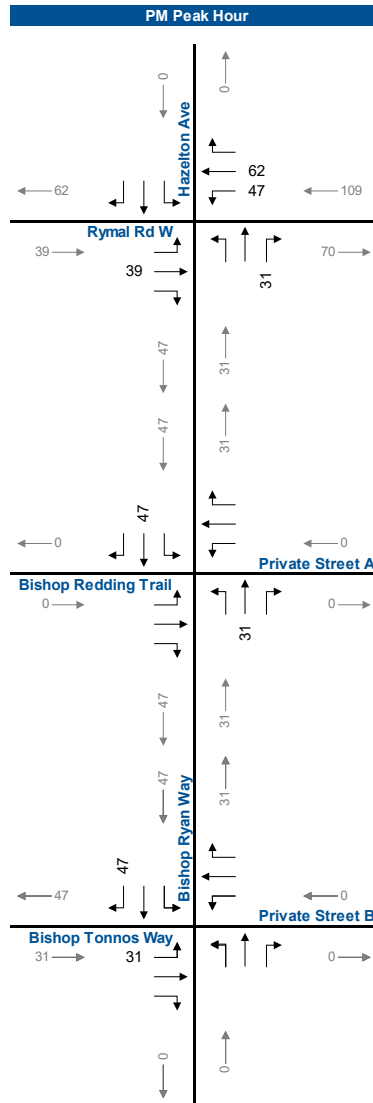
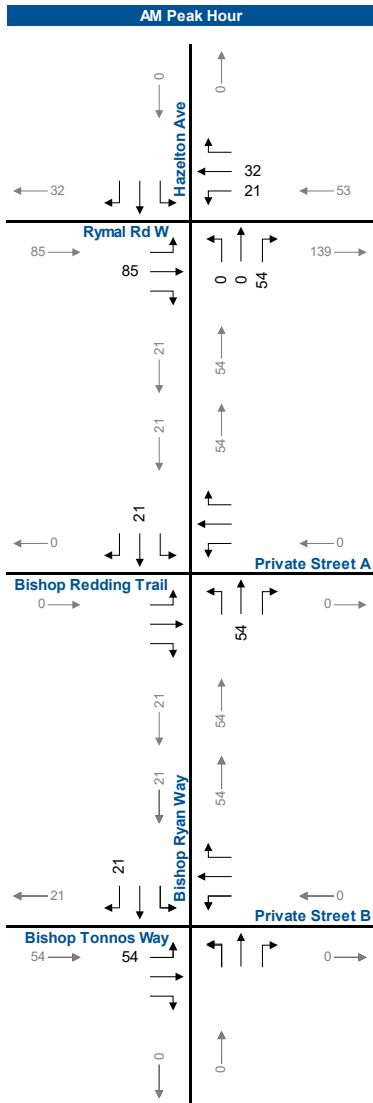
1	79	18
1	90	37
1	2083	55
1	2406	4
1	3464	7
1	3633	53
1	4002	37
1	4051	18
1	4052	37
1	4053	39
1	4061	24
1	4077	100
1	4079	6
1	4082	25
1	5005	54
1	5010	8
1	5033	171
1	5036	15
1	5038	13
1	5040	43
1	5041	16
1	5043	174
1	5044	45
1	5046	51
1	5047	868
1	5050	173
1	5051	83
1	5052	48
1	5056	232
1	5058	639
1	5060	40
1	5065	128
1	5066	377
1	5067	75
1	5068	188
1	5069	50
1	5073	69
1	5075	71
1	5082	80
1	5084	277
1	5086	30
1	5087	136
1	5089	113
1	5091	207
1	5092	92
1	5094	67
1	5095	39
1	5097	67
1	5098	113

1	5099	37
1	5100	35
1	5101	68
1	5102	87
1	5104	83
1	5105	33
1	5108	21
1	5109	22
1	5112	238
1	5115	116
1	5116	103
1	5119	76
1	5121	78
1	5122	49
1	5123	52
1	5125	68
1	5128	78
1	5129	34
1	5130	70
1	5131	15
1	5133	82
1	5135	15
1	5139	132
1	5140	96
1	5142	226
1	5143	59
1	5144	76
1	5147	24
1	5149	64
1	5150	27
1	5151	184
1	5154	30
1	5155	38
1	5163	18
1	5167	24
1	5172	60
1	5176	39
1	5178	20
1	5179	17
1	5180	83
1	5181	14
1	5186	107
1	5194	37
1	5197	81
1	5198	82
1	5202	19
1	5205	62
1	5216	16
1	5226	12
1	5242	37
1	5245	47
1	5250	43
1	6012	46
1	6146	11
1	6166	11
1	6359	21
1	6360	44
1	7097	19
1	7302	49
1	7375	37
1	7379	12
1	8087	50
1	8905	36
1	8907	19
1	8911	340
1	8916	20
1	8945	18
1	9068	48
1	9998	12

Appendix F

Background Development Traffic Volumes





Background Developments Traffic Volumes

Appendix G

Background Synchro/SimTraffic Reports



Lanes, Volumes, Timings
3: Bishop Ryan Way & Bishop Reding Trail/Street A

HCM Unsignalized Intersection Capacity Analysis
3: Bishop Ryan Way & Bishop Reding Trail/Street A

Background - 2031
AM Peak Hour

Background - 2031
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	66	0	0	0	34
Future Volume (vph)	0	0	0	0	0	0	0	66	0	0	0	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	1863	0	0	1863	0	0	0	1863
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	1863	0	0	1863	0	0	0	1863
Link Speed (k/h)	50			50				50				50
Link Distance (m)	64.3			135.1				88.8				64.6
Travel Time (s)	4.6			9.7				6.4				4.7
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
Adj. Flow (vph)	0	0	0	0	0	0	0	72	0	0	0	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	72	0	0	0	37
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
Median Width (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8			4.8				4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	25	15	25	25	15	25	25	15	25
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	6.8%											
Analysis Period (min)	15											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	66	0	0	0	34
Future Volume (Veh/h)	0	0	0	0	0	0	0	66	0	0	0	34
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0	0	72	0	0	0	37
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None				None
Median storage (veh)												
Upstream signal (m)												65
pX, platoon unblocked												
vC, conflicting volume	109	109	37	109	109	72	37					72
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	109	109	37	109	109	72	37					72
iC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1					4.1
iC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2					2.2
p0 queue free %	100	100	100	100	100	100	100	100	100	100	100	100
p0 capacity (veh/h)	870	781	1035	870	781	990	1574					1528
Direction_Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	0	72	37								
Volume Left	0	0	0	0								
Volume Right	0	0	0	0								
cSH	1700	1700	1574	1528								
Volume to Capacity	0.00	0.00	0.00	0.00								
Queue Length 95th (m)	0.0	0.0	0.0	0.0								
Control Delay (s)	0.0	0.0	0.0	0.0								
Lane LOS	A	A	A	A								
Approach Delay (s)	0.0	0.0	0.0	0.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Average Delay	0.0											
Intersection Capacity Utilization	6.8%											
ICU Level of Service	A											
Analysis Period (min)	15											

Lanes, Volumes, Timings
6: Bishop Ryan Way & Bishop Tonnos Way

Background - 2031
AM Peak Hour

EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group											
57	1	3	0	2	2	3	6	0	1	8	25
Traffic Volume (vph)											
57	1	3	0	2	2	3	6	0	1	8	25
Future Volume (vph)											
1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)											
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor											
Frt 0.994											
Flt Protected 0.955											
Satd. Flow (prot) 0.1768 0 0 1736 0 0 1835 0 0 1677 0											
Flt Permitted 0.955											
Satd. Flow (perm) 0.1768 0 0 1736 0 0 1835 0 0 1677 0											
Link Speed (k/h) 50											
Link Distance (m) 147.2 133.8											
Travel Time (s) 10.6 9.6											
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											
Adj. Flow (vph) 62 1 3 0 2 2 3 7 0 1 9 27											
Shared Lane Traffic (%)											
Lane Group Flow (vph) 0 66 0 0 4 0 0 10 0 0 37 0											
Enter Blocked Intersection											
Lane Alignment											
Median Width(m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0											
Link Offset(m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0											
Crosswalk Width(m) 4.8 4.8											
Two way Left Turn Lane											
Headway Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00											
Turning Speed (k/h) 25 15 25 15 25 15 25 15 25 15 25											
Sign Control											
Stop Stop Stop Stop Stop Stop Stop Stop Stop Stop Stop											
Intersection Summary											
Area Type: Other											
Control Type: Unsignalized											
Intersection Capacity Utilization 20.1%											
Analysis Period (min) 15											

HCM Unsignalized Intersection Capacity Analysis
6: Bishop Ryan Way & Bishop Tonnos Way

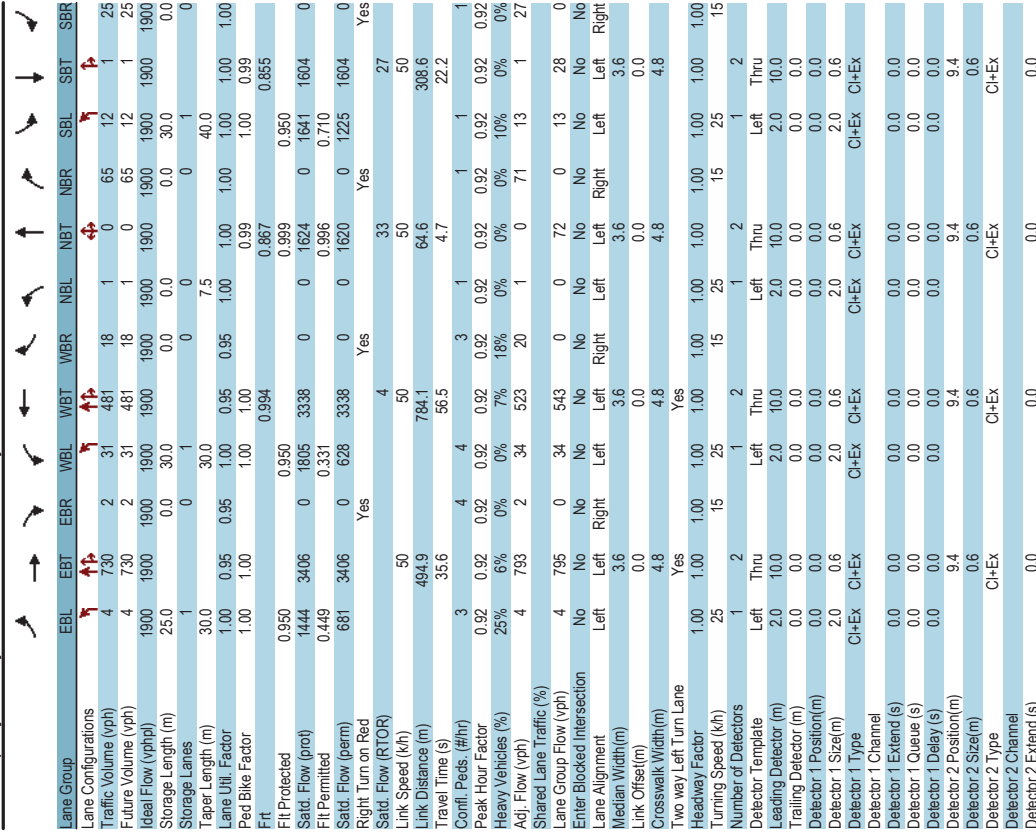
Background - 2031
AM Peak Hour

EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement											
57	1	3	0	2	2	3	6	0	1	8	25
Traffic Volume (vph)											
57	1	3	0	2	2	3	6	0	1	8	25
Future Volume (vph)											
0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Peak Hour Factor											
62	1	3	0	2	2	3	7	0	1	9	27
Hourly flow rate (vph)											
Direction_Lane #											
EB 1 WB 1 NB 1 SB 1											
Volume Total (vph) 66 4 10 37											
Volume Left (vph) 62 0 3 1											
Volume Right (vph) 3 2 0 27											
Head (s) 0.19 -0.27 0.09 -0.40											
Departure Headway (s) 4.2 3.8 4.2 3.7											
Degree Utilization, x 0.08 0.00 0.01 0.04											
Capacity (veh/h) 844 929 834 958											
Control Delay (s) 7.5 6.8 7.2 6.8											
Approach Delay (s) 7.5 6.8 7.2 6.8											
Approach LOS A A A A											
Intersection Summary											
Delay 7.3											
Level of Service A											
Intersection Capacity Utilization 20.1%											
Analysis Period (min) 15											

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
Traffic Volume (vph)	4730	231	481	18	1	0	65	12	1	25		
Future Volume (vph)	4730	231	481	18	1	0	65	12	1	25		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0	30.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0	0.0	0.0
Storage Lanes	1	0	1	0	0	0	0	1	0	1	0	0
Taper Length (m)	30.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00	0.99	1.00
Frt	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (prot)	1444	3406	0	1805	3338	0	0	1624	0	1641	1604	0
FIT Permitted	0.449	0.331	0.331	0.331	0.331	0.331	0.331	0.331	0.331	0.331	0.331	0.331
Satd. Flow (perm)	681	3406	0	628	3338	0	0	1620	0	1225	1604	0
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	4	4	4	4	4	4	4	4	4	4	4	4
Link Speed (km/h)	50	50	50	50	50	50	50	50	50	50	50	50
Link Distance (m)	494.9	784.1	784.1	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6
Travel Time (s)	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6
Confl. Peds. (#/hr)	3	4	4	4	4	4	4	4	4	4	4	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	0.92
Heavy Vehicles (%)	25%	6%	0%	7%	16%	0%	0%	10%	0%	0%	0%	0%
Adj. Flow (vph)	4793	234	523	20	1	0	71	13	1	27		
Shared Lane Traffic (%)	4	795	0	34	543	0	0	72	0	13	28	0
Lane Group Flow (vph)	No	No	No	No	No	No	No	No	No	No	No	No
Enter Blocked Intersection	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (km/h)	25	15	25	15	25	15	25	15	25	15	25	15
Number of Detectors	1	2	1	2	1	2	1	2	1	2	1	2
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Detector 2 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 2 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	NA	Perm	NA	NA	Perm	NA	NA	Perm	NA	NA
Protected Phases	4	4	4	8	8	8	2	2	2	6	6	6
Permitted Phases	4	4	4	8	8	8	2	2	2	6	6	6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase	10.0	10.0	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0	30.0
Minimum Initial (s)	25.7	25.7	25.7	25.7	25.7	25.7	36.3	36.3	36.3	36.3	36.3	36.3
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0	64.0	64.0	64.0	64.0	64.0	64.0
Total Split (s)	28.9%	28.9%	28.9%	28.9%	28.9%	28.9%	71.1%	71.1%	71.1%	71.1%	71.1%	71.1%
Total Split (%)	20.3	20.3	20.3	20.3	20.3	20.3	57.7	57.7	57.7	57.7	57.7	57.7
Maximum Green (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Yellow Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-2.3	-2.3	-2.3	-2.3	-2.3	-2.3
Lost Time Adjust (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost Time (s)	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Min	Min	Min	None	None	None	None	None	None
Vehicle Extension (s)	7.0	7.0	7.0	7.0	7.0	7.0	9.0	9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	31.7	31.7	31.7	31.7	31.7	31.7	34.5	34.5	34.5	34.5	34.5	34.5
Actuated G/C Ratio	0.01	0.31	0.07	0.22	0.05	0.05	0.01	0.02	0.01	0.02	0.01	0.02
v/c Ratio	12.0	9.7	12.1	9.0	4.2	4.2	6.4	3.5	6.4	3.5	6.4	3.5
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	12.0	9.7	12.1	9.0	4.2	4.2	6.4	3.5	6.4	3.5	6.4	3.5
Total Delay	12.0	9.7	12.1	9.0	4.2	4.2	6.4	3.5	6.4	3.5	6.4	3.5
LOS	B	A	B	A	A	A	A	A	A	A	A	A
Approach Delay	9.7	9.7	9.2	9.2	4.2	4.2	4.5	4.5	4.5	4.5	4.5	4.5
Approach LOS	A	A	A	A	A	A	A	A	A	A	A	A
Intersection Summary	Other											
Area Type:	Other											
Cycle Length:	90											
Actuated Cycle Length:	42.7											
Natural Cycle:	65											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	0.31											
Intersection Signal Delay:	9.1											
Intersection Capacity Utilization:	57.4%											
Analysis Period (min):	15											

Queues
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Background - 2031
AM Peak Hour

	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group	4	795	34	543	72	13	28
Lane Group Flow (vph)	0.01	0.31	0.07	0.22	0.05	0.01	0.02
v/c Ratio	12.0	9.7	12.1	9.0	4.2	6.4	3.5
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	12.0	9.7	12.1	9.0	4.2	6.4	3.5
Total Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Length 50th (m)	2.1	59.5	8.6	38.6	7.4	2.9	3.2
Queue Length 95th (m)	2.1	470.9	8.6	760.1	40.6	284.6	30.0
Internal Link Dist (m)	25.0						
Turn Bay Length (m)	505	2524	465	2475	1596	1207	1580
Base Capacity (vph)	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.31	0.07	0.22	0.05	0.01	0.02
Intersection Summary							

HCM Signalized Intersection Capacity Analysis
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Background - 2031
AM Peak Hour

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	4	730	2	31	481	18	1	0	65
Traffic Volume (vph)	4	730	2	31	481	18	1	0	65
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpb)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00
Fpb. ped/bikes	1.00	1.00	1.00	1.00	1.00	0.87	1.00	1.00	1.00
Fibb. ped/bikes	1.00	1.00	1.00	0.99	1.00	0.87	1.00	0.86	1.00
Frt	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Flt Protected	1442	3405	1802	3340	1626	1626	1640	1606	1606
Satd. Flow (prot)	0.45	1.00	0.33	1.00	1.00	0.71	1.00	1.00	1.00
Flt Permitted	682	3405	628	3340	1621	1621	1226	1606	1606
Satd. Flow (perm)	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Peak-Hour factor, PHF	4	793	2	34	523	20	1	0	71
Adj. Flow (vph)	0	0	0	0	2	0	0	26	0
RTOR Reduction (vph)	4	795	0	34	541	0	0	46	0
Lane Group Flow (vph)	3	4	4	4	3	1	1	1	1
Confl. Peds. (#/hr)	25%	0%	0%	7%	18%	0%	0%	10%	0%
Heavy Vehicles (%)	Perm	NA	Perm	NA	Perm	NA	Perm	NA	NA
Turn Type	4	8	2	2	6	6	6	6	6
Protected Phases	4	8	2	2	6	6	6	6	6
Permitted Phases	26.2	26.2	26.2	26.2	8.2	8.2	8.2	8.2	8.2
Actuated Green, G (s)	27.9	27.9	27.9	27.9	10.5	10.5	10.5	10.5	10.5
Effective Green, g (s)	0.60	0.60	0.60	0.60	0.23	0.23	0.23	0.23	0.23
Actuated g/C Ratio	5.7	5.7	5.7	5.7	6.3	6.3	6.3	6.3	6.3
Clearance Time (s)	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	410	2047	377	2008	366	277	363	363	363
Lane Grp Cap (vph)	c0.23	0.05	0.05	0.05	c0.03	0.01	0.01	0.01	0.01
v/s Ratio Prot	0.01	0.39	0.09	0.27	0.13	0.05	0.02	0.02	0.02
v/c Ratio	3.7	4.8	3.9	4.4	14.3	14.0	13.9	13.9	13.9
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	0.0	0.0	0.1	0.1	0.2	0.1	0.0	0.0	0.0
Incremental Delay, d2	3.7	4.9	4.0	4.5	14.5	14.1	14.0	14.0	14.0
Delay (s)	A	A	A	A	B	B	B	B	B
Level of Service	4.9	4.4	4.4	4.4	14.5	14.0	14.0	14.0	14.0
Approach Delay (s)	A	A	A	A	B	B	B	B	B
Approach LOS	A	A	A	A	B	B	B	B	B
Intersection Summary									
HCM 2000 Control Delay	5.4	HCM 2000 Level of Service							A
HCM 2000 Volume to Capacity ratio	0.32								
Actuated Cycle Length (s)	46.4	Sum of lost time (s)							8.0
Intersection Capacity Utilization	57.4%	ICU Level of Service							B
Analysis Period (min)	15								
c. Critical Lane Group									

Intersection: 3: Bishop Ryan Way & Bishop Reding Trail/Street A

Movement	EB	WB	NB	SB
Directions Served	L TR	L TR	L TR	L TR
Maximum Queue (m)	15.5	9.2	10.7	14.3
Average Queue (m)	8.2	1.1	2.3	6.4
95th Queue (m)	14.2	5.9	9.0	13.7
Link Distance (m)	138.7	125.4	112.5	71.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Bishop Ryan Way & Bishop Tonnos Way

Movement	EB	WB	NB	SB
Directions Served	L TR	L TR	L TR	L TR
Maximum Queue (m)	15.5	9.2	10.7	14.3
Average Queue (m)	8.2	1.1	2.3	6.4
95th Queue (m)	14.2	5.9	9.0	13.7
Link Distance (m)	138.7	125.4	112.5	71.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Bishop Ryan Way/Hazelon Avenue & Rymal Road West

Movement	EB	WB	NB	SB
Directions Served	L TR	L TR	L TR	L TR
Maximum Queue (m)	18.2	64.4	60.6	20.4
Average Queue (m)	1.4	35.7	31.9	6.9
95th Queue (m)	12.3	56.0	55.1	17.1
Link Distance (m)	485.0	485.0	773.0	773.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	25.0			30.0
Storage Blk Time (%)	16			3
Queuing Penalty (veh)	1			1

Network Summary

Network wide Queuing Penalty: 2

Intersection: 3: Bishop Ryan Way & Bishop Reding Trail/Street A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	59	0	0	78	0
Future Volume (vph)	0	0	0	0	0	0	0	59	0	0	78	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	1863	0	0	1863	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	1863	0	0	1863	0	0	1863	0
Link Speed (k/h)		50		50		50		50		50		50
Link Distance (m)		64.3		135.1		88.8		64.6		64.6		4.7
Travel Time (s)		4.6		9.7		6.4		6.4		6.4		0.92
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
Adj. Flow (vph)	0	0	0	0	0	0	0	64	0	0	85	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	64	0	0	85	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
Median Width(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8		4.8		4.8		4.8		4.8		4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	25	15	25	25	15	25	25	15	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free
Intersection Summary	Other											
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization %	7.4%											
ICU Level of Service A												
Analysis Period (min)	15											

3: Bishop Ryan Way & Bishop Reding Trail/Street A

Background - 2031
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	59	0	0	78	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	59	0	0	78	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	0%	0%	Free	0%	0%
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0	0	64	0	0	85	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None					
Median storage (veh)												
Upstream signal (m)												65
pX platoon unblocked												
VC, conflicting volume	149	149	85	149	149	64	85					64
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
VCU, unblocked vol	149	149	85	149	149	64	85					64
IC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1					4.1
IC, 2 stage (s)												
p0 queue free %	3.5	4.0	3.3	3.5	4.0	3.3	2.2					2.2
IF (s)	100	100	100	100	100	100	100					100
CM capacity (veh/h)	819	743	974	819	743	1000	1512					1538
Direction_Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	0	64	85								
Volume Left	0	0	0	0								
Volume Right	0	0	0	0								
cSH	1700	1700	1512	1538								
Volume to Capacity	0.00	0.00	0.00	0.00								
Queue Length 95th (m)	0.0	0.0	0.0	0.0								
Control Delay (s)	0.0	0.0	0.0	0.0								
Lane LOS	A	A	A	A								
Approach Delay (s)	0.0	0.0	0.0	0.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Average Delay	0.0											
Intersection Capacity Utilization	7.4%											
ICU Level of Service	A											
Analysis Period (min)	15											

6: Bishop Ryan Way & Bishop Tonnos Way

Background - 2031
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	2	8	0	1	2	2	17	1	1	26	50
Future Volume (vph)	40	2	8	0	1	2	2	17	1	1	26	50
Ideal Flow (vphbl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Ft	0.977			0.910			0.994					0.912
Flt Protected	0.962						0.995					0.999
Satd. Flow (prot)	0	1786	0	0	1729	0	0	1879	0	0	1731	0
Flt Permitted	0.962						0.995					0.999
Satd. Flow (perm)	0	1786	0	0	1729	0	0	1879	0	0	1731	0
Link Speed (k/h)	50			50			50					50
Link Distance (m)	147.2			133.8			121.0					88.8
Travel Time (s)	10.6			9.6			8.7					6.4
Conf. Peds. (#/hr)	2			2			2					2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	43	2	9	0	1	2	2	18	1	1	28	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	54	0	0	3	0	0	21	0	0	83	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Right	Left	Right
Median Width (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8			4.8			4.8					4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	25	25	15	25	25	15	25	25	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	20.8%											
ICU Level of Service A												
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
 6: Bishop Ryan Way & Bishop Tonnos Way

Background - 2031
 PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		Stop	Stop		Stop			Stop				
Traffic Volume (vph)	40	2	8	0	1	2	2	17	1	1	26	50
Future Volume (vph)	40	2	8	0	1	2	2	17	1	1	26	50
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
Hourly flow rate (vph)	43	2	9	0	1	2	2	18	1	1	28	54
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	54	3	21	83								
Volume Left (vph)	43	0	2	1								
Volume Right (vph)	9	2	1	54								
Head (s)	0.06	-0.40	-0.01	-0.39								
Departure Headway (s)	4.2	3.8	4.1	3.7								
Degree Utilization, x	0.06	0.00	0.02	0.08								
Capacity (veh/h)	839	924	854	964								
Control Delay (s)	7.4	6.8	7.2	7.0								
Approach Delay (s)	7.4	6.8	7.2	7.0								
Approach LOS	A	A	A	A								
Intersection Summary			7.2									
Level of Service			A									
Intersection Capacity Utilization			20.8%			ICU Level of Service					A	
Analysis Period (min)			15									

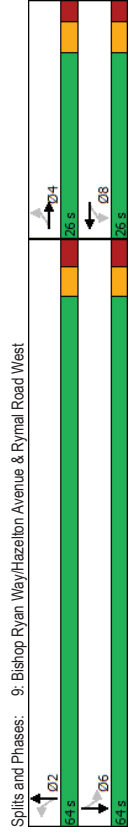
Lanes, Volumes, Timings
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Background - 2031
 PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		Left	Thru		Left	Thru		Left	Thru		Left	Thru
Traffic Volume (vph)	8	855	8	70	884	43	3	0	56	23	0	14
Future Volume (vph)	8	855	8	70	884	43	3	0	56	23	0	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0
Storage Lanes	1	0	1	0	0	0	0	0	0	1	0	0
Taper Length (m)	30.0	0.0	30.0	0.0	0.0	0.0	7.5	0.0	0.0	40.0	0.0	0.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00			1.00			0.99			1.00		0.99
Frt	0.999			0.993			0.871			0.850		
Flt/Protected	0.950			0.950			0.988			0.950		
Satd. Flow (prot)	1805	3571	0	1805	3546	0	0	1631	0	1805	1594	0
Flt/Permitted	0.248			0.273			0.988			0.715		
Satd. Flow (perm)	471	3571	0	519	3546	0	0	1615	0	1357	1594	0
Right Turn on Red		Yes		Yes			Yes		Yes			Yes
Satd. Flow (RTOR)	1			5			33			33		
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	494.9			784.1			64.6			308.6		
Travel Time (s)	35.6			56.5			4.7			22.2		
Confli. Peds. (#/hr)	3			3			1			1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	9	929	9	76	961	47	3	0	61	25	0	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	938	0	76	1008	0	0	64	0	25	15	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.6			3.6			3.6			3.6		
Link Offset (m)	0.0			0.0			0.0			0.0		
Crosswalk Width (m)	4.8			4.8			4.8			4.8		
Two way Left Turn Lane	Yes			Yes			Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	25	15	25	25	15	25	25	15	15
Number of Detectors	1	2	1	1	2	1	1	2	1	2	1	2
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4			9.4		
Detector 2 Size (m)	0.6			0.6			0.6			0.6		
Detector 2 Type	Ch+Ex			Ch+Ex			Ch+Ex			Ch+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		

Lanes, Volumes, Timings
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West
 Background - 2031
 PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perim	NA	4	Perim	NA	8	Perim	NA	2	Perim	NA	6
Protected Phases	4	4	8	8	8	2	2	2	2	6	6	6
Permitted Phases	4	4	8	8	8	2	2	2	2	6	6	6
Detector Phase	4	4	8	8	8	2	2	2	2	6	6	6
Switch Phase	4	4	8	8	8	2	2	2	2	6	6	6
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	25.7	25.7	25.7	25.7	25.7	36.3	36.3	36.3	36.3	36.3	36.3	36.3
Total Split (s)	26.0	26.0	26.0	26.0	26.0	64.0	64.0	64.0	64.0	64.0	64.0	64.0
Total Split (%)	28.9%	28.9%	28.9%	28.9%	28.9%	71.1%	71.1%	71.1%	71.1%	71.1%	71.1%	71.1%
Maximum Green (s)	20.3	20.3	20.3	20.3	20.3	57.7	57.7	57.7	57.7	57.7	57.7	57.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.7	-1.7	-1.7	-1.7	-1.7	-2.3	-2.3	-2.3	-2.3	-2.3	-2.3	-2.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead/Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	None	None	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effr Green (s)	36.3	36.3	36.3	36.3	36.3	33.8	33.8	33.8	33.8	33.8	33.8	33.8
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.74	0.89	0.89	0.89	0.89	0.89	0.89	0.89
v/c Ratio	0.03	0.35	0.20	0.38	0.20	0.06	0.03	0.03	0.01	0.03	0.01	0.01
Control Delay	12.2	10.0	14.0	10.6	14.0	4.2	4.2	6.4	1.5	4.2	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	10.0	14.0	10.6	14.0	4.2	4.2	6.4	1.5	4.2	0.0	0.0
LOS	B	A	B	B	B	A	A	A	A	A	A	A
Approach Delay	10.0	10.9	10.9	10.9	10.9	4.2	4.2	4.6	4.6	4.6	4.6	4.6
Approach LOS	B	B	B	B	B	A	A	A	A	A	A	A
Intersection Summary	# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.											
Area Type:	Other											
Cycle Length:	90											
Actuated Cycle Length:	49											
Natural Cycle:	65											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	0.38											
Intersection Signal Delay:	10.2											
Intersection Capacity Utilization:	69.2%											
Analysis Period (min):	15											



Queues
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West
 Background - 2031
 PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	9	938	76	1008	64	25	15					
v/c Ratio	0.03	0.35	0.20	0.38	0.06	0.03	0.01					
Control Delay	12.2	10.0	14.0	10.6	4.2	6.4	1.5					
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
Total Delay	12.2	10.0	14.0	10.6	4.2	6.4	1.5					
Queue Length 50th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
Queue Length 95th (m)	3.5	71.3	18.8	#79.6	6.6	4.5	1.3					
Internal Link Dist (m)	25.0	470.9	30.0	760.1	40.6	284.6						
Turn Bay Length (m)	349	2647	385	2630	1591	1337	1571					
Starvation Cap Reductn	0	0	0	0	0	0	0					
Spillback Cap Reductn	0	0	0	0	0	0	0					
Storage Cap Reductn	0	0	0	0	0	0	0					
Reduced v/c Ratio	0.03	0.35	0.20	0.38	0.04	0.02	0.01					
Intersection Summary	# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.											

HCM Signalized Intersection Capacity Analysis
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	5	4	4	5	4	4	4	4	4	4	4	4	
Traffic Volume (vph)	8	855	8	70	884	43	3	0	56	23	0	14	
Future Volume (vph)	8	855	8	70	884	43	3	0	56	23	0	14	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Fpb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Fpb. ped/bikes	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ft	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1803	3569	1805	3547	1632	1804	1595						
Flt Permitted	0.25	1.00	0.27	1.00	0.99	0.99	0.72	1.00					
Satd. Flow (perm)	471	3569	519	3547	1617								
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	9	929	9	76	961	47	3	0	61	25	0	15	
RTOR Reduction (vph)	0	0	0	2	0	0	26	0	0	0	12	0	
Lane Group Flow (vph)	9	938	0	76	1006	0	0	38	0	25	3	0	
Confl. Peds. (#/hr)	3			3	1		1	1	1	1	1	1	
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	
Protected Phases	4		4		8		2		2		6		
Permitted Phases	4		8		8		2		2		6		
Actuated Green, G (s)	31.6	31.6	31.6	31.6	31.6	9.4	9.4	9.4	9.4	9.4	9.4	9.4	
Effective Green, g (s)	33.3	33.3	33.3	33.3	33.3	11.7	11.7	11.7	11.7	11.7	11.7	11.7	
Actuated G/C Ratio	0.63	0.63	0.63	0.63	0.63	0.22	0.22	0.22	0.22	0.22	0.22	0.22	
Clearance Time (s)	5.7	5.7	5.7	5.7	5.7	6.3	6.3	6.3	6.3	6.3	6.3	6.3	
Vehicle Extension (s)	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	285	2242	326	2228	356	299	352						
v/s Ratio Prot	0.26		0.26		c0.28								
v/s Ratio Perm	0.02	0.15	0.23	0.45	0.02	0.02	0.02						
v/c Ratio	0.03	0.42	0.23	0.45	0.11	0.08	0.01						
Uniform Delay, d1	3.7	5.0	4.3	5.1	16.5	16.4	16.1						
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Incremental Delay, d2	0.0	0.0	0.4	0.1	0.1	0.1	0.1						
Delay (s)	3.7	5.0	4.7	5.3	16.6	16.5	16.1						
Level of Service	A	A	A	A	A	B	B						
Approach Delay (s)	5.0		5.2		16.6		16.4						
Approach LOS	A		A		B		B						
Intersection Summary													
HCM 2000 Control Delay	5.7											HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.36												
Actuated Cycle Length (s)	53.0											Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.2%											ICU Level of Service	C
Analysis Period (min)	15												
c Critical Lane Group													

Intersection: 3: Bishop Ryan Way & Bishop Reding Trail/Street A

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	10.6	8.7	9.2	17.7
Average Queue (m)	8.1	0.5	4.2	9.2
95th Queue (m)	12.9	3.8	11.6	16.8
Link Distance (m)	138.7	125.4	112.5	71.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Bishop Ryan Way & Bishop Tonnos Way

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	10.6	8.7	9.2	17.7
Average Queue (m)	8.1	0.5	4.2	9.2
95th Queue (m)	12.9	3.8	11.6	16.8
Link Distance (m)	138.7	125.4	112.5	71.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR
Maximum Queue (m)	14.3	67.6	66.6	44.6	71.7	76.6	17.8	14.7
Average Queue (m)	2.2	40.0	38.0	17.0	39.8	47.2	7.4	3.8
95th Queue (m)	9.0	60.1	60.5	38.1	64.2	71.5	15.0	11.5
Link Distance (m)	485.0	485.0	485.0	773.0	773.0	773.0	42.2	294.1
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)	25.0			30.0			30.0	
Storage Blk Time (%)	21			4			13	
Queuing Penalty (veh)	2			17			9	

Network Summary

Network wide Queuing Penalty: 27

Lanes, Volumes, Timings
3: Bishop Ryan Way & Bishop Reding Trail/Street A

HCM Unsignalized Intersection Capacity Analysis
3: Bishop Ryan Way & Bishop Reding Trail/Street A

Background - 2031
SAT Peak Hour

Background - 2031
SAT Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	0	0	0	0	0	0	0	0
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0	1900	0	0	1900	0	0	1900	0	0	1900	0
Satd. Flow (prot)	0	1900	0	0	1900	0	0	1900	0	0	1900	0
Flt Permitted	0	1900	0	0	1900	0	0	1900	0	0	1900	0
Satd. Flow (perm)	0	1900	0	0	1900	0	0	1900	0	0	1900	0
Link Speed (k/h)	50	50	50	50	50	50	50	50	50	50	50	50
Link Distance (m)	64.3	64.3	64.3	135.1	135.1	135.1	88.8	88.8	88.8	64.6	64.6	4.7
Travel Time (s)	4.6	4.6	4.6	9.7	9.7	9.7	6.4	6.4	6.4	4.7	4.7	0.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Shared Lane Traffic (%)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Headway Factor	25	15	15	25	25	15	25	25	15	25	25	15
Turning Speed (k/h)	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	7.0%											
ICU Level of Service A												
Analysis Period (min)	15											

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	0	0	0	0	0	0	0	0
Traffic Volume (veh/h)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None	None	None	None	None	None
Median storage (veh)												
Upstream signal (m)												65
Adj. platoon unblocked												
vC, conflicting volume	149	149	73	149	149	76	73	73	76	76	76	76
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	149	149	73	149	149	76	73	73	76	76	76	76
iC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1	4.1	4.1	4.1	4.1	4.1
iC, 2 stage (s)												
p0 queue free %	3.5	4.0	3.3	3.5	4.0	3.3	2.2	2.2	2.2	2.2	2.2	2.2
IF (s)	100	100	100	100	100	100	100	100	100	100	100	100
p0 capacity (veh/h)	824	746	995	824	746	991	1540	1540	1536	1536	1536	1536
Direction_Lane #	EB 1	WB 1	NB 1	SB 1	EB 1	WB 1	NB 1	SB 1	EB 1	WB 1	NB 1	SB 1
Volume Total	0	0	0	0	0	0	0	0	0	0	0	0
Volume Left	0	0	0	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0	0	0	0	0
cSH	1700	1700	1540	1536	1536	1536	1536	1536	1536	1536	1536	1536
Volume to Capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Approach LOS	A	A	A	A	A	A	A	A	A	A	A	A
Intersection Summary												
Average Delay	0.0											
Intersection Capacity Utilization	7.0%											
ICU Level of Service	A											
Analysis Period (min)	15											

Lanes, Volumes, Timings
6: Bishop Ryan Way & Bishop Tonnos Way

HCM Unsignalized Intersection Capacity Analysis
6: Bishop Ryan Way & Bishop Tonnos Way

Background - 2031
SAT Peak Hour

Background - 2031
SAT Peak Hour

EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group											
Lane Configurations											
34	33	4	0	3	2	3	35	2	1	36	30
Traffic Volume (vph)											
34	33	4	0	3	2	3	35	2	1	36	30
Future Volume (vph)											
1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)											
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor											
0.993	0.993	0.946	0.994	0.994	0.994	0.994	0.999	0.999	0.999	0.999	0.999
FIT Protected											
0	1843	0	0	1797	0	0	1883	0	0	1782	0
Satd. Flow (prot)											
0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977
FIT Permitted											
0	1843	0	0	1797	0	0	1883	0	0	1782	0
Satd. Flow (perm)											
50	50	50	50	50	50	50	50	50	50	50	50
Link Speed (k/h)											
147.2	147.2	133.8	133.8	133.8	133.8	121.0	121.0	88.8	88.8	88.8	88.8
Link Distance (m)											
10.6	10.6	9.6	9.6	9.6	9.6	6.7	6.7	6.4	6.4	6.4	6.4
Travel Time (s)											
0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Peak Hour Factor											
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Heavy Vehicles (%)											
37	36	4	0	3	2	3	38	2	1	39	33
Adj. Flow (vph)											
Shared Lane Traffic (%)											
0	77	0	0	5	0	0	43	0	0	73	0
Lane Group Flow (vph)											
Enter Blocked Intersection											
No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment											
Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)											
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset(m)											
0.0	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
Crosswalk Width(m)											
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Two way Left Turn Lane											
25	15	15	25	25	15	25	25	15	25	25	15
Headway Factor											
Turning Speed (k/h)											
Sign Control											
Stop											
Stop											
Stop											
Intersection Summary											
Area Type: Other											
Control Type: Unsignalized											
Intersection Capacity Utilization 21.2%											
ICU Level of Service A											
Analysis Period (min) 15											

EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement											
Lane Configurations											
34	33	4	0	3	2	3	35	2	1	36	30
Traffic Volume (vph)											
34	33	4	0	3	2	3	35	2	1	36	30
Future Volume (vph)											
0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Peak Hour Factor											
37	36	4	0	3	2	3	38	2	1	39	33
Hourly flow rate (vph)											
Direction_Lane #											
EB 1	WB 1	NB 1	SB 1								
77	5	43	73								
Volume Total (vph)											
37	0	3	1								
Volume Left (vph)											
4	2	2	33								
Volume Right (vph)											
0.06	-0.24	-0.01	-0.27								
Head (s)											
4.2	4.0	4.1	3.9								
Departure Headway (s)											
0.09	0.01	0.05	0.08								
Degree Utilization, x											
829	871	840	909								
Capacity (veh/h)											
7.6	7.0	7.4	7.2								
Control Delay (s)											
7.6	7.0	7.4	7.2								
Approach Delay (s)											
A	A	A	A								
Approach LOS											
Intersection Summary											
Delay 7.4											
Level of Service A											
Intersection Capacity Utilization 21.2%											
ICU Level of Service A											
Analysis Period (min) 15											

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

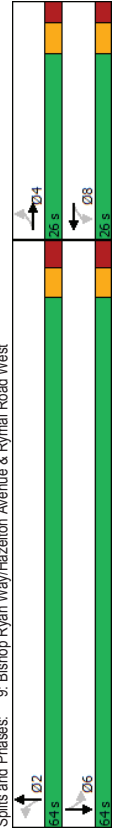
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	8	8	8	2	2	2	6	6	6
Traffic Volume (vph)	12	1016	19	48	1042	26	2	1	67	27	0	21
Future Volume (vph)	12	1016	19	48	1042	26	2	1	67	27	0	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0	0.0
Storage Lanes	1	0	1	0	0	0	0	0	1	0	0	0
Taper Length (m)	30.0	0.0	30.0	0.0	0.0	0.0	7.5	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00	0.99
Frt	0.997	0.996	0.996	0.996	0.996	0.996	0.870	0.999	0.950	0.850	0.850	0.850
FIT Protected	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (prot)	1444	3397	0	1805	3350	0	0	1631	0	1641	1594	0
FIT Permitted	0.172	0.183	0	0.183	0.183	0	0	0.985	0	0.708	0.708	0
Satd. Flow (perm)	261	3397	0	348	3350	0	0	1624	0	1222	1594	0
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	2	3	2	3	2	2	2	2	2	33	33	33
Link Speed (km/h)	50	50	50	50	50	50	50	50	50	50	50	50
Link Distance (m)	494.9	784.1	784.1	784.1	784.1	784.1	64.6	64.6	308.6	308.6	308.6	308.6
Travel Time (s)	35.6	56.5	56.5	56.5	56.5	56.5	4.7	4.7	22.2	22.2	22.2	22.2
Confl. Peds. (#/hr)	3	4	4	4	3	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	25%	6%	0%	7%	16%	0%	0%	0%	10%	0%	0%	0%
Adj. Flow (vph)	13	1104	21	52	1133	28	2	1	73	29	0	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	1125	0	52	1161	0	0	76	0	29	23	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (km/h)	25	15	25	15	25	15	25	15	25	15	25	15
Number of Detectors	1	2	1	2	1	2	1	2	1	2	1	2
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Detector 2 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SEV - Village Square Update, Hamilton
PTSL (230019)
Page 5

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	4	Perm	NA	8	Perm	NA	NA	Perm	NA	SBR
Protected Phases	4	4	4	8	8	8	2	2	2	6	6	6
Permitted Phases	4	4	4	8	8	8	2	2	2	6	6	6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	25.7	25.7	25.7	25.7	25.7	25.7	36.3	36.3	36.3	36.3	36.3	36.3
Total Split (s)	26.0	26.0	26.0	26.0	26.0	26.0	64.0	64.0	64.0	64.0	64.0	64.0
Total Split (%)	28.9%	28.9%	28.9%	28.9%	28.9%	28.9%	71.1%	71.1%	71.1%	71.1%	71.1%	71.1%
Maximum Green (s)	20.3	20.3	20.3	20.3	20.3	20.3	57.7	57.7	57.7	57.7	57.7	57.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-2.3	-2.3	-2.3	-2.3	-2.3	-2.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Min	Min	None	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	9.0	9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	33.5	33.5	33.5	33.5	33.5	33.5	33.8	33.8	33.8	33.8	33.8	33.8
Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
v/c Ratio	0.08	0.54	0.24	0.56	0.56	0.56	0.08	0.08	0.04	0.04	0.02	0.02
Control Delay	16.1	16.9	19.5	17.8	17.8	17.8	7.4	7.4	7.7	7.7	2.5	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.1	16.9	19.5	17.8	17.8	17.8	7.4	7.4	7.7	7.7	2.5	2.5
LOS	B	B	B	B	B	B	A	A	A	A	A	A
Approach Delay	16.9	16.9	17.9	17.9	17.9	17.9	7.4	7.4	7.4	5.4	5.4	5.4
Approach LOS	B	B	B	B	B	B	A	A	A	A	A	A
Intersection Summary	Other											
Area Type	Other											
Cycle Length	90											
Actuated Cycle Length	54.3											
Natural Cycle	65											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.56											
Intersection Signal Delay	16.8											
Intersection Capacity Utilization	71.6%											
Analysis Period (min)	15											

SEV - Village Square Update, Hamilton
PTSL (230019)
Page 6



	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	13	1125	52	1161	76	29	23
v/c Ratio	0.08	0.54	0.24	0.56	0.08	0.04	0.02
Control Delay	16.1	16.9	19.5	17.8	7.4	7.7	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.1	16.9	19.5	17.8	7.4	7.7	2.5
Queue Length 50th (m)	1.0	67.4	4.7	71.1	4.6	1.8	0.0
Queue Length 95th (m)	5.0	#108.5	#17.3	#115.0	9.8	5.0	2.3
Internal Link Dist (m)	470.9			760.1	40.6		284.6
Turn Bay Length (m)	25.0		30.0			30.0	
Base Capacity (vph)	161	2096	214	2067	1576	1185	1548
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.54	0.24	0.56	0.05	0.02	0.01

Intersection Summary
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Traffic Volume (vph)	12	1016	19	48	1042	26	2	2	1	67	27	0
Future Volume (vph)	12	1016	19	48	1042	26	2	2	1	67	27	0
Ideal Flow (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fpb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	0.99	1.00
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.87	1.00	1.00	1.00	0.85	1.00
Frt	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Flt Protected	1443	3398	1803	3351	1631	1640	1595					
Satd. Flow (prot)	0.17	1.00	0.18	1.00	1.00	0.71	1.00					
Flt Permitted	261	3398	348	3351	1626	1221	1595					
Satd. Flow (perm)	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Peak-Hour factor, PHF	13	1104	21	52	1133	28	2	1	73	29	0	23
Adj. Flow (vph)	0	1	0	0	1	0	0	0	1	0	0	16
RTOR Reduction (vph)	0	1124	0	52	1160	0	0	75	0	29	7	0
Lane Group Flow (vph)	3	1124	4	4	1160	3	1	1	1	1	1	1
Confl. Peds. (#/hr)	25%	6%	0%	0%	7%	18%	0%	0%	0%	10%	0%	0%
Heavy Vehicles (%)	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Turn Type	4			8			2			6		6
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	29.6	29.6		29.6	29.6		15.5			15.5		15.5
Effective Green, g (s)	31.3	31.3		31.3	31.3		17.8			17.8		17.8
Actuated g/C Ratio	0.55	0.55		0.55	0.55		0.31			0.31		0.31
Clearance Time (s)	5.7	5.7		5.7	5.7		6.3			6.3		6.3
Vehicle Extension (s)	2.0	2.0		3.0	3.0		3.0			3.0		3.0
Lane Grp Cap (vph)	143	1862		190	1836		506			380		497
v/s Ratio Prot	0.33			0.35								0.00
v/c Ratio Perm	0.05			0.15			0.05			0.02		0.00
v/c Ratio	0.09	0.60		0.27	0.63		0.15			0.08		0.01
Uniform Delay, d1	6.1	8.7		6.9	8.9		14.2			13.9		13.6
Progression Factor	1.00	1.00		1.00	1.00		1.00			1.00		1.00
Incremental Delay, d2	0.1	0.4		0.8	0.7		0.1			0.1		0.0
Delay (s)	6.2	9.1		7.6	9.6		14.3			13.9		13.6
Level of Service	A	A		A	A		B			B		B
Approach Delay (s)	9.1			9.5			14.3			13.8		13.8
Approach LOS	A			A			B			B		B
Intersection Summary												
HCM 2000 Control Delay	9.6 HCM 2000 Level of Service A											
HCM 2000 Volume to Capacity ratio	0.46											
Actuated Cycle Length (s)	57.1 Sum of lost time (s) 8.0											
Intersection Capacity Utilization	71.6% ICU Level of Service C											
Analysis Period (min)	15											
c Critical Lane Group												

Intersection: 3: Bishop Ryan Way & Bishop Reding Trail/Street A

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	12.0	9.2	14.9	17.8
Average Queue (m)	8.6	1.3	7.1	8.8
95th Queue (m)	12.8	6.5	14.1	15.7
Link Distance (m)	138.7	125.4	112.5	71.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Bishop Ryan Way & Bishop Tonnos Way

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	12.0	9.2	14.9	17.8
Average Queue (m)	8.6	1.3	7.1	8.8
95th Queue (m)	12.8	6.5	14.1	15.7
Link Distance (m)	138.7	125.4	112.5	71.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Bishop Ryan Way/Hazeldon Avenue & Rymal Road West

Movement	EB	WB	NB	SB
Directions Served	L	T	TR	L
Maximum Queue (m)	39.3	101.3	97.8	51.9
Average Queue (m)	5.3	57.3	55.8	15.4
95th Queue (m)	22.0	85.3	83.3	38.5
Link Distance (m)	485.0	485.0	773.0	773.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	25.0			30.0
Storage Blk Time (%)	0	32		3
Queuing Penalty (veh)	2	4		13

Network Summary

Network wide Queuing Penalty: 31

Appendix H

Total Synchro/SimTraffic Reports



Lanes, Volumes, Timings
3: Bishop Ryan Way & Bishop Reding Trail/Street A

Total - 2031
AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	16	0	199	0	0	0	107
Future Volume (vph)	0	0	0	0	0	16	0	199	0	0	0	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr						0.865						
Flt Protected												
Satd. Flow (prot)	0	0	1863	0	0	1611	0	1863	0	0	0	1863
Flt Permitted												
Satd. Flow (perm)	0	0	1863	0	0	1611	0	1863	0	0	0	1863
Link Speed (k/h)	50			50				50				50
Link Distance (m)	64.3			135.1				88.8				64.6
Travel Time (s)	4.6			9.7				6.4				4.7
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
Adj. Flow (vph)	0	0	0	0	0	17	0	216	0	0	0	116
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	17	0	216	0	0	0	116
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
Median Width (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8			4.8				4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	25	15	25	25	15	25	15	25	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	20.5%											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
3: Bishop Ryan Way & Bishop Reding Trail/Street A

Total - 2031
AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	16	0	199	0	0	0	107
Future Volume (Veh/h)	0	0	0	0	0	16	0	199	0	0	0	107
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	17	0	216	0	0	0	116
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None					None
Median storage (veh)												
Upstream signal (m)												65
pX platoon unblocked												
vC, conflicting volume	349	332	116	332	332	216	116					216
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	349	332	116	332	332	216	116					216
iC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1					4.1
iC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2					2.2
p0 queue free %	100	100	100	100	100	98	100					100
p0 capacity (veh/h)	583	588	936	621	588	824	1473					1354
Direction_Lane #	EB 1	WB 1	NB 1	SB 1	EB 1	WB 1	NB 1	SB 1	EB 1	WB 1	NB 1	SB 1
Volume Total	0	17	216	116								
Volume Left	0	0	0	0								
Volume Right	0	17	0	0								
cSH	1700	824	1700	1700								
Volume to Capacity	0.00	0.02	0.13	0.07								
Queue Length 95th (m)	0.0	0.5	0.0	0.0								
Control Delay (s)	0.0	9.5	0.0	0.0								
Lane LOS	A	A	A	A								
Approach Delay (s)	0.0	9.5	0.0	0.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Average Delay	0.5											
Intersection Capacity Utilization	20.5%											
ICU Level of Service	A											
Analysis Period (min)	15											

Lanes, Volumes, Timings
6: Bishop Ryan Way & Bishop Tonnos Way

Total - 2031
AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	57	1	3	0	2	17	3	124	0	39	43	25
Traffic Volume (vph)	57	1	3	0	2	17	3	124	0	39	43	25
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	0.994			0.878								0.969
Frt	0.955						0.999					0.982
Flt Protected	0	1768	0	0	1635	0	0	1861	0	0	1773	0
Satd. Flow (prot)	0.955							0.999				0.982
Flt Permitted	0	1768	0	0	1635	0	0	1861	0	0	1773	0
Satd. Flow (perm)	50			50			50				50	
Link Speed (k/h)	147.2			133.8			121.0				88.8	
Link Distance (m)	10.6			9.6			6.7				6.4	
Travel Time (s)	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Peak Hour Factor	62	1	3	0	2	18	3	135	0	42	47	27
Adj. Flow (vph)												
Shared Lane Traffic (%)	0	66	0	0	20	0	0	138	0	0	116	0
Lane Group Flow (vph)	No	No	No	No	No	No	No	No	No	No	No	No
Enter Blocked Intersection	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
Lane Alignment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Median Width(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset(m)	4.8			4.8			4.8				4.8	
Crosswalk Width(m)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Two way Left Turn Lane	25			15			25			15		25
Headway Factor	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Turning Speed (k/h)												
Sign Control	Intersection Summary											
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	32.7%											
Analysis Period (min)	15											
	ICU Level of Service A											

HCM Unsignalized Intersection Capacity Analysis
6: Bishop Ryan Way & Bishop Tonnos Way

Total - 2031
AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	57	1	3	0	2	17	3	124	0	39	43	25
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume (vph)	57	1	3	0	2	17	3	124	0	39	43	25
Future Volume (vph)	57	1	3	0	2	17	3	124	0	39	43	25
Ideal Flow (vphpl)	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Lane Util. 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
Hourly flow rate (vph)	62	1	3	0	2	18	3	135	0	42	47	27
Direction_Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	66	20	138	116								
Volume Left (vph)	62	0	3	42								
Volume Right (vph)	3	18	0	27								
Head (s)	0.19	-0.51	0.04	-0.03								
Departure Headway (s)	4.7	4.0	4.3	4.2								
Degree Utilization, x	0.09	0.02	0.16	0.14								
Capacity (veh/h)	718	820	817	820								
Control Delay (s)	8.1	7.1	8.1	7.9								
Approach Delay (s)	8.1	7.1	8.1	7.9								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay	8.0											
Level of Service	A											
Intersection Capacity Utilization	32.7%											
Analysis Period (min)	15											
	ICU Level of Service A											

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

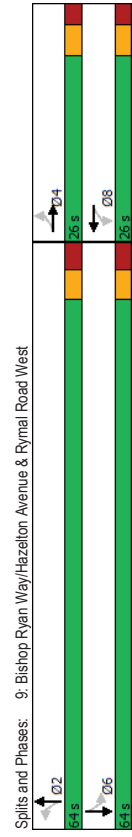
Total - 2031
All Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
Traffic Volume (vph)	4	730	56	50	481	18	110	0	105	12	1	25
Future Volume (vph)	4	730	56	50	481	18	110	0	105	12	1	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	0.0	0.0
Storage Lanes	1	0	1	0	1	0	0	0	0	1	0	0
Taper Length (m)	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	0.0	0.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00	0.99	1.00
Frt	0.989		0.994		0.994		0.934		0.934		0.855	
FIT Protected	0.950		0.950		0.950		0.975		0.975		0.950	
Satd. Flow (prot)	1444	3375	0	1805	3338	0	1719	0	1641	1604	0	0
FIT Permitted	0.379		0.196		0.843		0.843		0.630		0.630	
Satd. Flow (perm)	575	3375	0	372	3338	0	1486	0	1087	1604	0	0
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	8		4		4		33		33		27	
Link Speed (km/h)	50		50		50		50		50		50	
Link Distance (m)	494.9		784.1		64.6		64.6		308.6		308.6	
Travel Time (s)	35.6		56.5		4.7		4.7		22.2		22.2	
Confl. Peds. (#/hr)	3		4		4		3		1		1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	25%	6%	0%	7%	16%	0%	0%	0%	10%	0%	0%	0%
Adj. Flow (vph)	4	793	61	54	523	20	120	0	114	13	1	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	854	0	54	543	0	0	234	0	13	28	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.6		3.6		3.6		3.6		3.6		3.6	
Link Offset (m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width (m)	4.8		4.8		4.8		4.8		4.8		4.8	
Two way Left Turn Lane	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (km/h)	25		15		25		15		25		25	
Number of Detectors	1	2	1	2	1	2	1	2	1	2	1	2
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size (m)	0.6		0.6		0.6		0.6		0.6		0.6	
Detector 2 Type	Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Total - 2031
All Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	NA	Perm	NA	NA	Perm	NA	NA	Perm	NA	NA
Protected Phases	4	4	4	8	8	8	2	2	2	6	6	6
Permitted Phases	4	4	4	8	8	8	2	2	2	6	6	6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	25.7	25.7	25.7	25.7	25.7	25.7	36.3	36.3	36.3	36.3	36.3	36.3
Total Split (s)	26.0	26.0	26.0	26.0	26.0	26.0	64.0	64.0	64.0	64.0	64.0	64.0
Total Split (%)	28.9%	28.9%	28.9%	28.9%	28.9%	28.9%	71.1%	71.1%	71.1%	71.1%	71.1%	71.1%
Maximum Green (s)	20.3	20.3	20.3	20.3	20.3	20.3	57.7	57.7	57.7	57.7	57.7	57.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-2.3	-2.3	-2.3	-2.3	-2.3	-2.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Min	Min	Min	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	9.0	9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	23.1	23.1	23.1	23.1	23.1	23.1	32.3	32.3	32.3	32.3	32.3	32.3
Actuated g/C Ratio	0.36	0.36	0.36	0.36	0.36	0.36	0.51	0.51	0.51	0.51	0.51	0.51
v/c Ratio	0.02	0.69	0.40	0.40	0.45	0.40	0.30	0.02	0.03	0.02	0.03	0.03
Control Delay	13.5	20.7	16.8	26.2	16.8	26.2	8.7	8.7	7.6	7.6	3.5	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	20.7	16.8	26.2	16.8	26.2	8.7	8.7	7.6	7.6	3.5	3.5
LOS	B	C	C	B	B	B	A	A	A	A	A	A
Approach Delay	20.7		17.6		17.6		8.7		8.7		4.8	
Approach LOS	C		B		B		A		A		A	
Intersection Summary	Other											
Area Type:	Other											
Cycle Length:	90											
Actuated Cycle Length:	63.4											
Natural Cycle:	65											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	0.69											
Intersection Signal Delay:	17.6											
Intersection Capacity Utilization:	65.3%											
Analysis Period (min):	15											



Queues
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Total - 2031
AM Peak Hour

	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group	4	854	54	543	234	13	28
Lane Group Flow (vph)	0.02	0.69	0.40	0.45	0.30	0.02	0.03
v/c Ratio	13.5	20.7	26.2	16.8	8.7	7.6	3.5
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	13.5	20.7	26.2	16.8	8.7	7.6	3.5
Total Delay	0.3	45.4	4.8	25.8	12.5	0.7	0.1
Queue Length 50th (m)	2.1	64.7	15.5	38.6	24.7	2.9	3.2
Queue Length 95th (m)	470.9			760.1	40.6		284.6
Internal Link Dist (m)	25.0		30.0			30.0	
Turn Bay Length (m)	209	1231	135	1216	1409	1029	1520
Base Capacity (vph)	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0.02	0.69	0.40	0.45	0.17	0.01	0.02
Reduced v/c Ratio							
Intersection Summary							

HCM Signalized Intersection Capacity Analysis
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Total - 2031
AM Peak Hour

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	4	730	56	50	481	18	110	0	105
Traffic Volume (vph)	4	730	56	50	481	18	110	0	105
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpb)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	0.99
Fpb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fibb. ped/bikes	1.00	0.99	1.00	0.99	1.00	0.93	1.00	0.86	1.00
Frt	1441	3377	1802	3339	1719	1640	1605	1605	1605
Flt Protected	0.38	1.00	0.20	1.00	0.84	0.63	1.00	1.00	1.00
Satd. Flow (prot)	575	3377	372	3339	1487	1087	1605	1605	1605
Flt Permitted	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Satd. Flow (perm)	4	793	61	54	523	20	120	0	114
Peak-Hour factor, PHF	0	5	0	0	3	0	0	0	16
Adj. Flow (vph)	0	849	0	54	540	0	218	0	13
RTOR Reduction (vph)	3	4	4	4	3	1	1	1	1
Lane Group Flow (vph)	25%	6%	0%	7%	18%	0%	0%	10%	0%
Conf. Ped. (#/hr)	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Heavy Vehicles (%)	4	8	8	8	8	2	6	6	6
Turn Type	4	21.4	21.4	21.4	21.4	30.0	30.0	30.0	30.0
Protected Phases	23.1	23.1	23.1	23.1	23.1	32.3	32.3	32.3	32.3
Permitted Phases	0.36	0.36	0.36	0.36	0.36	0.51	0.51	0.51	0.51
Actuated Green, G (s)	5.7	5.7	5.7	5.7	5.7	6.3	6.3	6.3	6.3
Effective Green, g (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Actuated g/C Ratio	209	1230	135	1216	757	563	817	817	817
Clearance Time (s)	v/s Ratio	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Vehicle Extension (s)	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Lane Grp Cap (vph)	0.02	0.69	0.40	0.44	0.29	0.02	0.02	0.02	0.02
v/s Ratio Prot	12.9	17.1	15.0	15.3	8.9	7.7	7.7	7.7	7.7
v/c Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
v/c Ratio Perm	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay, d1	0.0	1.4	1.9	0.3	0.2	0.0	0.0	0.0	0.0
Progression Factor	12.9	18.5	16.9	15.5	9.1	7.7	7.7	7.7	7.7
Incremental Delay, d2	B	B	B	B	A	A	A	A	A
Level of Service	18.4	15.7	15.7	15.7	9.1	7.7	7.7	7.7	7.7
Approach Delay (s)	B	B	B	B	A	A	A	A	A
Approach LOS	B	B	B	B	A	A	A	A	A
Intersection Summary									
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B						
HCM 2000 Volume to Capacity ratio	0.46								
Actuated Cycle Length (s)	63.4	Sum of lost time (s)	8.0						
Intersection Capacity Utilization	65.3%	ICU Level of Service	C						
Analysis Period (min)	15								
c Critical Lane Group									

Queuing and Blocking Report

Total - 2031
AM Peak Hour

Intersection: 3: Bishop Ryan Way & Bishop Reding Trail/Street A

Movement	WB	WB	NB	SB
Directions Served	R			
Maximum Queue (m)	9.2			
Average Queue (m)	4.0			
95th Queue (m)	11.0			
Link Distance (m)	126.4			
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Bishop Ryan Way & Bishop Tonnos Way

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	17.8	9.2	20.6	19.2
Average Queue (m)	8.8	4.3	10.9	10.6
95th Queue (m)	15.2	11.4	17.1	16.9
Link Distance (m)	138.7	125.4	112.5	71.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Bishop Ryan Way/Hazleton Avenue & Rymal Road West

Movement	EB	EB	WB	WB	NB	SB	SB	TR
Directions Served	L	T	TR	L	TR	L	TR	TR
Maximum Queue (m)	9.1	71.0	68.6	29.3	49.0	52.3	33.3	16.0
Average Queue (m)	1.0	42.8	40.4	12.6	25.7	30.4	17.3	2.5
95th Queue (m)	5.4	62.3	62.4	24.6	40.8	47.4	28.8	10.5
Link Distance (m)		485.0	485.0		773.0	773.0	42.2	294.1
Upstream Blk Time (%)								0
Queuing Penalty (veh)								0
Storage Bay Dist (m)								30.0
Storage Blk Time (%)								4
Queuing Penalty (veh)								2

Network Summary

Network wide Queuing Penalty: 5

Lanes, Volumes, Timings

Total - 2031
PM Peak Hour

3: Bishop Ryan Way & Bishop Reding Trail/Street A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	42	0	146	0	0	235	0
Future Volume (vph)	0	0	0	0	0	42	0	146	0	0	235	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt						0.865						
Flt Protected												
Satd. Flow (prot)	0	0	1863	0	0	1611	0	1863	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	0	1863	0	0	1611	0	1863	0	0	1863	0
Link Speed (k/h)						50		50			50	
Link Distance (m)						135.1		88.8			64.6	
Travel Time (s)						9.7		6.4			4.7	
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
Adj. Flow (vph)	0	0	0	0	0	46	0	159	0	0	255	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	46	0	159	0	0	255	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)						4.8		4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	25	25	15	25	25	15	25	25	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free
Intersection Summary	Other											
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	17.7%											
Analysis Period (min)	15											

3: Bishop Ryan Way & Bishop Reding Trail/Street A

Total - 2031
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	42	0	146	0	0	235	0
Future Volume (Veh/h)	0	0	0	0	0	42	0	146	0	0	235	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	0%	Free	Free	0%
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	46	0	159	0	0	255	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None	None				None
Median storage (veh)												
Upstream signal (m)												65
pX platoon unblocked	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96				
VC, conflicting volume	460	414	255	414	414	159	255				159	
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
VCU, unblocked vol	422	374	209	374	374	159	209				159	
IC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
IC, 2 stage (s)												
p0 queue free %	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
IF (s)	100	100	100	100	100	95	100				100	
CM capacity (veh/h)	496	537	802	562	537	886	1313				1420	
Direction_Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	46	159	255								
Volume Left	0	0	0	0								
Volume Right	0	46	0	0								
cSH	1700	886	1700	1700								
Volume to Capacity	0.00	0.05	0.09	0.15								
Queue Length 95th (m)	0.0	1.3	0.0	0.0								
Control Delay (s)	0.0	9.3	0.0	0.0								
Lane LOS	A	A	A	A								
Approach Delay (s)	0.0	9.3	0.0	0.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Average Delay	0.9											
Intersection Capacity Utilization	17.7%											
ICU Level of Service	A											
Analysis Period (min)	15											

6: Bishop Ryan Way & Bishop Tonnos Way

Total - 2031
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	2	8	0	1	32	2	74	1	70	115	50
Future Volume (vph)	40	2	8	0	1	32	2	74	1	70	115	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Ft	0.977			0.869				0.988				0.971
Flt Protected	0.962							0.999				0.985
Satd. Flow (prot)	0	1786	0	0	1651	0	0	1894	0	0	1817	0
Flt Permitted	0.962							0.999				0.985
Satd. Flow (perm)	0	1786	0	0	1651	0	0	1894	0	0	1817	0
Link Speed (k/h)	50			50				50				50
Link Distance (m)	147.2			133.8				121.0				88.8
Travel Time (s)	10.6			9.6				8.7				6.4
Conf. Peds. (#/hr)	2			2				2				2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	43	2	9	0	1	35	2	80	1	76	125	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	54	0	0	36	0	0	83	0	0	255	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8			4.8				4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	25	25	15	25	25	15	25	25	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	35.8%											
ICU Level of Service A												
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
 6: Bishop Ryan Way & Bishop Tonnos Way

Total - 2031
 PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		Stop	Stop		Stop			Stop				
Traffic Volume (vph)	40	2	8	0	1	32	2	74	1	70	115	50
Future Volume (vph)	40	2	8	0	1	32	2	74	1	70	115	50
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
Hourly flow rate (vph)	43	2	9	0	1	35	2	80	1	76	125	54
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	54	36	83	255								
Volume Left (vph)	43	0	2	76								
Volume Right (vph)	9	35	1	54								
Head (s)	0.06	-0.58	0.00	-0.07								
Departure Headway (s)	4.7	4.1	4.4	4.1								
Degree Utilization, x	0.07	0.04	0.10	0.29								
Capacity (veh/h)	699	792	790	851								
Control Delay (s)	8.1	7.3	7.9	8.8								
Approach Delay (s)	8.1	7.3	7.9	8.8								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay	8.4											
Level of Service	A											
Intersection Capacity Utilization	35.8%											
Analysis Period (min)	15											
ICU Level of Service	A											

Lanes, Volumes, Timings
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Total - 2031
 PM Peak Hour

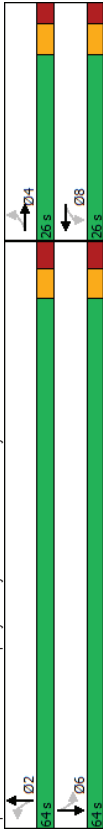
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		Stop	Stop		Stop			Stop				
Traffic Volume (vph)	8	849	121	115	878	43	95	0	93	23	0	14
Future Volume (vph)	8	849	121	115	878	43	95	0	93	23	0	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0
Storage Lanes	1	0	1	0	1	0	0	0	0	1	0	0
Taper Length (m)	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00			1.00			0.99		0.99	1.00		0.99
Frt	0.981			0.993			0.933		0.933			0.850
Flt/Protected	0.950			0.950			0.975		0.975			0.950
Satd. Flow (prot)	1805	3511	0	1805	3546	0	0	1717	0	1805	1594	0
Flt/Permitted	0.166			0.166			0.856		0.856			0.650
Satd. Flow (perm)	315	3511	0	315	3546	0	0	1507	0	1234	1594	0
Right Turn on Red	Yes			Yes			Yes		Yes			Yes
Satd. Flow (RTOR)	17			5			33		33			33
Link Speed (k/h)	50			50			50		50			50
Link Distance (m)	494.9			784.1			64.6		64.6			308.6
Travel Time (s)	35.6			56.5			4.7		4.7			22.2
Confli. Peds. (#/hr)	3			3			1		1			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	9	923	132	125	954	47	103	0	101	25	0	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	1055	0	125	1001	0	0	204	0	25	15	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.6			3.6			3.6		3.6			3.6
Link Offset (m)	0.0			0.0			0.0		0.0			0.0
Crosswalk Width (m)	4.8			4.8			4.8		4.8			4.8
Two way Left Turn Lane	Yes			Yes			Yes		Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	25	15	25	25	15	25	15	25	15
Number of Detectors	1	2	1	1	2	1	1	2	1	2	1	2
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4		9.4			9.4
Detector 2 Size (m)	0.6			0.6			0.6		0.6			0.6
Detector 2 Type	Ch+Ex			Ch+Ex			Ch+Ex		Ch+Ex			Ch+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0		0.0			0.0

Lanes, Volumes, Timings
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Total - 2031
 PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perim	NA	4	Perim	NA	8	Perim	NA	2	Perim	NA	6
Protected Phases												
Permitted Phases	4	4	8	8	8	8	2	2	2	6	6	6
Detector Phase												
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	25.7	25.7	25.7	25.7	25.7	36.3	36.3	36.3	36.3	36.3	36.3	36.3
Total Split (s)	26.0	26.0	26.0	26.0	26.0	64.0	64.0	64.0	64.0	64.0	64.0	64.0
Total Split (%)	28.9%	28.9%	28.9%	28.9%	28.9%	71.1%	71.1%	71.1%	71.1%	71.1%	71.1%	71.1%
Maximum Green (s)	20.3	20.3	20.3	20.3	20.3	57.7	57.7	57.7	57.7	57.7	57.7	57.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.7	-1.7	-1.7	-1.7	-1.7	-2.3	-2.3	-2.3	-2.3	-2.3	-2.3	-2.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Min	Min	None	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effr Green (s)	24.0	24.0	24.0	24.0	24.0	32.4	32.4	32.4	32.4	32.4	32.4	32.4
Actuated g/C Ratio	0.37	0.37	0.37	0.37	0.37	0.50	0.50	0.50	0.50	0.50	0.50	0.50
v/c Ratio	0.08	0.80	1.07	0.76	0.26	0.26	0.04	0.02	0.04	0.02	0.04	0.02
Control Delay	15.6	24.2	131.9	22.5	8.2	8.2	7.7	1.5	8.2	7.7	1.5	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	24.2	131.9	22.5	8.2	8.2	7.7	1.5	8.2	7.7	1.5	8.2
LOS	B	C	F	C	C	A	A	A	A	A	A	A
Approach Delay	24.1			34.6		8.2						5.3
Approach LOS	C			C		A						A
Intersection Summary												
Area Type:	Other											
Cycle Length:	90											
Actuated Cycle Length:	64.5											
Natural Cycle:	80											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	1.07											
Intersection Signal Delay:	27.3											
Intersection Capacity Utilization:	70.7%											
Analysis Period (min):	15											

Splits and Phases: 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West



Queues
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Total - 2031
 PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	9	1055	125	1001	204	25	15					
v/c Ratio	0.08	0.80	1.07	0.76	0.26	0.04	0.02					
Control Delay	15.6	24.2	131.9	22.5	8.2	7.7	1.5					
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
Total Delay	15.6	24.2	131.9	22.5	8.2	7.7	1.5					
Queue Length 50th (m)	0.7	59.3	~18.0	55.6	10.3	1.4	0.0					
Queue Length 95th (m)	3.7	#93.6	#47.6	#78.0	21.1	4.5	1.3					
Internal Link Dist (m)	470.9			760.1	40.6							
Turn Bay Length (m)	25.0		30.0				30.0					
Base Capacity (vph)	117	1319	117	1325	1409	1152	1490					
Starvation Cap Reductn	0	0	0	0	0	0	0					
Spillback Cap Reductn	0	0	0	0	0	0	0					
Storage Cap Reductn	0	0	0	0	0	0	0					
Reduced v/c Ratio	0.08	0.80	1.07	0.76	0.14	0.02	0.01					
Intersection Summary												
Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

HCM Signalized Intersection Capacity Analysis
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Total - 2031
 PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	4	4	5	4	4	4	4	4	5	4	4
Traffic Volume (vph)	8	849	121	115	878	43	95	0	93	23	0	14
Future Volume (vph)	8	849	121	115	878	43	95	0	93	23	0	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fpb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fpb. ped/bikes	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.98	1.00	0.98	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1804	3512	1805	3547	1718	1804	1594					
Flt Permitted	0.17	1.00	0.17	1.00	0.86	1.00	0.65	1.00				
Satd. Flow (perm)	315	3512	315	3547	1508	1233	1594					
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	923	132	125	954	47	103	0	101	25	0	15
RTOR Reduction (vph)	0	11	0	0	3	0	0	16	0	0	0	7
Lane Group Flow (vph)	9	1044	0	125	998	0	0	188	0	25	8	0
Confl. Peds. (#/hr)	3					3	1		1	1	1	1
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases	4			8		2		2		6		6
Permitted Phases	4			8		2		2		6		6
Actuated Green, G (s)	22.4	22.4	22.4	22.4	22.4	30.1	30.1	30.1	30.1	30.1	30.1	30.1
Effective Green, g (s)	24.1	24.1	24.1	24.1	24.1	32.4	32.4	32.4	32.4	32.4	32.4	32.4
Actuated G/C Ratio	0.37	0.37	0.37	0.37	0.37	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Clearance Time (s)	5.7	5.7	5.7	5.7	5.7	6.3	6.3	6.3	6.3	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	117	1312	117	1325	757	619	800					
v/s Ratio Prot	0.30			0.28								
v/s Ratio Perm	0.03			c0.40		c0.12		0.02		0.02		0.00
v/c Ratio	0.08	0.80	1.07	0.75	0.25	0.04	0.01	0.01	0.01	0.01	0.01	0.01
Uniform Delay, d1	13.0	18.0	20.2	17.6	9.1	8.2	8.0					
Progression 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
Incremental Delay, d2	0.1	3.2	102.8	2.5	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Delay (s)	13.1	21.2	123.0	20.1	9.3	8.2	8.0					
Level of Service	B	C	F	C	A	A	A	A	A	A	A	A
Approach Delay (s)	21.1		31.5		9.3		8.1					
Approach LOS	C		C		A		A					
Intersection Summary												
HCM 2000 Control Delay	24.7 HCM 2000 Level of Service C											
HCM 2000 Volume to Capacity ratio	0.60											
Actuated Cycle Length (s)	64.5 Sum of lost time (s) 8.0											
Intersection Capacity Utilization	70.7% ICU Level of Service C											
Analysis Period (min)	15											
c Critical Lane Group												

Queuing and Blocking Report

Total - 2031
 PM Peak Hour

Intersection: 3: Bishop Ryan Way & Bishop Reding Trail/Street A

Movement	WB	SB
Directions Served	R	
Maximum Queue (m)	15.6	
Average Queue (m)	6.7	
95th Queue (m)	14.1	
Link Distance (m)	126.4	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Bishop Ryan Way & Bishop Tonnos Way

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	13.5	10.5	14.8	23.6
Average Queue (m)	7.3	6.0	8.7	13.3
95th Queue (m)	13.7	12.9	14.2	20.5
Link Distance (m)	138.7	125.4	112.5	71.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	T	TR	L	TR	L
Maximum Queue (m)	37.8	92.7	91.4	59.9	165.4	165.3
Average Queue (m)	3.5	50.6	51.1	45.9	98.2	98.8
95th Queue (m)	18.6	75.2	76.7	72.5	218.1	212.8
Link Distance (m)		485.0	485.0	773.0	773.0	42.2
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)				30.0		30.0
Storage Blk Time (%)				34		68
Queuing Penalty (veh)				3		301

Network Summary

Network wide Queuing Penalty: 323

Lanes, Volumes, Timings
3: Bishop Ryan Way & Bishop Reding Trail/Street A

Total - 2031
SAT Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	0	34	0	167	0	0	206	0
Traffic Volume (vph)	0	0	0	0	0	34	0	167	0	0	206	0
Future Volume (vph)	0	0	0	0	0	34	0	167	0	0	206	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt				0.865								
Flt Protected	0	0	1900	0	0	1644	0	1900	0	0	1900	0
Satd. Flow (prot)	0	0	1900	0	0	1644	0	1900	0	0	1900	0
Flt Permitted	0	0	1900	0	0	1644	0	1900	0	0	1900	0
Satd. Flow (perm)	0	0	1900	0	0	1644	0	1900	0	0	1900	0
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	64.3			135.1			88.8			64.6		
Travel Time (s)	4.6			9.7			6.4			4.7		
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 (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	0	0	0	37	0	182	0	0	224	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	37	0	182	0	0	224	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8			4.8			4.8			4.8		
Two way Left Turn Lane	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Headway Factor	25	15	15	25	25	15	25	25	15	25	25	15
Turning Speed (k/h)	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Sign Control												
Intersection Summary	Other											
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	18.8%											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
3: Bishop Ryan Way & Bishop Reding Trail/Street A

Total - 2031
SAT Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	0	0	0	0	0	34	0	167	0	0	206	0
Traffic Volume (veh/h)	0	0	0	0	0	34	0	167	0	0	206	0
Future Volume (Veh/h)	0	0	0	0	0	34	0	167	0	0	206	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	37	0	182	0	0	224	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None					None
Median storage (veh)												
Upstream signal (m)												65
pK, platoon unblocked	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
vC, conflicting volume	443	406	224	406	406	182	224					182
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	421	383	197	383	383	182	197					182
IC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1					4.1
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2					2.2
p0 queue free %	100	100	100	100	100	96	100					100
p0 capacity (veh/h)	512	542	832	567	542	866	1359					1405
Direction_Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	37	182	224								
Volume Left	0	0	0	0								
Volume Right	0	37	0	0								
cSH	1700	866	1700	1700								
Volume to Capacity	0.00	0.04	0.11	0.13								
Queue Length 95th (m)	0.0	1.1	0.0	0.0								
Control Delay (s)	0.0	9.3	0.0	0.0								
Lane LOS	A	A	A	A								
Approach Delay (s)	0.0	9.3	0.0	0.0								
Approach LOS	A	A	A	A								
Intersection Summary	Intersection Summary											
Average Delay	0.8											
Intersection Capacity Utilization	18.8%											
ICU Level of Service	A											
Analysis Period (min)	15											

Lanes, Volumes, Timings
6: Bishop Ryan Way & Bishop Tonnos Way

Total - 2031
SAT Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	34	33	4	0	3	27	3	107	2	61	115	30
Traffic Volume (vph)	34	33	4	0	3	27	3	107	2	61	115	30
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	0.993	0.999	0.878				0.998				0.980	
Flt Protected	0.977						0.999				0.985	
Satd. Flow (prot)	0	1843	0	0	1668	0	0	1894	0	0	1834	0
Flt Permitted	0.977						0.999				0.985	
Satd. Flow (perm)	0	1843	0	0	1668	0	0	1894	0	0	1834	0
Link Speed (k/h)	50			50			50				50	
Link Distance (m)	147.2			133.8			121.0				88.8	
Travel Time (s)	10.6			9.6			6.7				6.4	
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	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	37	36	4	0	3	29	3	116	2	66	125	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	77	0	0	32	0	0	121	0	0	224	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Left	Right	Left	Left	Right
Median Width(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8			4.8			4.8				4.8	
Two way Left Turn Lane	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Headway Factor	25	15	15	25	25	15	25	15	15	25	25	15
Turning Speed (k/h)	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Sign Control												

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.1%
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
6: Bishop Ryan Way & Bishop Tonnos Way

Total - 2031
SAT Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	34	33	4	0	3	27	3	107	2	61	115	30
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Volume (vph)	34	33	4	0	3	27	3	107	2	61	115	30
Future Volume (vph)	34	33	4	0	3	27	3	107	2	61	115	30
Ideal Flow (vphpl)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. 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
Hourly flow rate (vph)	37	36	4	0	3	29	3	116	2	66	125	33
Direction_Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	77	32	121	224								
Volume Left (vph)	37	0	3	66								
Volume Right (vph)	4	29	2	33								
Head (s)	0.06	-0.54	0.00	-0.03								
Departure Headway (s)	4.8	4.2	4.4	4.3								
Degree Utilization, x	0.10	0.04	0.15	0.27								
Capacity (veh/h)	685	770	784	811								
Control Delay (s)	8.3	7.4	8.2	8.8								
Approach Delay (s)	8.3	7.4	8.2	8.8								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay	8.5											
Level of Service	A											
Intersection Capacity Utilization	35.1%											
Analysis Period (min)	15											
ICU Level of Service	A											

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Total - 2031
SAT Peak Hour

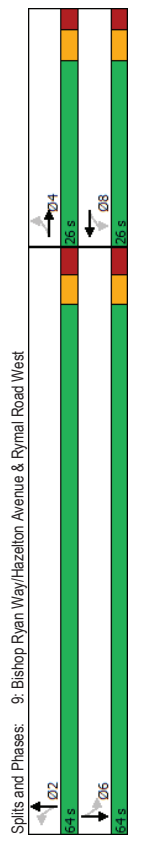
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Traffic Volume (vph)	12	1012	118	88	1037	26	96	1	104	27	0	21
Future Volume (vph)	12	1012	118	88	1037	26	96	1	104	27	0	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	0.0	0.0
Storage Lanes	1	0	1	0	0	0	0	0	0	1	0	0
Taper Length (m)	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	0.0	0.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00	0.99	1.00
Frt	0.984				0.996		0.930			0.850		
FIT Protected	0.950			0.950			0.977			0.950		
Satd. Flow (prot)	1444	3361	0	1805	3350	0	1715	0	1641	1594	0	0
FIT Permitted	0.169			0.169			0.659			0.640		
Satd. Flow (perm)	257	3361	0	321	3350	0	1507	0	1105	1594	0	0
Right Turn on Red		Yes		Yes			Yes		Yes			Yes
Satd. Flow (RTOR)	13			3			2			33		
Link Speed (km/h)	50			50			50			50		
Link Distance (m)	494.9			784.1			64.6			308.6		
Travel Time (s)	35.6			56.5			4.7			22.2		
Confl. Peds. (#/hr)	3		4	4		3	1		1	1		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	25%	6%	0%	7%	16%	0%	0%	0%	10%	0%	0%	23
Adj. Flow (vph)	13	1100	128	96	1127	28	104	1	113	29	0	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	1228	0	96	1155	0	0	218	0	29	23	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left
Median Width (m)	3.6			3.6			3.6			3.6		
Link Offset (m)	0.0			0.0			0.0			0.0		
Crosswalk Width (m)	4.8			4.8			4.8			4.8		
Two way Left Turn Lane	Yes			Yes			Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (km/h)	25	15	25	15	25	15	25	15	25	15	25	15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4			9.4		
Detector 2 Size (m)	0.6			0.6			0.6			0.6		
Detector 2 Type	Ch+Ex			Ch+Ex			Ch+Ex			Ch+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		

SEV - Village Square Update, Hamilton
PTSL (230019)
Page 5
Synchro 11 Report

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Total - 2031
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	NA	Perm	NA	NA	Perm	NA	NA	Perm	NA	NA
Protected Phases	4	4		8	8	8	2	2		6	6	
Permitted Phases	4	4		8	8	8	2	2		6	6	
Detector Phase												
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	30.0	30.0		30.0	30.0	
Minimum Split (s)	25.7	25.7		25.7	25.7	25.7	36.3	36.3		36.3	36.3	
Total Split (s)	26.0	26.0		26.0	26.0	26.0	64.0	64.0		64.0	64.0	
Total Split (%)	28.9%	28.9%		28.9%	28.9%	28.9%	71.1%	71.1%		71.1%	71.1%	
Maximum Green (s)	20.3	20.3		20.3	20.3	20.3	57.7	57.7		57.7	57.7	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.4	2.4		2.4	2.4	2.4	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.7	-1.7		-1.7	-1.7	-1.7	-2.3	-2.3		-2.3	-2.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Min	Min	Min	None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	9.0	9.0		9.0	9.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0	13.0	16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)	23.6	23.6		23.6	23.6	23.6	32.4	32.4		32.4	32.4	
Actuated G/C Ratio	0.37	0.37		0.37	0.37	0.37	0.51	0.51		0.51	0.51	
v/c Ratio	0.14	0.99		0.81	0.94	0.94	0.29	0.29		0.05	0.03	
Control Delay	18.2	45.2		71.4	36.1	36.1	9.9	9.9		7.8	2.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	18.2	45.2		71.4	36.1	36.1	9.9	9.9		7.8	2.5	
LOS	B	D		E	D	D	A	A		A	A	
Approach Delay			44.9				38.8	9.9				5.5
Approach LOS			D				D	A				A
Intersection Summary	Other											
Area Type:	Other											
Cycle Length:	90											
Actuated Cycle Length:	64											
Natural Cycle:	80											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	0.99											
Intersection Signal Delay:	38.6											
Intersection Capacity Utilization:	75.1%											
Intersection LOS:	D											
ICU Level of Service:	D											
Analysis Period (min):	15											



SEV - Village Square Update, Hamilton
PTSL (230019)
Page 6
Synchro 11 Report

	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	13	1228	96	1155	218	29	23
v/c Ratio	0.14	0.99	0.81	0.94	0.29	0.05	0.03
Control Delay	18.2	45.2	71.4	36.1	9.9	7.8	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2	45.2	71.4	36.1	9.9	7.8	2.5
Queue Length 50th (m)	1.0	~80.5	10.4	70.5	13.5	1.6	0.0
Queue Length 95th (m)	5.0	#123.8	#36.4	#114.2	25.3	5.0	2.3
Internal Link Dist (m)		470.9		760.1	40.6		284.6
Turn Bay Length (m)	25.0		30.0			30.0	
Base Capacity (vph)	94	1246	118	1235	1417	1039	1501
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.99	0.81	0.94	0.15	0.03	0.02
Intersection Summary							
~ Volume exceeds capacity, queue is theoretically infinite.							
Queue shown is maximum after two cycles.							
# 95th percentile volume exceeds capacity, queue may be longer.							
Queue shown is maximum after two cycles.							

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1
Traffic Volume (vph)	12	1012	118	88	1037	26	96	1	104
Future Volume (vph)	12	1012	118	88	1037	26	96	1	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Fpb. ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	0.99
Fpb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98	1.00	1.00	0.98	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1443	3363	1804	3351	1714	1714	1640	1594	1594
Flt Permitted	0.17	1.00	0.17	1.00	0.86	1.00	0.64	1.00	1.00
Satd. Flow (perm)	257	3363	322	3351	1508	1508	1104	1594	1594
Peak-Hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	1100	128	96	1127	28	104	1	113
RTOR Reduction (vph)	0	8	0	0	2	0	0	0	0
Lane Group Flow (vph)	13	1220	0	96	1153	0	217	0	29
Confl. Peds. (#/hr)	3	4	4	4	3	1	1	1	1
Heavy Vehicles (%)	25%	6%	0%	7%	18%	0%	0%	10%	0%
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Actuated Green, G (s)	21.9	21.9	21.9	21.9	30.1	30.1	30.1	30.1	30.1
Effective Green, g (s)	23.6	23.6	23.6	23.6	32.4	32.4	32.4	32.4	32.4
Actuated g/C Ratio	0.37	0.37	0.37	0.37	0.51	0.51	0.51	0.51	0.51
Clearance Time (s)	5.7	5.7	5.7	5.7	6.3	6.3	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	94	1240	118	1235	763	763	588	806	806
v/s Ratio Prot		c0.36		0.34					
v/s Ratio Perm	0.05		0.30		c0.14		0.03		0.01
v/c Ratio	0.14	0.98	0.81	0.93	0.28	0.05	0.03	0.01	0.01
Uniform Delay, d1	13.4	20.0	18.2	19.4	9.1	8.0	7.9	8.0	7.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	21.5	33.2	12.8	0.2	0.2	0.0	0.0	0.0
Delay (s)	13.7	41.5	51.4	32.2	9.3	8.1	7.9	8.1	7.9
Level of Service	B	D	D	C	A	A	A	A	A
Approach Delay (s)		41.2		33.7		9.3		8.0	
Approach LOS		D		C		A		A	
Intersection Summary									
HCM 2000 Control Delay	34.7		HCM 2000 Level of Service		C				
HCM 2000 Volume to Capacity ratio	0.58								
Actuated Cycle Length (s)	64.0								
Intersection Capacity Utilization	75.1%		Sum of lost time (s)		8.0				
Analysis Period (min)	15								
c. Critical Lane Group									

Queuing and Blocking Report

Total - 2031
SAT Peak Hour

Intersection: 3: Bishop Ryan Way & Bishop Reding Trail/Street A

Movement	WB	NB	TR
Directions Served	R	TR	
Maximum Queue (m)	12.9	3.5	
Average Queue (m)	6.1	0.1	
95th Queue (m)	13.1	1.8	
Link Distance (m)	126.4	71.7	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Bishop Ryan Way & Bishop Tonnos Way

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	
Maximum Queue (m)	15.2	10.5	16.4	22.6
Average Queue (m)	8.7	5.7	9.6	11.3
95th Queue (m)	14.0	12.6	13.4	17.6
Link Distance (m)	138.7	125.4	112.5	71.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Bishop Ryan Way/Hazleton Avenue & Rymal Road West

Movement	EB	EB	WB	WB	NB	NB	SB	SB	L	TR	L	TR
Directions Served	L	T	TR	L	T	TR	L	TR				
Maximum Queue (m)	54.9	186.1	182.5	59.9	564.5	560.5	38.0	17.9	10.8			
Average Queue (m)	8.0	99.2	98.8	57.4	336.6	334.5	17.9	3.8	3.0			
95th Queue (m)	28.9	170.1	169.2	61.2	567.0	559.8	30.9	12.6	9.7			
Link Distance (m)	485.0	485.0		773.0	773.0	42.2		294.1				
Upstream Blk Time (%)				3	2	0						
Queuing Penalty (veh)				0	0	0						
Storage Bay Dist (m)	25.0			30.0			30.0					
Storage Blk Time (%)	1	55		100	37							
Queuing Penalty (veh)	4	7		518	32							

Network Summary

Network wide Queuing Penalty: 561

Appendix I

Total with Improvements Synchro/SimTraffic Reports



Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
Traffic Volume (vph)	730	50	481	18	110	18	110	0	105	12	1	25
Future Volume (vph)	730	56	481	18	110	18	110	0	105	12	1	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	0.0	0.0
Storage Lanes	1	0	1	0	1	0	1	0	1	0	1	0
Taper Length (m)	30.0	30.0	30.0	40.0	40.0	40.0	40.0	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.99	1.00	0.99	1.00
Ped Bike Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00	0.99
Frt	0.989		0.994		0.994		0.850		0.850		0.855	
FIT Protected	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (prot)	1444	3375	0	1805	3338	0	1805	1594	0	1641	1604	0
FIT Permitted	0.413	0.246	0.246	0.739	0.739	0.739	0.739	0.684	0.684	0.684	0.684	0.684
Satd. Flow (perm)	626	3375	0	467	3338	0	1403	1594	0	1180	1604	0
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	8	4	4	33	33	33	33	27	27	27	27	27
Link Speed (km/h)	50	50	50	50	50	50	50	50	50	50	50	50
Link Distance (m)	494.9	784.1	784.1	64.6	64.6	64.6	64.6	308.6	308.6	308.6	308.6	308.6
Travel Time (s)	35.6	56.5	56.5	4.7	4.7	4.7	4.7	22.2	22.2	22.2	22.2	22.2
Confl. Peds. (#/hr)	3	4	4	3	1	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	25%	0%	0%	7%	16%	0%	0%	0%	10%	0%	0%	0%
Adj. Flow (vph)	4	793	61	54	523	20	120	0	114	13	1	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	854	0	54	543	0	120	114	0	13	28	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (km/h)	25	15	25	15	25	15	25	15	25	15	25	15
Number of Detectors	1	2	1	2	1	2	1	2	1	2	1	2
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Detector 2 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SEV - Village Square TIS Update, Hamilton
PTSL (230019)
Page 1

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	INA	4	Perm	INA	8	Perm	INA	2	Perm	INA	6
Protected Phases												
Permitted Phases	4	4	4	8	8	8	2	2	2	6	6	6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	25.7	25.7	25.7	25.7	25.7	25.7	36.3	36.3	36.3	36.3	36.3	36.3
Total Split (s)	26.0	26.0	26.0	26.0	26.0	26.0	64.0	64.0	64.0	64.0	64.0	64.0
Total Split (%)	28.9%	28.9%	28.9%	28.9%	28.9%	28.9%	71.1%	71.1%	71.1%	71.1%	71.1%	71.1%
Maximum Green (s)	20.3	20.3	20.3	20.3	20.3	20.3	57.7	57.7	57.7	57.7	57.7	57.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	0.0	-2.3	-2.3	-2.3	-2.3	-2.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	6.3	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Min	Min	None	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	9.0	9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Eff. Green (s)	27.7	27.7	27.7	27.7	27.7	27.7	31.2	33.6	33.6	33.6	33.6	33.6
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.48	0.48	0.54	0.59	0.59	0.59	0.59	0.59
v/c Ratio	0.01	0.52	0.24	0.34	0.34	0.34	0.16	0.12	0.02	0.03	0.03	0.03
Control Delay	13.5	17.1	18.8	14.9	10.0	6.3	7.5	3.5	0.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	17.1	18.8	14.9	10.0	6.3	7.5	3.5	0.0	0.0	0.0	0.0
LOS	B	B	B	B	B	B	A	A	A	A	A	A
Approach Delay	17.0	B	B	15.3	B	B	8.2	A	A	4.8	A	A
Approach LOS	B	B	B	B	B	B	A	A	A	A	A	A
Intersection Summary	Other											
Area Type	Other											
Cycle Length	90											
Actuated Cycle Length	57.4											
Natural Cycle	65											
Control Type	Actuated-Uncoordinated											
Maximum v/c Ratio	0.52											
Intersection Signal Delay	14.9											
Intersection Capacity Utilization	65.3%											
Analysis Period (min)	15											

SEV - Village Square TIS Update, Hamilton
PTSL (230019)
Page 2

Queues
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West
 Total - 2031 w/ Improvements
 AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	4	854	54	543	120	114	13	28
Lane Group Flow (vph)	0.01	0.52	0.24	0.34	0.16	0.12	0.02	0.03
v/c Ratio	13.5	17.1	18.8	14.9	10.0	6.3	7.5	3.5
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	13.5	17.1	18.8	14.9	10.0	6.3	7.5	3.5
Total Delay	0.3	45.4	4.7	25.8	7.7	4.6	0.7	0.1
Queue Length 50th (m)	2.1	64.7	13.9	38.6	16.1	11.5	2.9	3.2
Queue Length 95th (m)		470.9		760.1		40.6		284.6
Internal Link Dist (m)	25.0		30.0		30.0		30.0	
Turn Bay Length (m)	302	1632	225	1612	1320	1548	1145	1557
Base Capacity (vph)	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.52	0.24	0.34	0.09	0.07	0.01	0.02
Intersection Summary								

HCM Signalized Intersection Capacity Analysis
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West
 Total - 2031 w/ Improvements
 AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Traffic Volume (vph)	4	730	56	50	481	18	110	0	105	12	1	25
Future Volume (vph)	4	730	56	50	481	18	110	0	105	12	1	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	6.3	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fpb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00	0.99
Fibb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.85	1.00	0.85	1.00	0.86
Frt	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.95	1.00	0.95	1.00	0.95
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1441	3377	1802	3340	1804	1595	1640	1605	1640	1605	1640	1605
Flt Permitted	0.41	1.00	0.25	1.00	0.74	1.00	0.68	1.00	0.68	1.00	0.68	1.00
Satd. Flow (perm)	627	3377	467	3340	1403	1595	1180	1605	1180	1605	1180	1605
Peak-Hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	793	61	54	523	20	120	0	114	13	1	27
RTOR Reduction (vph)	0	4	0	0	2	0	0	0	19	0	0	16
Lane Group Flow (vph)	4	850	0	54	541	0	120	95	0	13	12	0
Confl. Peds. (#/hr)	3	4	4	4	3	1	1	1	1	1	1	1
Heavy Vehicles (%)	25%	0%	0%	7%	18%	0%	0%	0%	0%	10%	0%	0%
Turn Type	Perm	NA	NA	Perm	NA	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4			8			2				6	
Permitted Phases	4	24.7	24.7	24.7	24.7	24.7	22.1	22.1	22.1	22.1	22.1	22.1
Actuated Green, G (s)	26.4	26.4	26.4	26.4	26.4	26.4	23.8	23.8	23.8	23.8	23.8	23.8
Effective Green, g (s)	0.45	0.45	0.45	0.45	0.45	0.45	0.38	0.41	0.41	0.41	0.41	0.41
Actuated y/C Ratio	5.7	5.7	5.7	5.7	5.7	5.7	6.3	6.3	6.3	6.3	6.3	6.3
Clearance Time (s)	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	281	1516	209	1499	527	661	489	666	489	666	489	666
Lane Grp Cap (vph)	c0.25	0.12	0.12	0.12	0.12	0.12	c0.09	0.01	0.01	0.01	0.01	0.01
v/s Ratio Prot	0.01	0.56	0.26	0.36	0.23	0.14	0.03	0.02	0.03	0.02	0.03	0.02
v/c Ratio	9.0	11.9	10.1	10.7	12.5	10.7	10.2	10.1	10.2	10.1	10.2	10.1
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	0.0	0.3	0.7	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Incremental Delay, d2	9.0	12.2	10.8	10.8	12.7	10.8	10.2	10.2	10.2	10.2	10.2	10.2
Delay (s)	A	B	B	B	B	B	B	B	B	B	B	B
Level of Service	12.2	10.8	10.8	11.8	11.8	11.8	10.2	10.2	10.2	10.2	10.2	10.2
Approach Delay (s)	B			B			B				B	
Approach LOS	B			B			B				B	
Intersection Summary												
HCM 2000 Control Delay	11.6											
HCM 2000 Volume to Capacity ratio	0.39											
Actuated Cycle Length (s)	58.8											
Intersection Capacity Utilization	65.3%											
Analysis Period (min)	15											
c Critical Lane Group	C											

Queuing and Blocking Report

Total - 2031 w/ Improvements
AM Peak Hour

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
	L	T	TR	L	T	TR	L	TR	L	TR
Directions Served	8.4	70.8	73.5	28.6	43.4	60.0	26.0	26.2	18.4	12.4
Maximum Queue (m)	0.7	43.5	41.6	12.8	23.9	29.0	11.8	10.7	2.4	3.1
Average Queue (m)	4.9	63.7	64.6	27.6	38.0	48.6	21.3	19.7	10.5	10.1
95th Queue (m)		484.7	484.7	773.0	773.0	773.0	42.4		294.1	
Link Distance (m)										
Upstream Blk. Time (%)										
Queuing Penalty (veh)	25.0			30.0			30.0		30.0	
Storage Bay Dist (m)	26			3			3		3	
Storage Blk Time (%)										
Queuing Penalty (veh)	1			7			1		0	

Queuing and Blocking Report

Total - 2031 w/ Improvements
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
	→	→	→	←	←	←	←	←	←	←	←	←
Lane Configurations	8	849	121	115	878	43	95	0	93	23	0	14
Traffic Volume (vph)	8	849	121	115	878	43	95	0	93	23	0	14
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	25.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0
Storage Length (m)	1	0	1	0	1	0	1	0	1	0	1	0
Taper Length (m)	30.0		30.0		30.0		40.0		40.0		40.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00			1.00			1.00	0.99	1.00	0.99	1.00	0.99
Frt	0.981			0.993			0.850		0.850		0.850	
Flt Protected	0.950		0.950				0.950		0.950		0.950	
Satd. Flow (prot)	1805	3511	0	1805	3546	0	1805	1594	0	1805	1594	0
Flt Permitted	0.219		0.200				0.748		0.692		0.692	
Satd. Flow (perm)	416	3511	0	380	3546	0	1420	1594	0	1314	1594	0
Right Turn on Red		Yes		Yes			Yes		Yes		Yes	
Satd. Flow (RTOR)	27		9				116		105		105	
Link Speed (k/h)	50		50				50		50		50	
Link Distance (m)	494.9		784.1				64.6		308.6		308.6	
Travel Time (s)	35.6		56.5				4.7		22.2		22.2	
Confl. Peds. (#/hr)	3			3			1		1		1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	9	923	132	125	954	47	103	0	101	25	0	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	1055	0	125	1001	0	103	101	0	25	15	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Right	Left	Right
Median Width (m)	3.6		3.6		3.6		3.6		3.6		3.6	
Link Offset (m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width (m)	4.8		4.8		4.8		4.8		4.8		4.8	
Two way Left Turn Lane	Yes		Yes		Yes		Yes		Yes		Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	25	15	25	15	25	15	25	15	25
Number of Detectors	1	2	1	1	2	1	1	2	1	2	1	2
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size (m)	0.6		0.6		0.6		0.6		0.6		0.6	
Detector 2 Type	Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	

Lanes, Volumes, Timings
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

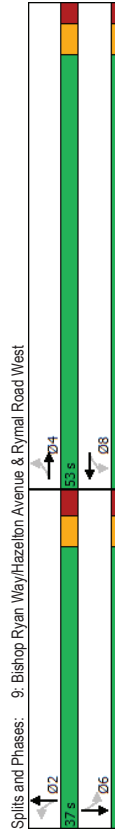
Queues
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Total - 2031 w/ Improvements
 PM Peak Hour

Total - 2031 w/ Improvements
 PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Permitted	NA	4	Permitted	NA	8	Permitted	NA	2	Permitted	NA	6
Protected Phases	4	4	8	8	8	8	2	2	2	6	6	6
Permitted Phases	4	4	8	8	8	8	2	2	2	6	6	6
Detector Phase	4	4	8	8	8	8	2	2	2	6	6	6
Switch Phase	10.0	10.0	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0	30.0
Minimum Initial (s)	25.7	25.7	25.7	25.7	25.7	25.7	36.3	36.3	36.3	36.3	36.3	36.3
Minimum Split (s)	53.0	53.0	53.0	53.0	53.0	53.0	37.0	37.0	37.0	37.0	37.0	37.0
Total Split (s)	58.9%	58.9%	58.9%	58.9%	58.9%	58.9%	41.1%	41.1%	41.1%	41.1%	41.1%	41.1%
Total Split (%)	47.3	47.3	47.3	47.3	47.3	47.3	30.7	30.7	30.7	30.7	30.7	30.7
Maximum Green (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Yellow Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	0.0	-2.3	-2.3	-2.3	-2.3	-2.3
Lost Time Adjust (s)	4.0	4.0	4.0	4.0	4.0	4.0	6.3	4.0	4.0	4.0	4.0	4.0
Total Lost Time (s)												
Lead/Lag												
Lead/Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	None	None	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	9.0	9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effr Green (s)	40.7	40.7	40.7	40.7	40.7	40.7	35.0	37.0	37.0	37.0	37.0	37.0
Actuated g/C Ratio	0.59	0.59	0.59	0.59	0.59	0.59	0.50	0.53	0.53	0.53	0.53	0.53
v/c Ratio	0.04	0.51	0.56	0.48	0.14	0.14	0.14	0.11	0.04	0.04	0.02	0.02
Control Delay	10.2	13.6	28.0	13.5	19.2	3.6	17.3	0.0	17.3	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	13.6	28.0	13.5	19.2	3.6	17.3	0.0	17.3	0.0	0.0	0.0
LOS	B	B	C	B	B	A	B	A	B	B	A	A
Approach Delay	13.6						15.1		11.5		10.8	
Approach LOS	B						B		B		B	
Intersection Summary												
Area Type:	Other											
Cycle Length:	90											
Actuated Cycle Length:	69.5											
Natural Cycle:	80											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	0.56											
Intersection Signal Delay:	14.1											
Intersection Capacity Utilization:	70.7%											
Analysis Period (min):	15											

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



HCM Signalized Intersection Capacity Analysis
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Total - 2031 w/ Improvements
 PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	8	8	8	8	8	8	8	8	8	8	8	8
Traffic Volume (vph)	849	121	115	878	43	95	0	93	23	0	14	14
Future Volume (vph)	849	121	115	878	43	95	0	93	23	0	14	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.85	1.00	0.85	1.00	1.00
Frt	1.00	0.98	1.00	0.99	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Flt Protected	1803	3512	1805	3547	1804	1594	1804	1594	1804	1594	1804	1594
Satd. Flow (prot)	0.22	1.00	0.20	1.00	0.75	1.00	0.69	1.00	0.69	1.00	0.69	1.00
Satd. Flow (perm)	415	3512	380	3547	1419	1594	1313	1594	1313	1594	1313	1594
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	923	132	125	954	47	103	0	101	25	0	15	15
RTOR Reduction (vph)	0	12	0	0	4	0	0	67	0	0	10	10
Lane Group Flow (vph)	9	1043	0	125	997	0	103	34	0	25	5	0
Confl. Peds. (#/hr)	3	0	0	0	0	0	3	1	1	1	1	1
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4	0	0	0	0	0	0	0	0	0	0	0
Permitted Phases	4	8	8	8	8	8	8	8	8	8	8	8
Actuated Green, G (s)	36.9	36.9	36.9	36.9	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4
Effective Green, g (s)	38.6	38.6	38.6	38.6	21.4	23.7	23.7	23.7	23.7	23.7	23.7	23.7
Actuated G/C Ratio	0.55	0.55	0.55	0.55	0.30	0.34	0.34	0.34	0.34	0.34	0.34	0.34
Clearance Time (s)	5.7	5.7	5.7	5.7	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	227	1928	208	1947	431	537	442	537	442	537	442	537
v/s Ratio Prot	0.30	0.30	0.28	0.28	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
v/s Ratio Perm	0.02	0.33	0.60	0.51	0.24	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Uniform Delay, d1	7.3	10.2	10.7	9.9	18.3	15.8	15.7	15.5	15.7	15.5	15.5	15.5
Progression 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
Incremental Delay, d2	0.0	0.2	4.8	0.2	0.3	0.0	0.1	0.0	0.1	0.0	0.1	0.0
Delay (s)	7.3	10.3	15.5	10.2	18.6	15.8	15.8	15.5	15.8	15.5	15.5	15.5
Level of Service	A	B	B	B	B	B	B	B	B	B	B	B
Approach Delay (s)	10.3	10.3	10.3	10.3	10.8	17.2	17.2	15.7	17.2	15.7	15.7	15.7
Approach LOS	B	B	B	B	B	B	B	B	B	B	B	B
Intersection Summary												
HCM 2000 Control Delay	11.2 HCM 2000 Level of Service B											
HCM 2000 Volume to Capacity ratio	0.45											
Actuated Cycle Length (s)	70.3 Sum of lost time (s) 8.0											
Intersection Capacity Utilization	70.7% ICU Level of Service C											
Analysis Period (min)	15											
c Critical Lane Group												

Queuing and Blocking Report
 Total - 2031 w/ Improvements
 PM Peak Hour

Intersection: 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR	L	TR
Maximum Queue (m)	19.4	72.1	76.8	51.7	67.0	72.9	28.5	29.3	14.9	11.0		
Average Queue (m)	2.2	42.8	44.3	22.4	37.7	44.4	13.2	10.8	3.2	1.6		
95th Queue (m)	11.4	62.8	68.2	41.4	59.1	65.5	24.5	21.9	10.8	7.1		
Link Distance (m)	484.7 484.7											
Upstream Blk Time (%)	0											
Queuing Penalty (veh)	0											
Storage Bay Dist (m)	25.0 30.0 30.0 0 0 0 30.0											
Storage Blk Time (%)	21 8 11 0 0 0 0											
Queuing Penalty (veh)	2 34 13 0 0 0 0											

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Lanes, Volumes, Timings
9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

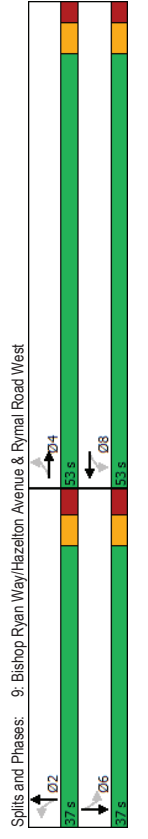
Total - 2031 w/ Improvements
SAT Peak Hour

Total - 2031 w/ Improvements
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Traffic Volume (vph)	12	1012	118	88	1037	26	96	1	104	27	0	21
Future Volume (vph)	12	1012	118	88	1037	26	96	1	104	27	0	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	0.0	0.0
Storage Lanes	1	0	1	0	1	0	1	0	1	0	1	0
Taper Length (m)	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00	0.99	1.00
Frt	0.984			0.996			0.851			0.850		
FIT Protected	0.950		0.950		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	1444	3361	0	1805	3350	0	1805	1596	0	1641	1594	0
FIT Permitted	0.175		0.154		0.742		0.742		0.684		0.684	
Satd. Flow (perm)	266	3361	0	292	3350	0	1408	1596	0	1180	1594	0
Right Turn on Red		Yes		Yes		Yes		Yes		Yes		Yes
Satd. Flow (RTOR)	22		4		4		72		50		68	
Link Speed (km/h)	50		50		50		50		50		50	
Link Distance (m)	494.9		784.1		64.6		64.6		308.6		308.6	
Travel Time (s)	35.6		56.5		4.7		4.7		22.2		22.2	
Confl. Peds. (#/hr)	3		4		4		3		1		1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	25%	6%	0%	7%	16%	0%	0%	0%	10%	0%	0%	23%
Adj. Flow (vph)	13	1100	128	96	1127	28	104	1	113	29	0	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	1228	0	96	1155	0	104	114	0	29	23	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.6		3.6		3.6		3.6		3.6		3.6	
Link Offset (m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width (m)	4.8		4.8		4.8		4.8		4.8		4.8	
Two way Left Turn Lane	Yes		Yes		Yes		Yes		Yes		Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (km/h)	25		15		25		15		25		15	
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size (m)	0.6		0.6		0.6		0.6		0.6		0.6	
Detector 2 Type	Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	

SEV - Village Square Update, Hamilton
PTSL (230019)
Page 1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	INA	4	Perm	INA	8	Perm	INA	2	Perm	INA	6
Protected Phases												
Permitted Phases	4	4	4	8	8	8	2	2	2	6	6	6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	25.7	25.7	25.7	25.7	25.7	25.7	36.3	36.3	36.3	36.3	36.3	36.3
Total Split (s)	53.0	53.0	53.0	53.0	53.0	53.0	37.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	58.9%	58.9%	58.9%	58.9%	58.9%	58.9%	41.1%	41.1%	41.1%	41.1%	41.1%	41.1%
Maximum Green (s)	47.3	47.3	47.3	47.3	47.3	47.3	30.7	30.7	30.7	30.7	30.7	30.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	0.0	-2.3	-2.3	-2.3	-2.3	-2.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	6.3	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Min	Min	None	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	9.0	9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	44.7	44.7	44.7	44.7	44.7	44.7	32.3	34.8	34.8	34.8	34.8	34.8
Actuated g/C Ratio	0.60	0.60	0.60	0.60	0.60	0.60	0.44	0.47	0.47	0.47	0.47	0.47
v/c Ratio	0.08	0.60	0.55	0.57	0.17	0.15	0.15	0.05	0.03	0.05	0.03	0.03
Control Delay	11.5	15.0	30.4	14.7	20.3	9.1	18.0	9.1	18.0	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	15.0	30.4	14.7	20.3	9.1	18.0	9.1	18.0	0.0	0.0	0.0
LOS	B	B	B	C	B	C	A	A	B	B	A	A
Approach Delay	15.0		B	15.9		B	14.5		B	10.0		B
Approach LOS												
Intersection Summary	Other											
Area Type:	Other											
Cycle Length:	90											
Actuated Cycle Length:	74.2											
Natural Cycle:	80											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	0.60											
Intersection Signal Delay:	15.3											
Intersection Capacity Utilization:	75.1%											
Intersection LOS:	B											
ICU Level of Service:	D											
Analysis Period (min):	15											



SEV - Village Square Update, Hamilton
PTSL (230019)
Page 2

Queues
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Total - 2031 w/ Improvements
 SAT Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	13	1228	96	1155	104	114	29	23
v/c Ratio	0.08	0.60	0.55	0.57	0.17	0.15	0.05	0.03
Control Delay	11.5	15.0	30.4	14.7	20.3	9.1	18.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	15.0	30.4	14.7	20.3	9.1	18.0	0.0
Queue Length 50th (m)	1.0	76.0	10.9	70.5	10.9	4.0	2.7	0.0
Queue Length 95th (m)	4.3	98.7	437.1	91.4	26.0	16.2	9.4	0.0
Internal Link Dist (m)	470.9		760.1		40.6		284.6	
Turn Bay Length (m)	25.0		30.0		30.0		30.0	
Base Capacity (vph)	181	2304	199	2290	627	801	565	798
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.53	0.48	0.50	0.17	0.14	0.05	0.03

Intersection Summary
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Total - 2031 w/ Improvements
 SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Traffic Volume (vph)	12	1012	118	88	1037	26	96	1	104	27	0	21
Future Volume (vph)	12	1012	118	88	1037	26	96	1	104	27	0	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fpb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00	0.99
Fpb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Frt	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1443	3363	1803	3351	1803	3351	1803	1597	1640	1594	1640	1594
Flt Permitted	0.17	1.00	0.15	1.00	0.74	1.00	0.74	1.00	0.68	1.00	0.68	1.00
Satd. Flow (perm)	265	3363	292	3351	1409	1597	1409	1597	1180	1594	1180	1594
Peak-Hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	1100	128	96	1127	28	104	1	113	29	0	23
RTOR Reduction (vph)	0	9	0	0	2	0	0	0	49	0	0	16
Lane Group Flow (vph)	13	1219	0	96	1153	0	104	65	0	29	7	0
Confl. Peds. (#/hr)	3	4	4	4	3	1	1	1	1	1	1	1
Heavy Vehicles (%)	25%	0%	0%	7%	18%	0%	0%	0%	0%	10%	0%	0%
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4		4		8		2		2		6	
Permitted Phases	4		8		8		2		2		6	
Actuated Green, G (s)	41.5	41.5	41.5	41.5	41.5	41.5	22.0	22.0	22.0	22.0	22.0	22.0
Effective Green, g (s)	43.2	43.2	43.2	43.2	43.2	43.2	22.0	24.3	24.3	24.3	24.3	24.3
Actuated g/C Ratio	0.57	0.57	0.57	0.57	0.57	0.57	0.29	0.32	0.32	0.32	0.32	0.32
Clearance Time (s)	5.7	5.7	5.7	5.7	5.7	5.7	6.3	6.3	6.3	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	151	1824	167	1917	410	514	410	514	379	513	379	513
v/s Ratio Prot	c0.36		0.34		0.34		0.04		0.04		0.00	
v/c Ratio Perm	0.09	0.63	0.57	0.60	0.25	0.13	0.08	0.01	0.08	0.01	0.01	0.01
Uniform Delay, d1	7.3	10.8	10.3	10.5	20.5	18.1	17.8	17.4	17.8	17.4	17.8	17.4
Progression 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
Incremental Delay, d2	0.1	0.5	4.7	0.5	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Delay (s)	7.4	11.3	15.0	11.1	20.8	18.2	17.9	17.5	17.9	17.5	17.9	17.5
Level of Service	A	B	B	B	C	B	B	B	B	B	B	B
Approach Delay (s)	11.3		11.4		19.4		17.7		17.7		17.7	
Approach LOS	B		B		B		B		B		B	
Intersection Summary												
HCM 2000 Control Delay	12.1											
HCM 2000 Level of Service	B											
HCM 2000 Volume to Capacity ratio	0.49											
Actuated Cycle Length (s)	75.5											
Sum of lost time (s)	8.0											
Intersection Capacity Utilization	75.1%											
ICU Level of Service	D											
Analysis Period (min)	15											
c. Critical Lane Group												

Queuing and Blocking Report

Total - 2031 w/ Improvements
SAT Peak Hour

Intersection: 9: Bishop Ryan Way/Hazelton Avenue & Rymal Road West

Movement	EB	EB	WB	WB	TR	EB	WB	WB	TR	NB	NB	SB	SB	TR
	L	T	L	T	L	L	T	L	T	L	T	L	T	L
Directions Served														
Maximum Queue (m)	38.5	83.0	84.8	59.1	81.2	94.2	32.0	26.4	16.0	16.4				
Average Queue (m)	5.3	51.4	51.4	21.7	46.8	52.9	14.5	11.2	4.1	3.4				
95th Queue (m)	20.2	74.8	76.1	47.1	73.6	79.7	26.8	21.5	13.5	11.0				
Link Distance (m)			484.7		484.7		773.0		773.0		42.4			294.1
Upstream Blk. Time (%)														
Queuing Penalty (veh)														
Storage Bay Dist (m)	25.0			30.0				30.0						30.0
Storage Blk. Time (%)	1	24		5	15			0						0
Queuing Penalty (veh)	5	3		28	13			0						0