Final Report

Transportation Impact Study – Commercial Development, 924 King Street, Midland, Ontario

Prepared for 1489338 Ontario Inc.
by Arcadis Professional Services
August 29, 2023

Document Control Page

CLIENT:	1489338 Ontario Inc.1489338 Ontario Inc.
PROJECT NAME:	924 King Street
REPORT TITLE:	Transportation Impact Study – Commercial Development, 924 King Street, Midland, Ontario Commercial Development, 924 King Street, Midland, Ontario
IBI REFERENCE:	141453
VERSION:	2.0
DIGITAL MASTER:	Sharepoint: 141453 TIS Parking Study for Fast Food at 924 King St, Midland - Internal Documents\6.0_Technical\03_Reports
ORIGINATOR:	Habeeb Olorode
REVIEWER:	Hugo Chan
AUTHORIZATION:	1489338 Ontario Inc.
CIRCULATION LIST:	
HISTORY:	1.0 Draft Report – March 2023 2.0 Final Report – August 2023

Table of Contents

Table of Contents (continued)

Table of Contents (continued)

List of Exhibits

Table of Contents (continued)

List of Appendices

1 Introduction

924 King Street (the 'development site') is located in the north-west quadrant of the intersection of King Street and Heritage Drive, in the Town of Midland. The development site currently contains a Quality Inn hotel with conference centre amenities. The proponent proposes to intensify the lands by converting a portion of the hotel's surface parking lot into fast-food drive-thru land uses.

Quality Inn (the 'proponent') proposes to construct two restaurants with drive-thru amenities, containing 64 indoor dining seats each (the 'proposed development'). A total of 16 parking spaces are proposed for each restaurant. These parking spaces are repurposed from their original hotel designated parking uses, due to an existing oversupply of hotel parking. The site is accessible via the existing driveway fronting King Street.

The purpose of this report is to analyze the impact that the proposed development may have on the surrounding transportation network. This report takes into consideration the future road configuration, background traffic growth, and other proposed developments in the area. The study also reviews internal maneuvering and vehicular parking requirements with respect to the Town of Midland Zoning By-law.

1.1 Study Purpose

The purpose of this report is to analyze the impact that the proposed development may have on the surrounding transportation network. This report takes into consideration the future road configuration, background traffic growth, and other proposed developments in the area. The purpose of this study is to:

- Assess the 2022 existing traffic operations of the study area intersections during the weekday morning, midday, and afternoon peak periods;
- Assess traffic operations in the 2029 and 2034 Future Background scenario as a 5 and 10 year horizon, respectively, after the date of this report, during the weekday AM, midday, and PM peak hours (incorporating both corridor traffic growth and background developments in the area);
- Estimate site traffic based on information published in the **Trip Generation Manual, 11th Edition**, by the Institute of Transportation Engineers (September, 2021);
- Assess traffic operations in the 2029, and 2034 Future Total scenario as a 5 and 10 year horizon, respectively, after the date of this report during the weekday AM, midday, and PM peak hours incorporating traffic growth, background developments in the area, and development site generated traffic;
- Develop mitigation measures to address any deficiencies for key study area intersections;
- Assess the functionality of the site vehicular access and internal maneuvering; and
- Review and assess the adequacy of the proposed parking supply with regards to the parking requirements per the Town's Zoning By-law, as amended (the "Zoning By-law") for the site, and to provide a professional opinion on the proposed parking supply based upon this assessment. This report is outlined with the following sections:
- **Section 2** examines the existing transportation facilities and discusses the traffic analysis details, such as signal timing plans, turning movement counts, analysis periods, and study intersections;

- **Section 3** examines the existing traffic operations conditions and identifies existing operations issues;
- **Section 4** through **Section 6** examines the future transportation improvements planned by the City, Future Background traffic operations under 5-year and 10-year horizons (2029 and 2034 respectively) without the subject site;
- **Section 7** examines site trip generation estimate from the proposed developments and trip assignment to the study area road network;
- **Section 8** through **Section 10** examines Future Total traffic operations under a 5-year and 10-year horizons (2029 and 2034 respectively);
- **Section 11** and **Section 12** examines the concept draft plan based on the parking required to support concept design and the vehicle swept path analysis; and
- **Section 13** provides recommendations and conclusions made based on the preceding sections.

This report references the **General Guidelines for the Preparation of Traffic Impact Studies Ministry of Transportation (2021),** the **Town of Midland Zoning Bylaw (ZBL),** the **County of Simcoe Bylaw**, and the **City of Barrie TIS Guidelines**.

1.2 Study Area

One of the study intersections is signal-controlled and the other study intersections is stop-controlled. The study area is illustrated in **Exhibit 1-1.**

The site is bounded by a mix of, commercial, and retail developments to the north, east, south, and west.

Exhibit 1-1: Study Area

1.3 Proposed Development

The proposed development will consist of two stand-alone buildings. Both buildings will be fast-food restaurants with drive-thru lanes, containing 64 indoor dining seats each. These will be constructed on a portion of the existing surface parking lot that currently serves the Quality Inn hotel, which is also owned by the proponent.

A parking supply of 16 spaces per restaurant is proposed at grade. Direct vehicular access to the adjacent road network will be provided via the existing full movement site access fronting King Street.

These site details are based on the latest received site plan (August, 2021) and is illustrated in **Exhibit 1-2**.

Exhibit 1-2: Proposed Site Plan

2 Existing Traffic Conditions

This section documents the transportation network in the study area in 2022, including existing roadways, transit services, active transportation networks, and 2022 traffic volumes.

2.1 Existing Road Network

The characteristics of the study area roadways are summarized in **Exhibit 2-1**.

Exhibit 2-1: Study Roadway Characteristics

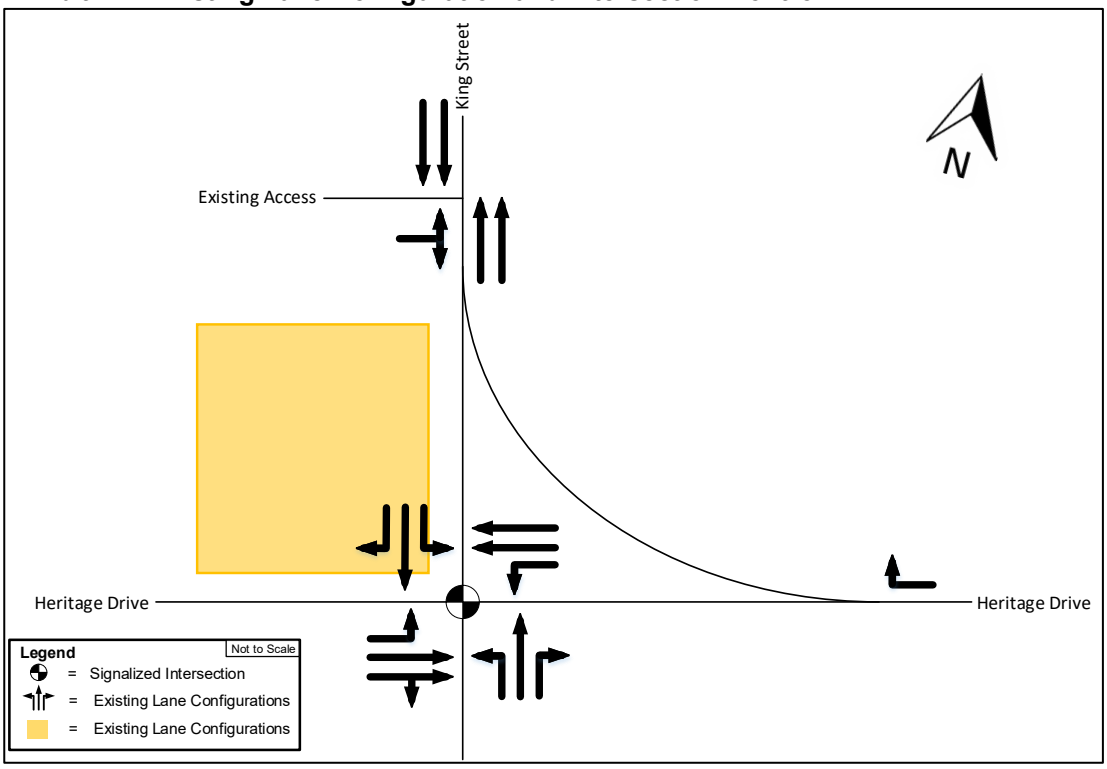
Street Name	Class.	Orientation	Road Width (Lanes)	Traffic Direction	From	To	On-Street Parking	Speed Limit
King Street	Arterial Road	North / South	2	Two-way	Bayshore Drive	-	Prohibited	50 km/h
Heritage Drive	Major Arterial Road	East / West	2	Two-way	Angela Schmid Foster Road	Wye River	Prohibited	50 km/h

As listed below, the study area of the following intersections:

1. King Street / Heritage Drive (signalized); and
2. King Street / Existing Access (unsignalized).

The intersection control and lane configurations for study area intersections are illustrated in **Exhibit 2-2**.

Exhibit 2-2: Existing Lane Configuration and Intersection Control



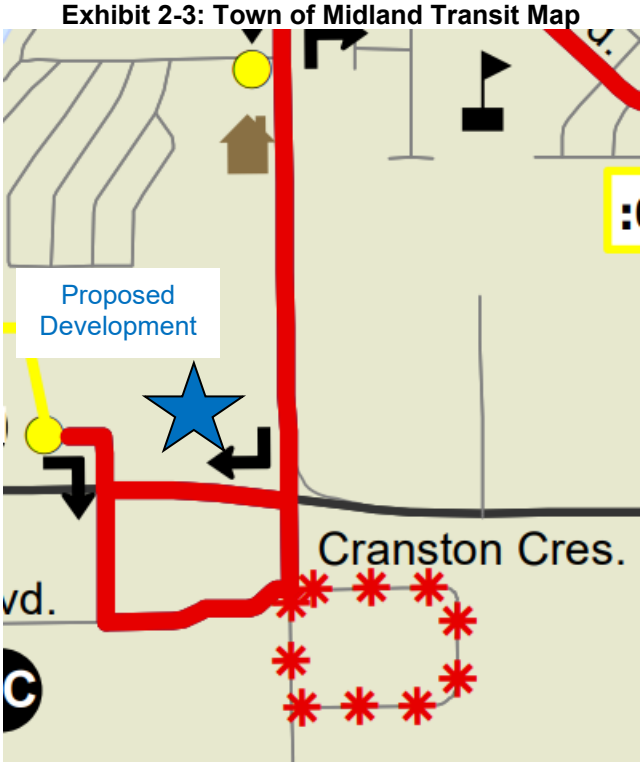
2.2 Existing Transit Network

Midland-Penetanguishene Transit Service is the public transit system in Midland, Ontario. Currently, the site is serviced by one bus route along King Street. Transit routes servicing the site are:

- **Midland South** operates between Hugel Avenue and Prospect Boulevard generally in a north-south direction. Monday to Friday service operates from 6:45 AM to 5:45 PM, and Saturday service operates from 8:45 AM to 4:45 PM. There is no service on Sunday or on holidays.

Transit Services in the development area are illustrated in **Exhibit 2-3**.

Exhibit 2-3: Town of Midland Transit Map



Source: Midland-Penetanguishene Transit Service, Retrieved December 16, 2022
https://www.midland.ca/Shared%20Documents/Midland%20Transit%20page%20files/Midpen%20Transit%20Route%20Map%20DEC%202021%20Midland%20Route%20Change%20V2.pdf

The nearest bus stop to the subject development is located west of Heritage Drive and Jones Road outside a Walmart. This bus stop is approximately 700 metres west of the development site.

2.3 Existing Active Transportation Network

2.3.1 Walking

Pedestrian sidewalks are provided throughout the study area. On Heritage Street a sidewalk is provided on the north side of the road, and on King Street a sidewalk is provided on the west side of the roadway.

2.3.1 Cycling

There are no bicycle lanes in any of the roadways in the study area.

2.4 Analysis Period

Based on the proposed development 's land use and study area characteristics, the following analysis periods were used in this study:

- AM Peak Period – 7:00 a.m. to 9:00 a.m. on a weekday;
- PM Peak period – 4:00 p.m. to 6:00 p.m. on a weekday; and
- Midday Peak Period – 11:00 a.m. to 2:00 p.m. on a weekday.

2.5 Turning Movement Counts

Turning movements counts (TMC) data at the study intersections were obtained by the Ontario Traffic Inc. They were all collected from 7:00 AM – 9:00 AM, 10:00 AM – 2:00 PM, and 4:00 PM – 6:00 PM to review typical weekday "rush hour" traffic activity. The peak for each individual intersection was used in this study.

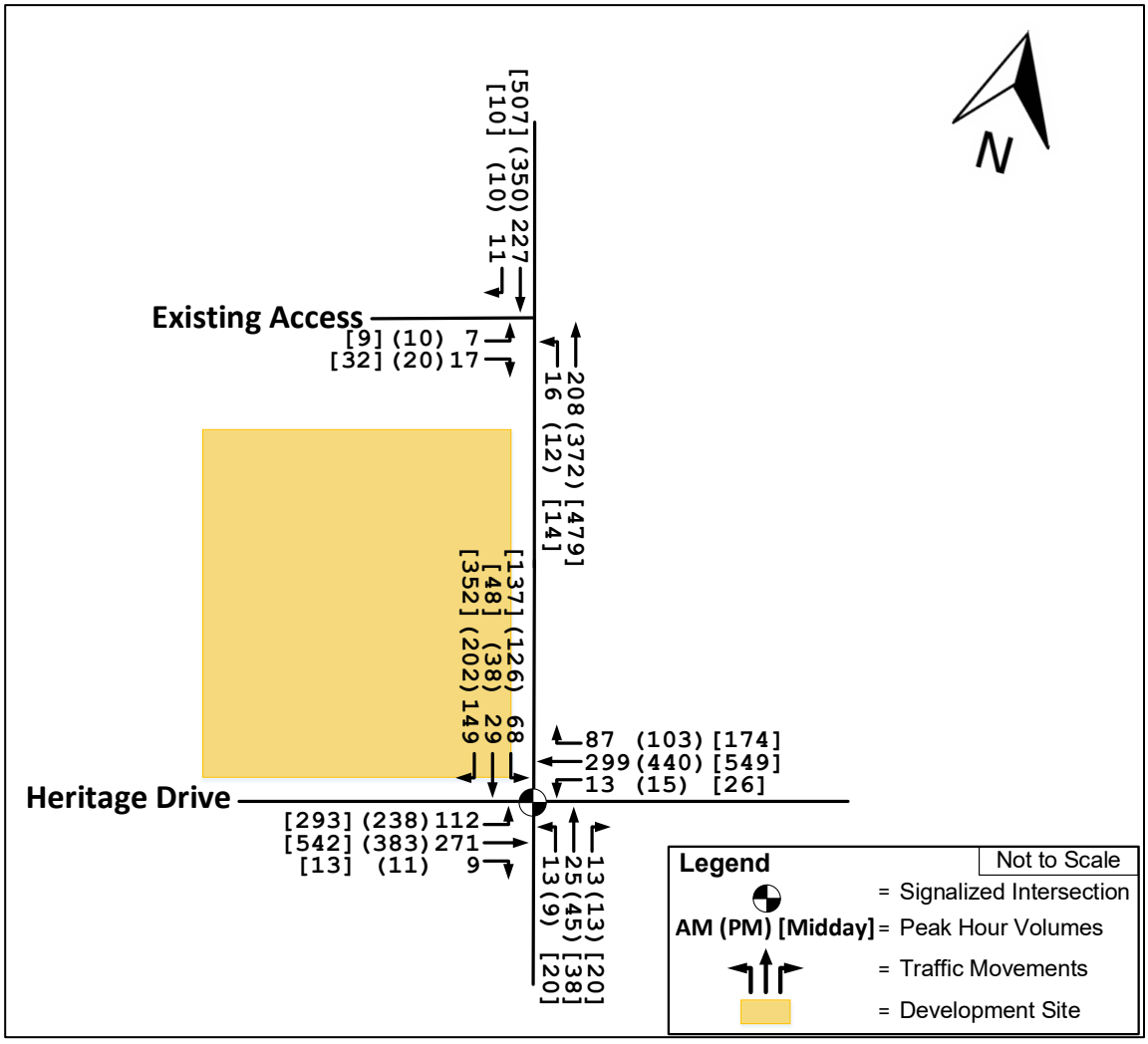
Details regarding the TMC used in this study are summarized below in **Exhibit 2-4**. TMC data for each study area intersection is provided in **Appendix A**.

Exhibit 2-4: Traffic Data Information

INTERSECTION	DATA SOURCE	DATE	PEAK HOUR		
			AM	MIDDAY	PM
King Street and Heritage Drive	Ontario Traffic Inc.	Saturday, August 13th, 2022	8:00 AM – 9:00 AM	11:15 AM – 12:15 PM	4:00 PM – 5:00 PM
King Street and Existing Access			8:00 AM – 9:00 AM	11:15 AM – 12:15 PM	4:00 PM – 5:00 PM

Correspondingly, **Exhibit 2-5** illustrates the 2022 existing weekday AM, midday, and PM peak hour traffic volumes.

Exhibit 2-5: Existing Traffic Volumes



2.6 Signal Timing Plans

Signal timing plans for the signalized study area intersections were observed on site on Wednesday May 6th, 2022 and are located in **Appendix B**.

2.7 Synchro Saturation Flow Rate Parameters

The Town of Midland does not have saturation flow rate parameters. A review of the **City of Barrie TIS Guidelines** suggests a Synchro saturation flow rate of 1,900 vphpl (vehicles per hour per lane) was used for the purposes of this study, consistent with the City of Barrie's TIS guidelines.

2.8 Peak Hour Factor

Under existing conditions, the peak hour factor (PHF) was obtained from the TMCs based on the peak 15-minute interval in comparison with the overall peak hour volumes for each intersection. This PHF was used for existing and future conditions analysis.

3 2022 Existing Conditions Analysis

Using the turning movement counts described in Section 2.5, the study area intersections were analyzed using the software package Synchro 11.0, which is based on the **Highway Capacity Manual** methodology. The Town of Midland does not have criteria for identifying critical movements at signalized and unsignalized intersections. Therefore, a review of the **City of Barrie TIS Guidelines** was completed as the closest municipality to the study area. Based on the **City of Barrie TIS Guidelines**, the criteria for identifying critical signalized intersections or movements is as follows:

- Volume to Capacity (v/c) ratio exceeds 0.85 for overall intersection operations, through movements, for exclusive turning movements of shared through/turning movements.

Furthermore, the following criteria were used in identifying critical operations at unsignalized intersections:

- Level of service (LOS), based on average delay per vehicle, on individual movements exceeds LOS E; and
- 95th percentile queue lengths for an individual movement exceeds the lesser of 5 vehicles or the available queue storage.

3.1 Signalized Intersections

The weekday AM, midday, and PM peak hour traffic operations at the signalized intersection are summarized in **Exhibit 3-1**Exhibit 3-1: Existing Traffic Operations - Signalized Intersections. Synchro output reports for the 2022 Existing Conditions are provided in **Appendix C**.

Exhibit 3-1: Existing Traffic Operations - Signalized Intersections

Intersection	Intersection			Critical Movement					
	LOS	Delay	V/C Ratio	Movement	LOS	Delay (s)	V/C Ratio	95th Percentile Queue (m)	Storage Capacity (m)
AM Peak Hour									
King Street & Heritage Drive	B	13.8	0.3	EBL	A	5.4	0.25	9.7	193
				EBT	A	7.2	0.17	18.8	-
				WBL	A	8.6	0.04	1.9	240
				WBT	B	10.6	0.26	23.3	-
				NBL	C	24.7	0.09	5.1	120
				NBT	C	25.4	0.21	6.7	-
				NBR	C	24.3	0.02	-	-
				SBL	C	27.6	0.45	17.3	212
				SBT	C	24.9	0.13	9.2	-
				SBR	C	24.9	0.12	8.3	-
Midday Peak Hour									
King Street & Heritage Drive	B	16.5	0.69	EBL	B	11.9	0.68	38.8	193
				EBT	B	10.9	0.33	46.0	-
				WBL	A	8.7	0.09	4.0	240
				WBT	B	13.8	0.47	58.1	-

Intersection	Intersection			Critical Movement					
				NBL	C	23.9	0.10	7.5	120
				NBT	C	24.4	0.19	10.7	-
				NBR	C	23.4	0.02	-	-
				SBL	C	29.9	0.60	36.7	212
				SBT	C	24.3	0.18	14.0	-
				SBR	C	25.9	0.37	30.5	-
PM Peak Hour									
King Street & Heritage Drive	B	15.6	0.59	EBL	A	8.3	0.54	28.3	193
				EBT	A	9.6	0.22	30.7	-
				WBL	A	9.4	0.05	2.7	240
				WBT	B	13.2	0.38	42.3	-
				NBL	C	23.4	0.10	3.0	120
				NBT	C	24.1	0.21	11.0	-
				NBR	C	22.9	0.01	-	-
				SBL	C	31.0	0.64	29.0	212
				SBT	C	23.7	0.15	10.4	-
				SBR	C	23.7	0.15	12.4	-

During all peak hours, operations are within capacity thresholds, with all turning queue lengths being within the storage lane capacities.

All other signalized intersection operations in the study are expected to remain at acceptable thresholds during the weekday AM, midday, and PM peak hours.

3.2 Unsignalized Intersections

The weekday AM and PM peak hour traffic operations at the unsignalized intersections are summarized in **Exhibit 3-2**.

Exhibit 3-2: Existing Traffic Operations - Unsignalized Intersections

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane V/C Ratio	Lane 95th Percentile Queue (m)	Lane Storage Capacity (m)
AM Peak Hour							
King Street & Existing Access	1.0	EBL	B	10.7	0.06	1.5	-
		NBL	A	1.9	0.02	0.4	-
Midday Peak Hour							
King Street & Existing Access	0.9	EBL	B	12.4	0.10	2.4	-
		NBL	A	1.6	0.03	0.7	-
PM Peak Hour							
King Street & Existing Access	0.7	EBL	B	11.6	0.07	1.7	-
		NBL	A	1.0	0.01	0.3	-

Overall, no queueing or operational issues were observed for the existing site King Street driveway during the weekday AM, midday, and PM peak hours. Full Highway Capacity Manual analysis for the 2022 existing conditions scenario is presented in **Appendix C**.

4 Future Background Traffic Conditions

This section discusses the growth rate, future road network improvements, other background developments, and future traffic conditions under the 2029 and 2034 horizon years.

4.1 Horizon Year

As per the **County of Simcoe's General Guidelines for Traffic Impact Studies**, horizon years of 2029 and 2034 were selected, which represents five years and 10 years as stipulated by the County's Engineering Consulting Team scope confirmation.

4.2 Growth Rate

An annual growth rate of 2% was applied to all through movements within the study area. This growth rate was obtained from consultations with the General Guidelines for the Preparation of Traffic Impact Studies MTO staff.

4.3 Future Transportation Network

Based on a review of the Town of Midland's, Simcoe County and Ministry of Transportation, no road network improvements in the study area are anticipated within the future horizon years.

4.4 Background Developments

Background developments were identified in the vicinity of the study area with the potential for generating additional traffic. Town of Midland listed additional background developments for us to consider on February 9, 2023, as summarized below:

- **16821 Highway 12**: A multi-phased development in which Phase 1 is expected to be fully built and occupied by 2030. Phase 1 includes 431 residential townhouse units, 97 semi-detached single-family homes, a 35,000 sq. ft. retail shopping centre, and 162 apartment units.
- **Future Hotel**: 5 storey hotel development with 93 guest rooms totalling 67,000 sq. ft., a 26,870 sq. ft. conference centre, 500 guests seating capacity, and a surface parking capacity of 329 spaces.
- **Gas station at Brandon Street / Highway 12**: A 2,792 sq. m gas station including 4 refueling pumps, a quick service restaurant and 12 parking spaces which is expected to be fully built out by 2021.
- **Hanson Development (west of the study intersection) starting new phases:** A multi-phased development in which Phase 1 includes 431 residential townhouse units, 97 semi-detached single-family homes, a 35,000 sq. ft. retail shopping centre, and 162 apartment units. Phases 2 and 3 include 475 residential townhouse units, 236 semi-detached single-family homes, 103 single family residential units, and 199 apartment units. Complete build out of the development, Phases 1, 2, and 3, is expected to be fully built and occupied by 2030.

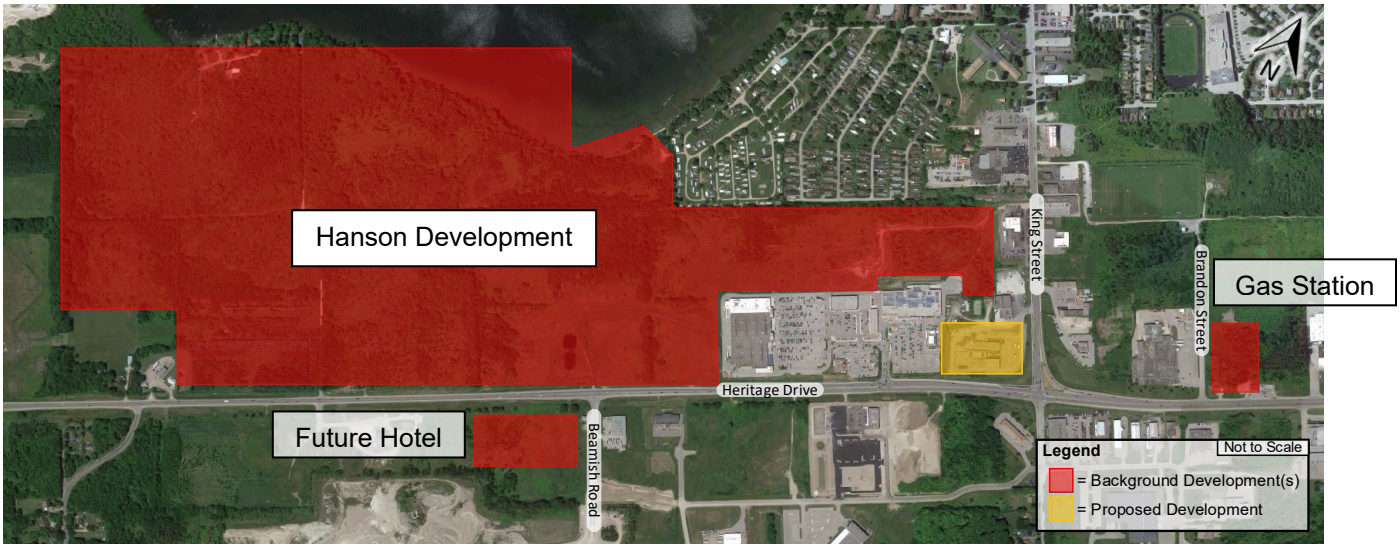
- **Future hotel:** 5 storey hotel development with 93 rooms and a conference centre (816 seating capacity, 3,138 sq.m / 33,782 sq.ft. GFA) on Beamish, just south of Highway 12

Exhibit 4-1 illustrates the background developments planned in the study area that may generate additional traffic. A review of the TIS reports were also completed. The TIS reports of the developments contained assigned trips within the study area, which we referenced in this report.

For the purposes of this study, any traffic generation analysis absent from studied background TIS reports (e.g., mid-day peak hour trips) is presumed to be adequately considered via the annual 2% growth rate (per Section 4.2).

These trips were added to existing traffic volumes with corridor growth to determine 2029 and 2034 Future Background traffic volumes. **Exhibit 4-2** summarizes the background development site traffic volumes within the study area during the weekday peak hours.

Exhibit 4-1: Adjacent Planned Developments



Base Map Source: Google Maps. Retrieved March 24th, 2023 from https://www.google.ca/maps

Exhibit 4-2: Planned Background Development Peak Hour Trips

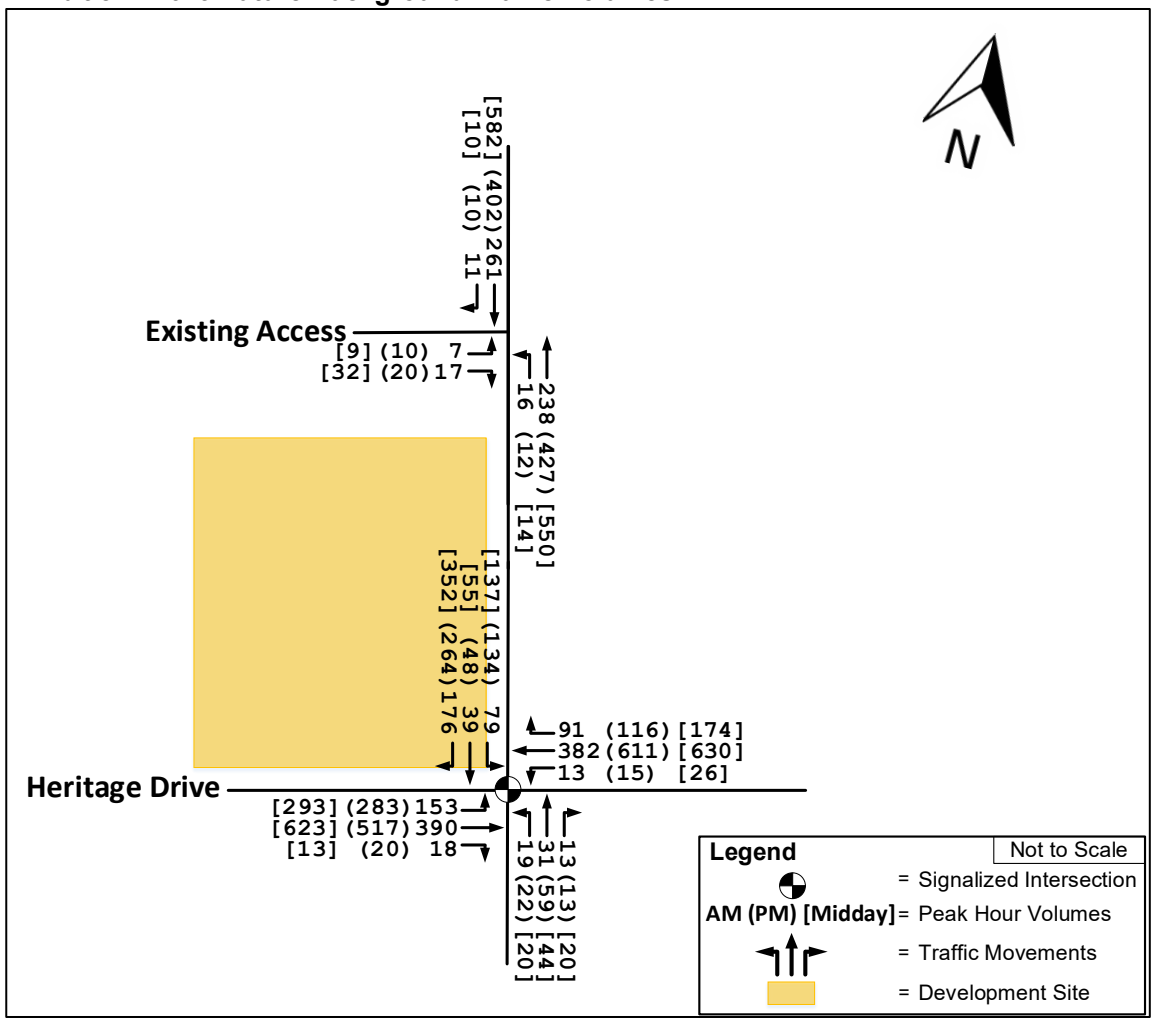
Planned Background Development Peak Hour Trips (Continued)

DATA SOURCE	VEHICLE TRIPS			
	Weekday AM Peak Hour		Weekday PM Peak Hour	
	Inbound	Outbound	Inbound	Outbound
16928 Hwy 12 Proposed hotel development (WSP, Jan 30, 2019)	26	18	28	27
16821 Hwy 12 Proposed mixed-use development, Hanson Development (Hanson TIS, August 2016)	217	662	777	497
16621 Hwy 12 Gas Station (Frontop Engineering Limited, May 15, 2021)	22	21	30	29

5 2029 Future Background Traffic Operations

To establish the 2029 Future Background condition traffic volumes, the existing corridor traffic volumes were increased by an annual growth factor of 2% (as defined in **Section 4.2)**. Other planned developments in the area were also added to the Future Background traffic volume assessment. The resulting 2029 Future Background traffic volumes during the weekday AM, midday, and PM peak hours are presented in **Exhibit 5-1**.

Exhibit 5-1: 2029 Future Background Traffic Volumes



5.1 Signalized Intersections

Using the volumes illustrated in **Exhibit 5-1**, operational analysis for the 2029 Future Background horizon year was conducted. The signalized intersection operation is summarized in **Exhibit 5-2**. The 2029 Future Background Synchro reports are provided in **Appendix D**.

Exhibit 5-2: 2029 Future Background Traffic Operations - Signalized Intersections

Intersection	Intersection			Critical Movement					
	LOS	Delay	V/C Ratio	Movement	LOS	Delay (s)	V/C Ratio	95th Percentile Queue (m)	Storage Capacity (m)
AM Peak Hour									
King Street & Heritage Drive	B	13.9	0.42	EBL	A	6.1	0.37	14.4	193
				EBT	A	7.9	0.25	29.1	-
				WBL	A	8.9	0.04	2.1	240
				WBT	B	11.4	0.32	32.0	-
				NBL	C	24.7	0.12	6.5	120
				NBT	C	25.3	0.24	7.7	-
				NBR	C	24.0	0.02	-	-
				SBL	C	27.8	0.50	19.5	212
				SBT	C	24.8	0.16	11.1	-
				SBR	C	24.8	0.14	8.2	-
Midday Peak Hour									
King Street & Heritage Drive	B	17.2	0.74	EBL	B	14.8	0.74	43.5	193
				EBT	B	11.1	0.37	52.8	-
				WBL	A	8.6	0.10	4.0	240
				WBT	B	14.1	0.51	66.5	-
				NBL	C	24.7	0.10	8.0	120
				NBT	C	25.4	0.22	12.8	-
				NBR	C	24.2	0.02	-	-
				SBL	C	31.5	0.61	39.6	212
				SBT	C	25.3	0.20	16.4	-
				SBR	C	27.7	0.48	41.1	-
PM Peak Hour									
King Street & Heritage Drive	B	18.2	0.79	EBL	B	17.4	0.78	43.6	193
				EBT	A	9.9	0.29	41.8	-
				WBL	A	9.3	0.06	2.6	240
				WBT	B	14.0	0.48	59.9	-
				NBL	C	27.1	0.25	6.7	120
				NBT	C	27.2	0.28	16.3	-
				NBR	C	25.4	0.01	-	-
				SBL	D	37.8	0.71	37.2	212
				SBT	C	26.5	0.19	14.7	-
				SBR	C	27.1	0.26	19.5	-

As shown, the signalized intersection of King Street / Heritage Drive is forecasted to have acceptable operations during the peak hours, with delays below critical thresholds and turning queues within turning lane storage capacities.

5.2 Unsignalized Intersections

The weekday AM, midday, and PM peak hour traffic operations at the unsignalized intersections are summarized in **Exhibit 5-3**.

Exhibit 5-3: Future Background Traffic Operations - Unsignalized Intersections

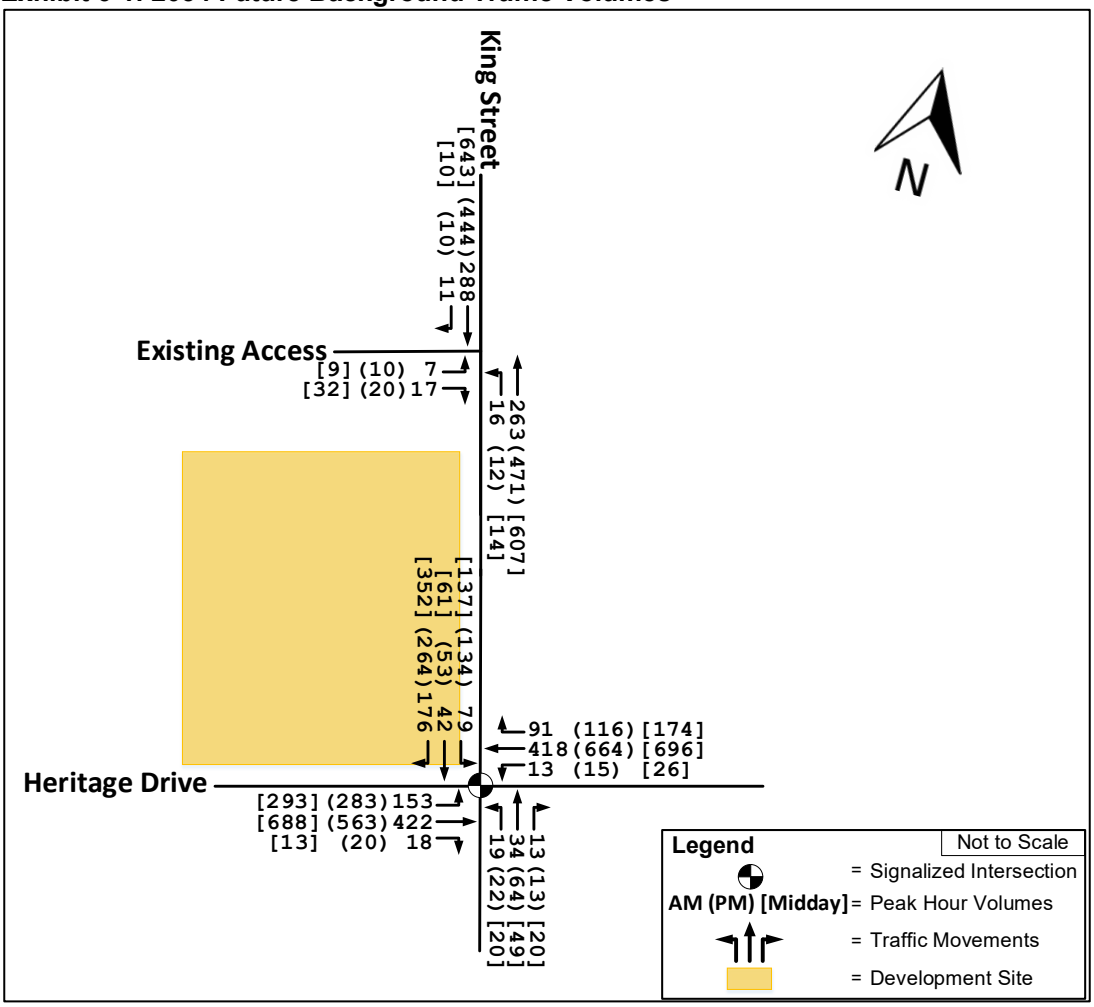
Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane V/C Ratio	Lane 95th Percentile Queue (m)	Lane Storage Capacity (m)
AM Peak Hour							
King Street & Existing Access	0.9	EBL	B	11.2	0.06	1.6	-
		NBL	A	1.7	0.02	0.5	-
Midday Peak Hour							
King Street & Existing Access	0.8	EBL	B	13.4	0.11	2.8	-
		NBL	A	1.5	0.03	0.8	-
PM Peak Hour							
King Street & Existing Access	0.7	EBL	B	12.3	0.08	1.8	-
		NBL	A	0.9	0.01	0.3	-

Overall, no queueing or operational issues were observed for the unsignalized intersections during the weekday AM, midday, and PM peak hours. Full Highway Capacity Manual analysis for the 2029 Future Background Conditions scenario is presented in **Appendix D**.

6 2034 Future Background Traffic Operations

Similar to the 2029 Future Background volumes, to obtain the 2034 future background conditions traffic volumes, the existing traffic volumes were increased by the growth factor of 2% defined in **Section 4.2**. Other planned developments in the area that will generate additional trips in the study area road network will also be added to the Future Background traffic volumes. The resulting 2034 Future Background traffic volumes during the weekday AM, midday, and PM peak hours are presented in **Exhibit 6-1**.

Exhibit 6-1: 2034 Future Background Traffic Volumes



6.1 Signalized Intersections

Using the volumes illustrated in **Exhibit 6-1**, operational analysis for the 2034 Future Background horizon year was conducted. The signalized intersection operation is summarized in **Exhibit 6-2**. The 2034 Future Background Synchro reports are provided in **Appendix E**.

Exhibit 6-2: 2034 Future Background Traffic Operations - Signalized Intersections

Intersection	Intersection			Critical Movement					
	LOS	Delay	V/C Ratio	Movement	LOS	Delay (s)	V/C Ratio	95th Percentile Queue (m)	Storage Capacity (m)
AM Peak Hour									
King Street & Heritage Drive	B	14	0.43	EBL	A	6.2	0.38	14.4	193
				EBT	A	8.1	0.27	31.5	-
				WBL	A	8.9	0.04	2.2	240
				WBT	B	11.6	0.35	35.2	-
				NBL	C	24.7	0.12	6.5	120
				NBT	C	25.5	0.26	8.3	-
				NBR	C	24.0	0.02	-	-
				SBL	C	27.9	0.50	19.5	212
				SBT	C	24.9	0.18	11.8	-
				SBR	C	24.8	0.14	8.2	-
Midday Peak Hour									
King Street & Heritage Drive	B	18	0.78	EBL	B	18.9	0.79	49.0	193
				EBT	B	11.3	0.41	59.1	-
				WBL	A	8.6	0.10	4.0	240
				WBT	B	14.6	0.55	74.3	-
				NBL	C	25.1	0.11	8.0	120
				NBT	C	26.0	0.24	14.0	-
				NBR	C	24.6	0.02	-	-
				SBL	C	32.1	0.62	39.6	212
				SBT	C	25.9	0.23	17.9	-
				SBR	C	29.2	0.55	46.6	-
PM Peak Hour									
King Street & Heritage Drive	B	18.9	0.84	EBL	C	24.2	0.84	49.5	193
				EBT	B	10.2	0.32	45.7	-
				WBL	A	9.5	0.06	2.6	240
				WBT	B	14.8	0.53	65.5	-
				NBL	C	25.9	0.25	6.7	120
				NBT	C	26.2	0.30	17.3	-
				NBR	C	24.2	0.01	-	-
				SBL	D	35.9	0.70	37.3	212
				SBT	C	25.4	0.20	15.7	-
				SBR	C	26.3	0.31	23.4	-

As shown, the signalized intersection of King Street / Heritage Drive is forecasted to have acceptable operations during the peak hours, with delays below critical thresholds and turning queues within turning lane storage capacities.

6.2 Unsignalized Intersections

The weekday AM, midday, and PM peak hour traffic operations at the unsignalized intersections are summarized in **Exhibit 6-3.**

Exhibit 6-3: 2034 Future Background Traffic Operations - Unsignalized Intersections

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane V/C Ratio	Lane 95th Percentile Queue (m)	Lane Storage Capacity (m)
AM Peak Hour							
King Street & Existing Access	0.9	EBL	B	11.5	0.07	1.6	-
		NBL	A	1.6	0.02	0.5	-
Midday Peak Hour							
King Street & Existing Access	0.8	EBL	B	14.3	0.12	3.0	-
		NBL	A	1.5	0.04	0.8	-
PM Peak Hour							
King Street & Existing Access	0.6	EBL	B	13.0	0.08	2.0	-
		NBL	A	0.8	0.01	0.3	-

Overall, no queueing or operational issues were observed for the unsignalized intersections during the weekday AM, midday, and PM peak hours. Full Highway Capacity Manual analysis for the 2034 Future Background Conditions scenario is presented in **Appendix E**.

7 Future Total Traffic Conditions

This section of the report analyzes the impact of the proposed developments on the future transportation network.

7.1 Proposed Development

The proposed development will consist of two buildings. Both buildings will be fast-food restaurants with drive-throughs containing 64 seats each. A parking supply of 16 spaces per restaurant is proposed at grade.

7.2 Site Accesses

Direct vehicular access to the arterial road network will be provided via one existing site access fronting King Street. The access is expected to be a full movement driveway. These site details are based on the latest received site plan (August, 2021).

7.3 Trip Generation

Trip generation rates from the Institute of Transportation Engineers **Trip Generation Manual, 11th Edition** (September, 2021) publication were used to estimate future automobile trips associated with the proposed development and existing development.

7.3.1 Existing Development Trip Generation

The existing site is occupied by a parking lot and therefore currently does not generate any trips. Trip generation rates from the ITE Trip Generation Manual, 11th Edition (September, 2021) publication was used to estimate future vehicular trips associated with the **two proposed fast-food restaurants with drive-throughs (64 seats each)**.

7.3.2 Proposed Development Trip Generation

Based on the nature of the proposed development and its location context, rate data for LUC 934: Fast-Food Restaurant with Drive-Through was used. The estimated net new inbound and outbound vehicle trips for the proposed development are presented in **Exhibit 7-1**.

Exhibit 7-1: Proposed Development Trip Generation

924 KING STREET										
LUC 934: Fast Food Restaurant with Drive-Through – General Urban/Suburban – 128 seats										
Term	Unit	Weekday AM Peak Hour			Weekday Midday Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
Directional Distribution	-	53%	47%	100%	50%	50%	100%	53%	47%	100%
Trip Generation Equation	vehicle trips / seats	-			-			-		
Trip Generation Rate	vehicle trips / seats	0.70	0.62	1.32	0.81	0.82	1.63	0.52	0.45	0.97
Total Trips	**Vehicle trips**	**89**	**79**	**168**	**104**	**105**	**209**	**66**	**58**	**124**

Based on the number of units of the existing development and the proposed development, the proposed development is expected to generate:

- 168 new vehicle trips during the weekday AM peak hour (89 inbound trips and 79 outbound trips);
- 209 new vehicle trips during the weekday midday peak hour (104 inbound trips and 105 outbound trips); and
- 124 new vehicle trips during the weekday PM peak hour (66 inbound trips and 58 outbound trips).

7.4 Trip Distribution and Assignment

The trip distribution for site trips was based on a review of existing traffic patterns in the are bounded by the existing access to the north, Heritage Drive to the south, and by King Street to the east and to the west.

For the weekday peak hours, existing directional traffic patterns in the study area were utilized to determine the respective distributions. The travel patterns of existing traffic in the study area intersections are presented in **Exhibit 7-2**.

Exhibit 7-2: Site Trip Distribution

FROM / TO	AM PEAK HOUR		MIDDAY PEAK HOUR		PM PEAK HOUR	
	INBOUND	OUTBOUND	INBOUND	OUTBOUND	INBOUND	OUTBOUND
Heritage Drive (West)	47%	59%	57%	64%	60%	54%
Heritage Drive (East)	37%	27%	34%	35%	26%	34%
King Street (North)	5%	3%	2%	2%	3%	3%
King Street (South)	11%	11%	7%	9%	11%	10%
TOTAL	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

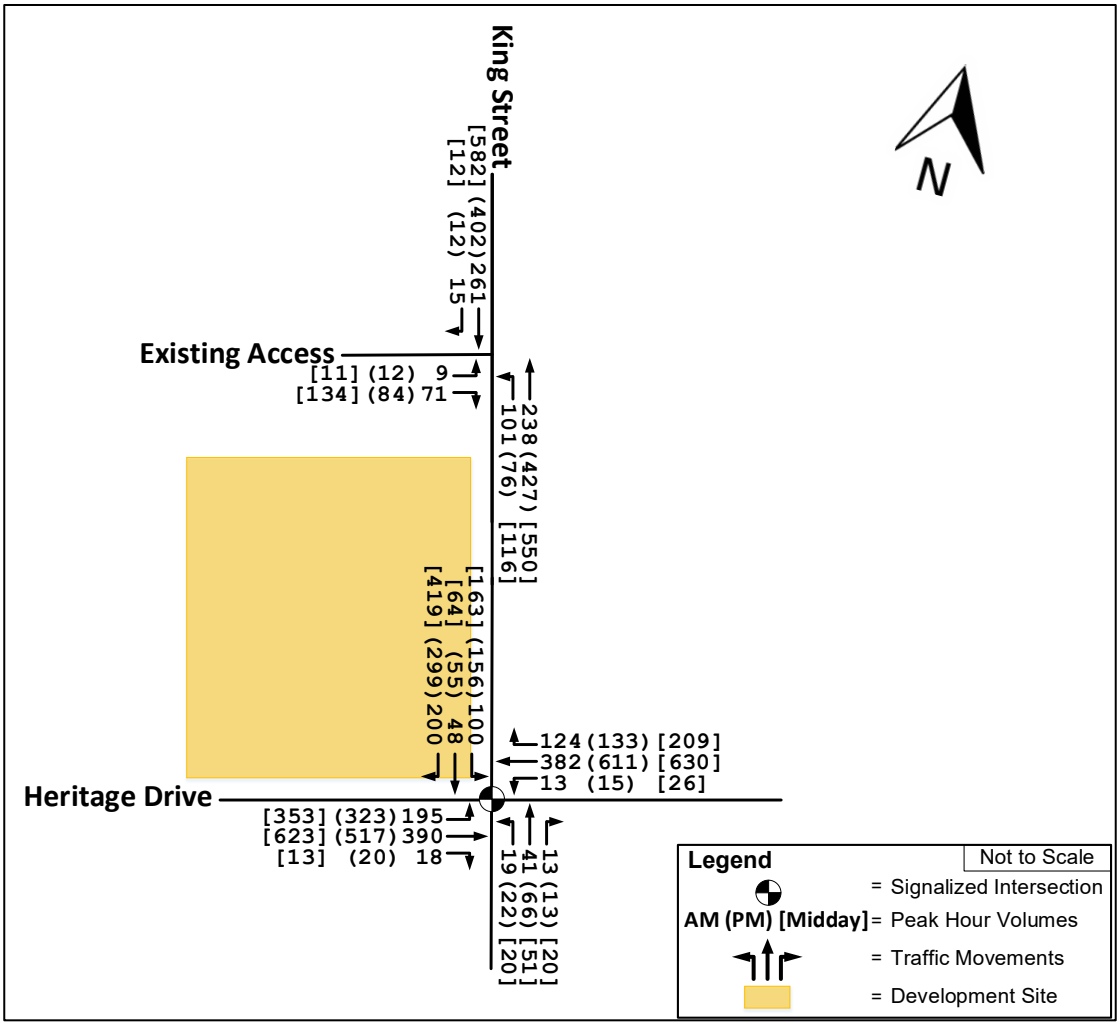
Based on the above distributions, site-generated trips were assigned to the adjacent road network for the weekday AM, midday, and PM peak hours, as shown in **Exhibit 7-3**.

Exhibit 7-3: New Trips Generated by the Proposed Development

8 2029 Future Total Traffic Operations

To establish the 2029 Future Total condition traffic volumes, the site generated trip volumes were added to the 2029 Future Background traffic volumes. The resulting 2029 Future Total traffic volumes during the weekday AM, midday, and PM peak hours are presented in **Exhibit 8-1**.

Exhibit 8-1: 2029 Future Total Traffic Volumes



8.1 Signalized Intersections

Using the volumes illustrated in **Exhibit 8-1**, operational analysis for the 2029 Future Total horizon year was conducted. The signalized intersection operations are summarized in **Exhibit 8-2**. The 2029 Future Total Synchro reports are provided in **Appendix F**.

Exhibit 8-2: 2029 Future Total Traffic Operations - Signalized Intersections

Intersection	Intersection			Critical Movement					
	LOS	Delay	V/C Ratio	Movement	LOS	Delay (s)	V/C Ratio	95th Percentile Queue (m)	Storage Capacity (m)
AM Peak Hour									
King Street & Heritage Drive	B	15.8	0.53	EBL	A	9.9	0.51	20.4	193
				EBT	B	12.3	0.31	31.3	-
				WBL	A	7.0	0.03	2.4	240
				WBT	B	12.7	0.36	35.9	-
				NBL	C	23.0	0.11	6.4	120
				NBT	C	24.0	0.28	9.5	-
				NBR	C	22.4	0.02	-	-
				SBL	C	28.2	0.57	23.7	212
				SBT	C	23.3	0.18	12.9	-
				SBR	C	23.3	0.16	8.0	-
Midday Peak Hour									
King Street & Heritage Drive	C	22.8	0.92	EBL	D	44.4	0.95	71.0	193
				EBT	B	11.7	0.38	52.8	-
				WBL	A	9.1	0.10	4.0	240
				WBT	B	15.2	0.54	69.4	-
				NBL	C	24.4	0.10	8.0	120
				NBT	C	25.3	0.24	14.4	-
				NBR	C	23.9	0.02	-	-
				SBL	C	34.6	0.69	46.9	212
				SBT	C	25.2	0.22	18.7	-
				SBR	C	32.8	0.67	62.3	-
PM Peak Hour									
King Street & Heritage Drive	C	22.8	0.94	EBL	D	44.4	0.95	64.2	193
				EBT	B	10.7	0.30	41.8	-
				WBL	B	10.1	0.06	2.6	240
				WBT	B	15.4	0.52	61.3	-
				NBL	C	25.2	0.23	6.7	120
				NBT	C	25.5	0.29	17.7	-
				NBR	C	23.6	0.01	-	-
				SBL	D	39.5	0.76	43.1	212
				SBT	C	24.8	0.19	16.1	-
				SBR	C	26.2	0.37	28.0	-

The signalized intersection of King Street / Heritage Drive eastbound left turn movement is forecasted to encounter some congestion during the weekday mid-day and PM peak hour, however capacity and turning lane queue storage limits are not exceeded. If desired, the signal timing plan can be optimized to increase turning operations.

8.2 Unsignalized Intersections

The weekday AM and PM peak hour traffic operations at the unsignalized intersections are summarized in **Exhibit 8-3**.

Exhibit 8-3: 2029 Future Total Traffic Operations - Unsignalized Intersections

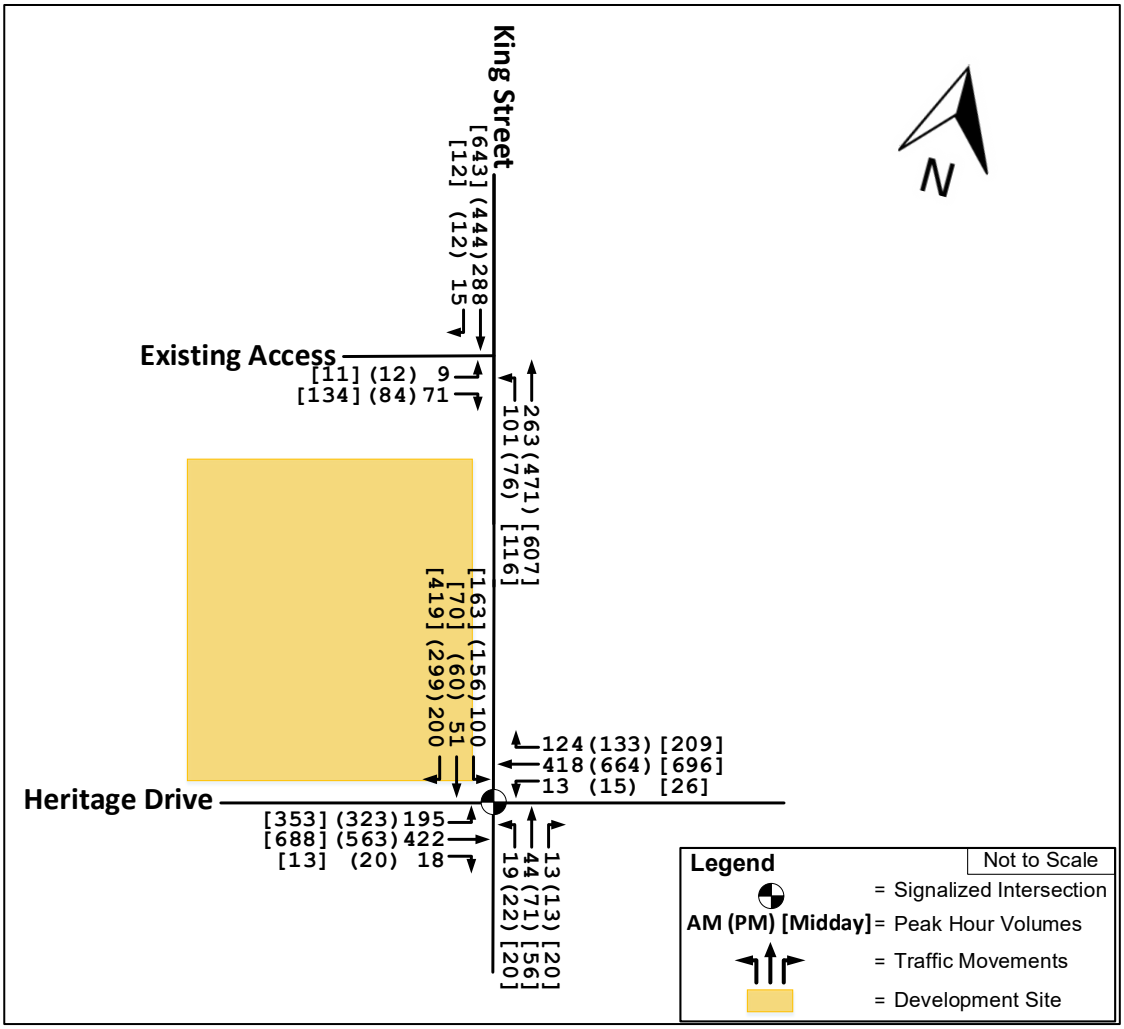
Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane V/C Ratio	Lane 95th Percentile Queue (m)	Lane Storage Capacity (m)
AM Peak Hour							
King Street & Existing Access	3.0	EBL	B	12.2	0.19	5.4	-
		NBL	A	5.6	0.13	3.3	-
Midday Peak Hour							
King Street & Existing Access	4.1	EBL	C	18.8	0.41	15.2	-
		NBL	A	7.2	0.28	8.6	-
PM Peak Hour							
King Street & Existing Access	2.2	EBL	B	12.7	0.20	5.8	-
		NBL	A	3.9	0.09	2.3	-

Overall, no queueing or operational issues were observed for the unsignalized intersections during the weekday AM, midday, and PM peak hours. Full Highway Capacity Manual analysis for the 2029 Future Total Conditions scenario is presented in **Appendix F**.

9 2034 Future Total Traffic Operations

To establish the 2034 Future Total condition traffic volumes, the site generated trip volumes were added to the 2034 Future Background traffic volumes. The resulting 2034 Future Total traffic volumes during the weekday AM, midday, and PM peak hours are presented in **Exhibit 9-1**.

Exhibit 9-1: 2034 Future Total Traffic Volumes



9.1 Signalized Intersections

Using the volumes illustrated in **Exhibit 9-1**, operational analysis for the 2034 Future Total horizon year was conducted. The signalized intersection operations are summarized in **Exhibit 9-2**. The 2034 Future Total Synchro reports are provided in **Appendix G**.

Exhibit 9-2: 2034 Future Total Traffic Operations - Signalized Intersections

Intersection	Intersection			Critical Movement					
	LOS	Delay	V/C Ratio	Movement	LOS	Delay (s)	V/C Ratio	95th %tile Queue (m)	Storage Capacity (m)
AM Peak Hour									
King Street & Heritage Drive	B	15	0.57	EBL	A	7.6	0.52	20.5	193
				EBT	A	8.7	0.27	33.9	-
				WBL	A	9.5	0.05	2.4	240
				WBT	B	12.5	0.38	39.5	-
				NBL	C	24.2	0.11	6.4	120
				NBT	C	25.4	0.31	10.0	-
				NBR	C	23.6	0.02	-	-
				SBL	C	30.2	0.59	23.7	212
				SBT	C	24.6	0.19	13.3	-
				SBR	C	24.5	0.16	8.0	-
Midday Peak Hour									
King Street & Heritage Drive	C	25.7	0.99	EBL	E	65.1	1.02	76.4	193
				EBT	B	12.0	0.41	59.1	-
				WBL	A	9.1	0.11	4.0	240
				WBT	B	15.7	0.58	77.5	-
				NBL	C	25.2	0.10	8.0	120
				NBT	C	26.3	0.26	15.6	-
				NBR	C	24.6	0.02	-	-
				SBL	D	35.8	0.69	47.0	212
				SBT	C	26.1	0.24	20.2	-
				SBR	D	36.8	0.73	71.1	-
PM Peak Hour									
King Street & Heritage Drive	C	25	0.98	EBL	E	61.0	1.01	69.1	193
				EBT	B	10.8	0.32	45.7	-
				WBL	B	10.0	0.06	2.6	240
				WBT	B	15.7	0.55	67.1	-
				NBL	C	25.7	0.23	6.7	120
				NBT	C	26.1	0.31	18.8	-
				NBR	C	24.1	0.01	-	-
				SBL	D	41.1	0.77	43.4	212
				SBT	C	25.4	0.22	17.3	-
				SBR	C	27.1	0.41	32.4	-

The signalized intersection of King Street / Heritage Drive eastbound left turn movement is forecasted to exceed capacity during the weekday mid-day and PM peak hour. However, turning

lane queue storage limits are not exceeded in both time horizons. If desired, the signal timing plan can be optimized to increase turning capacity.

9.2 Unsignalized Intersections

The weekday AM and PM peak hour traffic operations at the unsignalized intersections are summarized in **Exhibit 9-3**.

Exhibit 9-3: 2034 Future Total Traffic Operations - Unsignalized Intersections

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane V/C Ratio	Lane 95th %tile Queue (m)	Lane Storage Capacity (m)
AM Peak Hour							
King Street & Existing Access	2.9	EBL	B	12.6	0.20	5.7	-
		NBL	A	5.5	0.13	3.4	-
Midday Peak Hour							
King Street & Existing Access	4.2	EBL	C	21.3	0.46	17.6	-
		NBL	A	7.4	0.29	9.2	-
PM Peak Hour							
King Street & Existing Access	2.1	EBL	B	13.3	0.22	6.2	-
		NBL	A	3.8	0.09	2.4	-

Overall, no queueing or operational issues were observed for the unsignalized intersections during the weekday AM, midday, and PM peak hours. Full Highway Capacity Manual analysis for the 2034 Future Total Conditions scenario is presented in **Appendix G**.

10 Traffic Operations Summary

To provide a clearer comparison between changes to traffic operations between Future Background conditions, and Future Total conditions, the following sections compare changes to vehicular delays, v/c ratios, and queues via tables and visual aids.

10.1 Future Background and Future Total Traffic Comparison

A comparison of signalized intersections operations between 2034 Future Background traffic conditions and 2034 Future Total traffic conditions is presented in **Exhibit 10-1**.

Exhibit 10-1: Traffic Operations Comparison between 2034 Future Background and 2034 Future Total Traffic Conditions - Signalized Intersections

Intersection	Movement	2034 Future Background			2034 Future Total			Difference	
		LOS	Delay (s)	V/C Ratio	LOS	Delay (s)	V/C Ratio	Delay (s)	V/C Ratio
AM Peak Hour									
King Street & Heritage Drive	EBL	A	6.2	0.38	A	7.6	0.52	1.4	0.14
	EBT	A	8.1	0.27	A	8.7	0.27	0.6	0
	WBL	A	8.9	0.04	A	9.5	0.05	0.6	0.01
	WBT	B	11.6	0.35	B	12.5	0.38	0.9	0.03
	NBL	C	24.7	0.12	C	24.2	0.11	-0.5	-0.01
	NBT	C	25.5	0.26	C	25.4	0.31	-0.1	0.05
	NBR	C	24.0	0.02	C	23.6	0.02	-0.4	0
	SBL	C	27.9	0.50	C	30.2	0.59	2.3	0.09
	SBT	C	24.9	0.18	C	24.6	0.19	-0.3	0.01
	SBR	C	24.8	0.14	C	24.5	0.16	-0.3	0.02
Midday Peak Hour									
King Street & Heritage Drive	EBL	B	18.9	0.79	E	65.1	1.02	46.2	0.23
	EBT	B	11.3	0.41	B	12.0	0.41	0.7	0
	WBL	A	8.6	0.10	A	9.1	0.11	0.5	0.01
	WBT	B	14.6	0.55	B	15.7	0.58	1.1	0.03
	NBL	C	25.1	0.11	C	25.2	0.10	0.1	-0.01
	NBT	C	26.0	0.24	C	26.3	0.26	0.3	0.02
	NBR	C	24.6	0.02	C	24.6	0.02	0	0
	SBL	C	32.1	0.62	D	35.8	0.69	3.7	0.07
	SBT	C	25.9	0.23	C	26.1	0.24	0.2	0.01
	SBR	C	29.2	0.55	D	36.8	0.73	7.6	0.18
PM Peak Hour									
King Street & Heritage Drive	EBL	C	24.2	0.84	E	61.0	1.01	36.8	0.17
	EBT	B	10.2	0.32	B	10.8	0.32	0.6	0
	WBL	A	9.5	0.06	B	10.0	0.06	0.5	0
	WBT	B	14.8	0.53	B	15.7	0.55	0.9	0.02
	NBL	C	25.9	0.25	C	25.7	0.23	-0.2	-0.02
	NBT	C	26.2	0.30	C	26.1	0.31	-0.1	0.01
	NBR	C	24.2	0.01	C	24.1	0.01	-0.1	0
	SBL	D	35.9	0.70	D	41.1	0.77	5.2	0.07
	SBT	C	25.4	0.20	C	25.4	0.22	0	0.02
	SBR	C	26.3	0.31	C	27.1	0.41	0.8	0.1

The signalized intersection traffic operations analysis indicates that the addition of development site traffic to the study is expected to impact the following movements from a vehicular delay perspective:

- Weekday midday peak hour: King Street and Heritage Drive intersection's eastbound left movement experiences an additional 46 second delay; and
- Weekday PM peak hour: King Street and Heritage Drive intersection's eastbound left movement experiences an additional 36 second delay.

Adjustments to the existing signal timing plan can be performed to better accommodate eastbound left operations.

11 Parking Review

The existing parking provides 231 spots for the hotel and conference centre. The proposed future site plan removes some parking spots to facilitate the two fast-food restaurants with drive-thru amenities, which is mitigated by repainting and reorganizing the remaining parking space layout, and introducing tandem parking operated by via hotel valet services.

The existing and proposed parking supply is illustrated and tabulated below in **Exhibit 11-1 and 11-2**, respectively. It should be noted that a portion of the existing parking spaces lay within the designated MTO setback (14 metres from both King Street and Heritage Drive right of way). The portion of parking spaces in the southwest corner of the lands will be the tandem designated spaces.

Exhibit 11-1: Parking Lot Changes

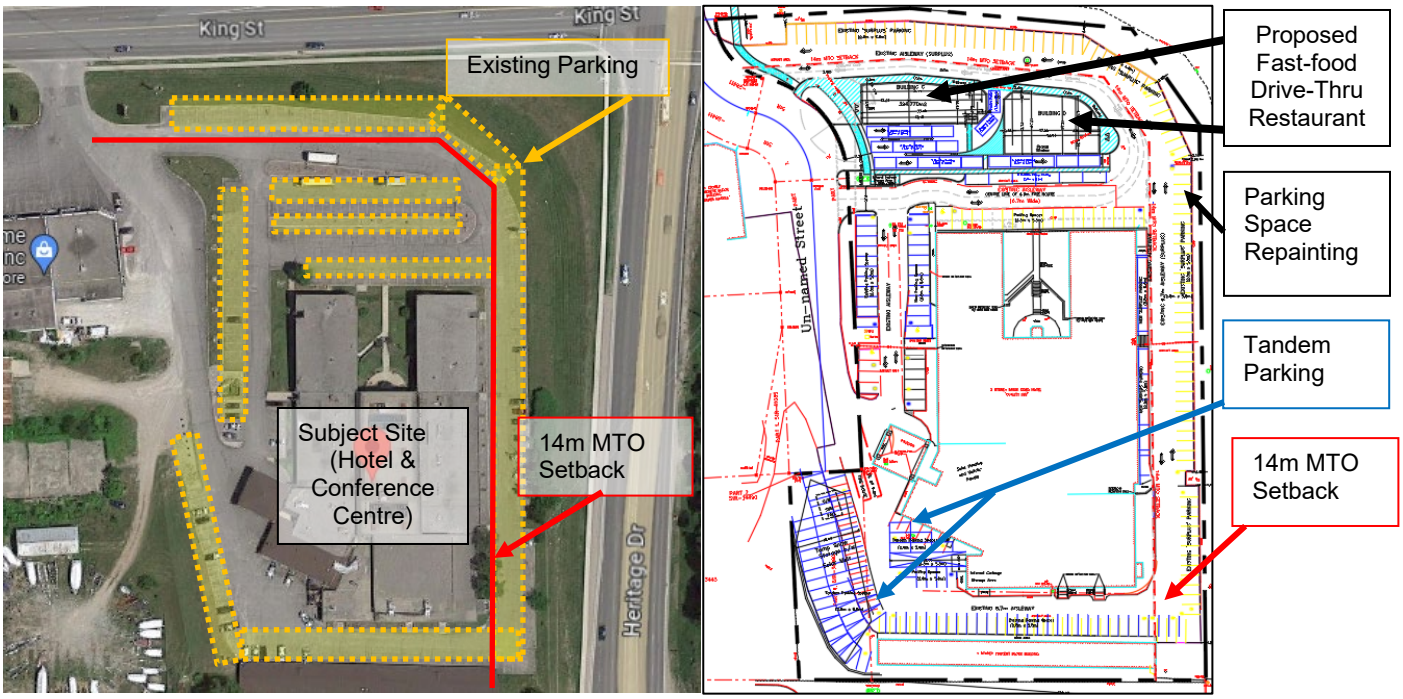


Exhibit 11-2: Parking Supply Comparison

Scenario	Land Use			
	Hotel	Conference Centre	Restaurant	Total
Existing	231 spaces (91 within MTO setback)		-	231 spaces (140 if excluding MTO setback)
Proposed	170 spaces (91 spaces within MTO setback) (30 spaces in tandem)		32	212 (123 if excluding MTO setback)
Difference	-59 ***(74% of original supply)***		+32	-17

To accommodate the proposed restaurant additions, the existing hotel / conference centre parking supply will be reduced to 74% of its original capacity.

Per Section 4 of the Town of Midland's Zoning By-law (ZBL), the relevant vehicle parking requirements for the existing hotel, conference centre, and proposed eating establishment as stipulated in the ZBL are summarized in **Exhibit 11-3** to demonstrate ZBL compliance.

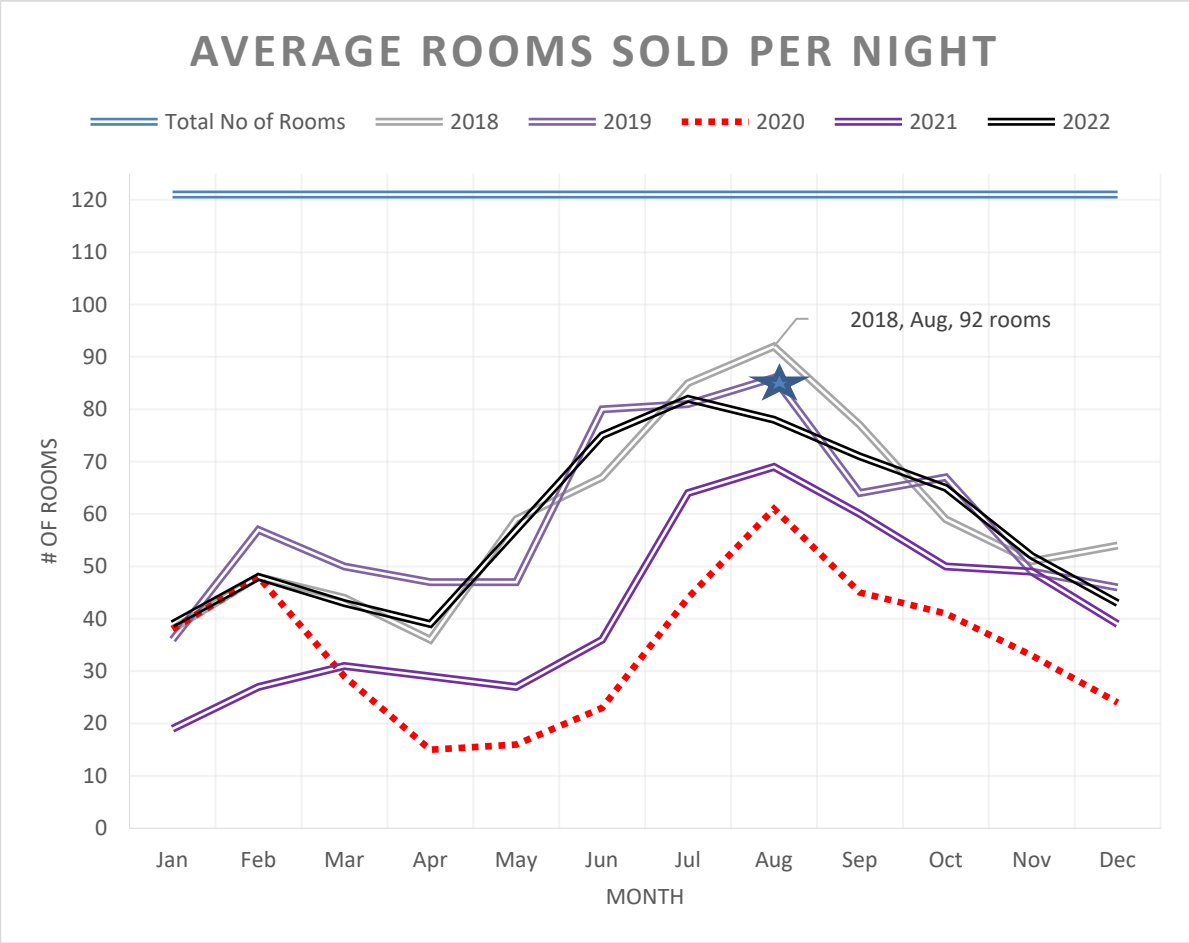
Based on the automobile parking rates referenced from the Town of Midland By-law 2004-90 (passed on January 29, 2014), the required parking supply is 16 parking spaces per restaurant, 32 parking spaces total. Since 64 seats are proposed per restaurant, this results in a ratio of 0.25 spaces / seat, which meets ZBL requirements.

Exhibit 11-3: Existing and Proposed Automobile Parking Supply Compared to ZBL Requirements

ZBL Building Use	Quantity	ZBL Parking Rate	Required Spaces	Proposed Spaces	Difference
Existing Hotel	106 rooms	1.25 spaces / room	133 spaces	170	-91
Existing Conference Room	512 seats	1 space / 4 persons	128 spaces		
Existing Total	**-**	**-**	**261 spaces**		
Proposed Drive-Thru Restaurant	128 seats (64 per restaurant)	0.25 spaces / seat	32 spaces (16 per restaurant)	32 (16 per restaurant)	-

A comparison of the ZBL requirements suggests that these requirements are excessive and would lead to an oversupply of parking for the subject site, as there currently are not any observed parking supply constraints reported by the proponent. Furthermore, site-specific trends show that the existing hotel is never fully occupied. This is illustrated below in **Exhibit 11-4**.

Exhibit 11-4: Hotel Occupancy Trends (2018-2022)



Based on the historical monthly hotel room occupancy trends, hotel room bookings never exceeded 76% (92 rooms out of 120 booked in August 2018). **During non-Covid years (2018, 2019, 2022) on record, an average monthly occupancy of 72% was observed.**

The existing parking supply currently supports the hotel and conference centre users with no constraints reported by the proponent. The proponent will be converting some of the hotel / conference centre parking in the southwest corner of the lot to tandem valet parking to make up for the spots lost to the restaurant space.

Overall, it is therefore deemed reasonable to presume that the current hotel average occupancy of 72% can have its parking supply reduced to 74% of its current capacity, with the excess parking space repurposed for restaurant land uses, which has a parking supply that meets ZBL parking requirements...

12 Site Circulation

A vehicle swept path analysis was conducted using AutoTURN to demonstrate that vehicles can enter and exit the site and that access to the loading and waste collection are functional. The following vehicles and their respective paths were analyzed:

- Front-loading waste collection trucks accessing the garbage storage area;
- Rear-loading delivery trucks (MSU) accessing the loading space;

- Fire truck circulating the fire route; and
- Passenger vehicles circulating the development.

Based on a review of the analysis, there are no concerns with site circulation for the passenger vehicles, MSU delivery trucks, waste collection vehicles, and fire trucks. The vehicle swept path analysis is presented in **Appendix H**. The vehicle swept path analysis was completed on the August, 2021 site plan.

13 Conclusion and Recommendations

This section summarizes the key findings of this transportation impact study (TIS).

13.1 Existing Conditions

Under existing conditions, the following operations are observed:

- The results of the analysis indicate that no intersections are expected to operate at critical capacity during the weekday AM, midday, and PM peak periods.
- The eastbound left movement at King Street and Heritage Drive during the weekday midday and PM peak periods is considered critical and is outlined in the section.
- No queueing or operational issues were observed for unsignalized intersections during the weekday AM, midday, and PM peak periods.

13.2 Future Background Conditions

Under the Future Background conditions, the following are observed:

- There are two background developments that will also generate traffic into the subject site's study area. These adjacent development site trips were added and are included in the 2029 and 2034 Future Background conditions volumes. Additional developments mentioned by Town Staff upon the writing of this Report are to be determined and added at a later date.
- An annual background traffic growth rate of 2% for the road network within the study area was applied.
- Future background traffic operations for both horizon years in the study area are forecasted to be acceptable.

13.3 Future Total Conditions

The proponent is proposing to construct two fast food restaurants with drive-throughs containing 64 seats each. The trip generation for the proposed development was derived using trip generation rates from the **Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition** (September 2021) publication. Based on the existing development and the proposed development, the total site trips are 168 vehicle trips during the weekday AM peak hour (89 inbound trips and 79 outbound trips), 209 vehicle trips during the weekday midday peak hour (104 inbound trips and 105 outbound trips), and 124 vehicle trips during the weekday PM peak hour (66 inbound trips and 58 outbound trips).

To evaluate the impact the subject site has on the study area road network, the 2034 Future Total operations are compared to the 2034 Future Background operations. Overall, when compared to the 2034 Future Background traffic operations, excessive delays, attributed to subject site traffic, are expected at the eastbound left movement at King Street and Heritage

Drive during the weekday midday and PM peak hours. It is expected that this can be alleviated via signal timing plan adjustments to address future traffic congestion concerns.

13.4 Vehicle Swept Path Analysis

A vehicle swept path analysis was conducted using AutoTURN to demonstrate that access to the loading and waste collection areas are functional, and that passenger vehicles can circulate the site in one forward motion. Based on the analysis, passenger vehicles, the medium single unit delivery trucks, fire trucks, and waste collection trucks at the loading area will not have any issues.

13.5 Parking Analysis

Based on automobile parking rates referenced from Town of Midland By-law 2004-90, the required parking supply is 32 parking spaces for both restaurants (16 parking spaces each). This analysis indicates that the 16 parking spaces per restaurant will be sufficient for the development.

The existing parking supply currently supports the hotel and conference centre users with no constraints reported by the proponent. The proponent will be converting some of the hotel / conference centre parking in the southwest corner of the lot to tandem valet parking to make up for the spots lost to the restaurant space.

Overall, it is therefore deemed reasonable to presume that the current hotel average occupancy of 72% can have its parking supply reduced to 74% of its current capacity, with the excess parking space repurposed for restaurant land uses, which has a parking supply that meets ZBL parking requirements.

Appendix A: Turning Movement Counts

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #22-273 - IBI Group

Intersection Count Report

Intersection:	King St & Heritage Dr (Hwy 12)
Municipality:	Midland
Count Date:	Saturday, Aug 13, 2022
Site Code:	2227300001
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	King St & Heritage Dr (Hwy 12)
Site Code:	2227300001
Municipality:	Midland
Count Date:	Aug 13, 2022

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: King St & Heritage Dr (Hwy 12)
Site Code: 2227300001
Municipality: Midland
Count Date: Aug 13, 2022

King St - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	38	28	85	0	151	0	6	14	6	0	26	0	177
08:00 - 09:00	68	29	149	0	246	0	13	25	13	0	51	0	297
09:00 - 10:00	95	28	200	0	323	0	21	27	25	0	73	0	396
10:00 - 11:00	109	63	260	0	432	0	23	38	30	0	91	0	523
11:00 - 12:00	138	48	356	0	542	0	26	46	17	0	89	0	631
12:00 - 13:00	152	52	294	0	498	0	14	35	29	0	78	0	576
13:00 - 14:00	134	23	319	0	476	0	12	70	16	0	98	0	574
14:00 - 15:00	143	45	264	0	452	0	18	20	16	0	54	0	506
15:00 - 16:00	142	25	247	0	414	0	9	16	24	0	49	0	463
16:00 - 17:00	127	37	203	0	367	0	9	45	13	0	67	0	434
17:00 - 18:00	112	26	176	0	314	0	6	40	12	0	58	0	372
GRAND TOTAL	**1258**	**404**	**2553**	**0**	**4215**	**0**	**157**	**376**	**201**	**0**	**734**	**0**	**4949**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: King St & Heritage Dr (Hwy 12)
Site Code: 2227300001
Municipality: Midland
Count Date: Aug 13, 2022

Heritage Dr (Hwy 12) - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	16	175	52	0	243	0	60	116	13	0	189	0	432
08:00 - 09:00	13	299	87	0	399	0	112	271	9	0	392	0	791
09:00 - 10:00	33	409	125	0	567	0	162	340	17	0	519	0	1086
10:00 - 11:00	17	513	118	0	648	0	234	385	23	0	642	2	1290
11:00 - 12:00	25	545	165	0	735	0	286	501	12	0	799	1	1534
12:00 - 13:00	16	519	166	0	701	0	288	575	8	0	871	1	1572
13:00 - 14:00	19	496	171	0	686	0	284	504	21	0	809	1	1495
14:00 - 15:00	19	484	125	0	628	0	275	476	12	0	763	0	1391
15:00 - 16:00	12	426	115	0	553	0	258	492	23	0	773	0	1326
16:00 - 17:00	15	440	103	0	558	0	238	383	11	0	632	2	1190
17:00 - 18:00	12	294	112	0	418	0	220	384	7	0	611	2	1029
GRAND TOTAL	**197**	**4600**	**1339**	**0**	**6136**	**0**	**2417**	**4427**	**156**	**0**	**7000**	**9**	**13136**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: King St & Heritage Dr (Hwy 12)
Site Code: 2227300001
Municipality: Midland
Count Date: Aug 13, 2022

North Approach - King St

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
07:00	10	3	15	0	28	0	0	0	0	0	0	0	0	0	0	0
07:15	7	8	15	0	30	0	0	0	0	0	0	0	0	0	0	0
07:30	10	7	29	0	46	0	1	0	0	1	0	0	0	0	0	0
07:45	11	8	26	0	45	0	1	0	0	1	0	0	0	0	0	0
08:00	10	10	24	0	44	0	0	1	0	1	0	0	0	0	0	0
08:15	15	6	42	0	63	0	0	1	0	1	0	0	0	0	0	0
08:30	18	6	31	0	55	0	1	0	0	1	0	0	0	0	0	0
08:45	25	6	49	0	80	0	0	1	0	1	0	0	0	0	0	0
09:00	18	6	45	0	69	1	0	0	0	1	0	0	0	0	0	0
09:15	21	7	42	0	70	0	0	0	0	0	0	0	0	0	0	0
09:30	29	9	37	0	75	0	0	3	0	3	0	0	0	0	0	0
09:45	26	6	71	0	103	0	0	2	0	2	0	0	0	0	0	0
10:00	33	17	76	0	126	0	1	0	0	1	0	0	0	0	0	0
10:15	29	9	62	0	100	0	0	1	0	1	0	0	1	0	1	0
10:30	19	17	59	0	95	0	0	2	0	2	0	0	1	0	1	0
10:45	28	19	57	0	104	0	0	1	0	1	0	0	0	0	0	0
11:00	36	7	85	0	128	1	0	0	0	1	0	0	1	0	1	0
11:15	34	7	97	0	138	0	1	1	0	2	0	0	0	0	0	0
11:30	26	16	92	0	134	0	0	0	0	0	0	0	0	0	0	0
11:45	40	17	79	0	136	1	0	1	0	2	0	0	0	0	0	0

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
12:00	36	7	82	0	125	0	0	0	0	0	0	0	0	0	0	0
12:15	37	17	67	0	121	0	2	0	0	2	0	0	0	0	0	0
12:30	34	18	79	0	131	1	0	0	0	1	0	0	0	0	0	0
12:45	43	8	65	0	116	1	0	1	0	2	0	0	0	0	0	0
13:00	38	4	85	0	127	0	0	0	0	0	0	0	0	0	0	0
13:15	36	3	74	0	113	0	0	0	0	0	0	1	0	0	1	0
13:30	38	9	76	0	123	0	1	0	0	1	0	0	0	0	0	0
13:45	22	5	83	0	110	0	0	1	0	1	0	0	0	0	0	0
14:00	42	8	73	0	123	0	3	1	0	4	0	0	0	0	0	0
14:15	39	2	68	0	109	0	0	0	0	0	0	0	0	0	0	0
14:30	32	17	61	0	110	0	3	0	0	3	0	0	0	0	0	0
14:45	30	12	60	0	102	0	0	1	0	1	0	0	0	0	0	0
15:00	46	4	77	0	127	0	0	0	0	0	0	0	0	0	0	0
15:15	41	7	63	0	111	0	0	0	0	0	0	0	0	0	0	0
15:30	21	8	64	0	93	0	0	1	0	1	0	0	0	0	0	0
15:45	34	6	41	0	81	0	0	1	0	1	0	0	0	0	0	0
16:00	29	14	47	0	90	1	0	0	0	1	0	0	0	0	0	0
16:15	31	9	60	0	100	0	0	0	0	0	0	0	0	0	0	0
16:30	45	9	46	0	100	0	0	0	0	0	0	0	0	0	0	0
16:45	21	5	49	0	75	0	0	1	0	1	0	0	0	0	0	0
17:00	25	14	53	0	92	0	0	1	0	1	0	0	0	0	0	0
17:15	40	4	51	0	95	0	1	0	0	1	0	0	0	0	0	0
17:30	27	4	43	0	74	0	0	0	0	0	0	0	0	0	0	0
17:45	20	3	27	0	50	0	0	0	0	0	0	0	1	0	1	0
SUBTOTAL	1252	388	2527	0	4167	6	15	22	0	43	0	1	4	0	5	0
GRAND TOTAL	**1252**	**388**	**2527**	**0**	**4167**	**6**	**15**	**22**	**0**	**43**	**0**	**1**	**4**	**0**	**5**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: King St & Heritage Dr (Hwy 12)
Site Code: 2227300001
Municipality: Midland
Count Date: Aug 13, 2022

South Approach - King St

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0
07:15	0	3	1	0	4	0	0	0	0	0	0	0	0	0	0	0
07:30	1	1	1	0	3	0	0	1	0	1	0	0	0	0	0	0
07:45	5	7	3	0	15	0	0	0	0	0	0	0	0	0	0	0
08:00	3	4	6	0	13	0	2	1	0	3	0	0	0	0	0	0
08:15	2	1	1	0	4	0	0	1	0	1	0	0	0	0	0	0
08:30	3	14	3	0	20	0	2	0	0	2	0	0	0	0	0	0
08:45	4	1	1	0	6	1	1	0	0	2	0	0	0	0	0	0
09:00	1	6	3	0	10	1	1	0	0	2	0	0	0	0	0	0
09:15	5	4	4	0	13	0	0	0	0	0	0	0	0	0	0	0
09:30	6	6	6	0	18	0	0	2	0	2	0	0	0	0	0	0
09:45	8	9	8	0	25	0	1	2	0	3	0	0	0	0	0	0
10:00	9	5	8	0	22	0	1	1	0	2	0	0	0	0	0	0
10:15	6	7	7	0	20	0	1	0	0	1	0	0	0	0	0	0
10:30	3	7	7	0	17	0	0	0	0	0	0	0	0	0	0	0
10:45	5	15	7	0	27	0	2	0	0	2	0	0	0	0	0	0
11:00	12	14	6	0	32	1	0	1	0	2	0	0	0	0	0	0
11:15	2	9	5	0	16	1	0	0	0	1	0	0	0	0	0	0
11:30	7	5	1	0	13	0	0	0	0	0	0	0	0	0	0	0
11:45	3	17	3	0	23	0	1	1	0	2	0	0	0	0	0	0

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
12:00	7	6	10	0	23	0	0	0	0	0	0	0	0	0	0	0
12:15	5	6	4	0	15	0	0	0	0	0	0	0	0	0	0	0
12:30	0	6	6	0	12	0	0	0	0	0	0	0	0	0	0	0
12:45	2	16	8	0	26	0	1	1	0	2	0	0	0	0	0	0
13:00	2	17	8	0	27	0	0	0	0	0	0	0	0	0	0	0
13:15	5	13	4	0	22	0	0	0	0	0	0	0	0	0	0	0
13:30	4	11	2	0	17	1	0	0	0	1	0	1	0	0	1	0
13:45	0	28	2	0	30	0	0	0	0	0	0	0	0	0	0	0
14:00	8	4	5	0	17	0	1	0	0	1	0	0	0	0	0	0
14:15	2	3	4	0	9	0	0	1	0	1	0	0	0	0	0	0
14:30	5	3	1	0	9	0	1	0	0	1	0	0	0	0	0	0
14:45	2	7	5	0	14	1	1	0	0	2	0	0	0	0	0	0
15:00	3	5	9	0	17	0	0	0	0	0	0	0	0	0	0	0
15:15	2	9	4	0	15	0	0	0	0	0	0	0	0	0	0	0
15:30	3	1	8	0	12	0	0	0	0	0	0	0	0	0	0	0
15:45	1	0	3	0	4	0	1	0	0	1	0	0	0	0	0	0
16:00	7	11	2	0	20	0	0	0	0	0	0	0	0	0	0	0
16:15	1	21	2	0	24	0	0	0	0	0	0	0	0	0	0	0
16:30	0	3	3	0	6	0	0	0	0	0	0	0	0	0	0	0
16:45	1	9	6	0	16	0	1	0	0	1	0	0	0	0	0	0
17:00	1	9	3	0	13	0	0	0	0	0	0	0	0	0	0	0
17:15	1	13	4	0	18	1	0	0	0	1	0	0	0	0	0	0
17:30	1	10	3	0	14	0	1	0	0	1	0	0	0	0	0	0
17:45	2	7	2	0	11	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	150	355	189	0	694	7	20	12	0	39	0	1	0	0	1	0
GRAND TOTAL	**150**	**355**	**189**	**0**	**694**	**7**	**20**	**12**	**0**	**39**	**0**	**1**	**0**	**0**	**1**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: King St & Heritage Dr (Hwy 12)
Site Code: 2227300001
Municipality: Midland
Count Date: Aug 13, 2022

East Approach - Heritage Dr (Hwy 12)

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
07:00	1	36	3	0	40	2	1	0	0	3	0	0	0	0	0	0
07:15	4	33	9	0	46	1	1	0	0	2	0	0	0	0	0	0
07:30	2	54	20	0	76	0	3	0	0	3	0	0	0	0	0	0
07:45	6	46	19	0	71	0	1	1	0	2	0	0	0	0	0	0
08:00	3	57	16	0	76	0	3	0	0	3	0	0	0	0	0	0
08:15	5	63	19	0	87	0	2	0	0	2	0	0	0	0	0	0
08:30	1	87	22	0	110	0	2	1	0	3	0	0	0	0	0	0
08:45	4	85	29	0	118	0	0	0	0	0	0	0	0	0	0	0
09:00	2	89	33	0	124	1	2	0	0	3	0	0	0	0	0	0
09:15	8	85	39	0	132	0	1	1	0	2	0	0	0	0	0	0
09:30	3	98	22	0	123	0	4	0	0	4	0	0	0	0	0	0
09:45	17	127	30	0	174	2	3	0	0	5	0	0	0	0	0	0
10:00	5	119	28	0	152	1	2	0	0	3	0	0	0	0	0	0
10:15	1	119	32	0	152	0	1	0	0	1	0	0	0	0	0	0
10:30	4	125	22	0	151	1	3	1	0	5	0	1	0	0	1	0
10:45	5	140	34	0	179	0	3	1	0	4	0	0	0	0	0	0
11:00	3	141	32	0	176	0	3	1	0	4	0	0	0	0	0	0
11:15	6	148	44	0	198	0	1	0	0	1	0	0	0	0	0	0
11:30	11	120	51	0	182	0	1	0	0	1	0	0	0	0	0	0
11:45	5	131	37	0	173	0	0	0	0	0	0	0	0	0	0	0

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
12:00	4	146	42	0	192	0	2	0	0	2	0	0	0	0	0	0
12:15	5	115	44	0	164	1	2	0	0	3	0	0	0	0	0	0
12:30	4	132	37	0	173	0	1	0	0	1	0	0	0	0	0	0
12:45	2	121	42	0	165	0	0	1	0	1	0	0	0	0	0	0
13:00	6	127	48	0	181	0	2	0	0	2	0	0	0	0	0	0
13:15	2	139	46	0	187	0	2	0	0	2	0	0	0	0	0	0
13:30	9	104	33	0	146	0	0	0	0	0	0	1	0	0	1	0
13:45	2	119	44	0	165	0	2	0	0	2	0	0	0	0	0	0
14:00	5	125	36	0	166	0	0	1	0	1	0	0	0	0	0	0
14:15	7	119	37	0	163	0	2	0	0	2	0	0	0	0	0	0
14:30	5	130	33	0	168	0	2	0	0	2	0	0	0	0	0	0
14:45	2	105	18	0	125	0	1	0	0	1	0	0	0	0	0	0
15:00	5	110	32	0	147	0	1	0	0	1	0	0	0	0	0	0
15:15	2	106	28	0	136	0	0	0	0	0	0	0	0	0	0	0
15:30	2	107	25	0	134	0	1	0	0	1	0	0	0	0	0	0
15:45	3	101	29	0	133	0	0	1	0	1	0	0	0	0	0	0
16:00	4	105	19	0	128	1	0	1	0	2	0	0	0	0	0	0
16:15	1	129	28	0	158	0	0	0	0	0	0	0	0	0	0	0
16:30	2	113	31	0	146	0	0	0	0	0	0	0	0	0	0	0
16:45	7	92	24	0	123	0	1	0	0	1	0	0	0	0	0	0
17:00	0	80	27	0	107	0	0	1	0	1	0	0	0	0	0	0
17:15	3	73	29	0	105	0	0	0	0	0	0	0	0	0	0	0
17:30	3	62	24	0	89	0	1	0	0	1	0	0	0	0	0	0
17:45	6	78	31	0	115	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	187	4541	1328	0	6056	10	57	11	0	78	0	2	0	0	2	0
GRAND TOTAL	**187**	**4541**	**1328**	**0**	**6056**	**10**	**57**	**11**	**0**	**78**	**0**	**2**	**0**	**0**	**2**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: King St & Heritage Dr (Hwy 12)
Site Code: 2227300001
Municipality: Midland
Count Date: Aug 13, 2022

West Approach - Heritage Dr (Hwy 12)

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	7	21	2	0	30	0	0	0	0	0	0	0	0	0	0	0
07:15	5	33	2	0	40	0	0	0	0	0	0	0	0	0	0	0
07:30	24	24	4	0	52	0	1	0	0	1	0	0	0	0	0	0
07:45	24	36	5	0	65	0	1	0	0	1	0	0	0	0	0	0
08:00	19	65	3	0	87	0	0	0	0	0	0	0	0	0	0	0
08:15	30	57	0	0	87	0	0	1	0	1	0	0	0	0	0	0
08:30	24	64	1	0	89	0	2	0	0	2	0	0	0	0	0	0
08:45	39	81	4	0	124	0	2	0	0	2	0	0	0	0	0	0
09:00	37	86	3	0	126	1	0	0	0	1	0	0	0	0	0	0
09:15	35	81	3	0	119	0	0	0	0	0	0	0	0	0	0	0
09:30	49	91	5	0	145	0	0	1	0	1	0	0	0	0	0	0
09:45	40	79	5	0	124	0	3	0	0	3	0	0	0	0	0	0
10:00	49	75	8	0	132	0	0	0	0	0	0	0	0	0	0	1
10:15	62	109	3	0	174	1	1	0	0	2	0	0	0	0	0	0
10:30	66	81	6	0	153	0	0	0	0	0	0	0	0	0	0	1
10:45	56	118	6	0	180	0	1	0	0	1	0	0	0	0	0	0
11:00	70	111	0	0	181	0	0	0	0	0	0	0	0	0	0	0
11:15	65	130	5	0	200	2	1	0	0	3	0	0	0	0	0	1
11:30	75	136	3	0	214	0	0	0	0	0	0	0	0	0	0	0
11:45	74	121	4	0	199	0	2	0	0	2	0	0	0	0	0	0

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
12:00	75	147	1	0	223	0	1	0	0	1	0	0	0	0	0	1
12:15	78	157	0	0	235	0	1	0	0	1	0	0	0	0	0	0
12:30	69	135	1	0	205	0	1	0	0	1	0	0	0	0	0	0
12:45	66	132	6	0	204	0	1	0	0	1	0	0	0	0	0	0
13:00	75	118	7	0	200	0	0	0	0	0	0	0	0	0	0	0
13:15	75	125	3	0	203	0	0	0	0	0	0	0	0	0	0	0
13:30	69	130	4	0	203	0	0	0	0	0	0	0	0	0	0	0
13:45	65	131	7	0	203	0	0	0	0	0	0	0	0	0	0	1
14:00	70	112	3	0	185	0	1	0	0	1	0	0	0	0	0	0
14:15	77	116	3	0	196	1	0	0	0	1	0	0	0	0	0	0
14:30	55	128	3	0	186	0	2	0	0	2	0	0	0	0	0	0
14:45	72	117	3	0	192	0	0	0	0	0	0	0	0	0	0	0
15:00	75	115	5	0	195	0	1	0	0	1	0	0	0	0	0	0
15:15	54	136	4	0	194	0	1	1	0	2	0	1	0	0	1	0
15:30	64	111	9	0	184	0	0	1	0	1	0	0	0	0	0	0
15:45	65	126	3	0	194	0	1	0	0	1	0	0	0	0	0	0
16:00	61	100	1	0	162	0	0	0	0	0	0	0	0	0	0	0
16:15	60	101	3	0	164	0	0	0	0	0	0	0	0	0	0	1
16:30	69	89	3	0	161	0	0	0	0	0	0	0	0	0	0	1
16:45	48	93	4	0	145	0	0	0	0	0	0	0	0	0	0	0
17:00	56	120	1	0	177	0	0	0	0	0	0	0	0	0	0	0
17:15	57	94	2	0	153	0	1	0	0	1	0	0	0	0	0	0
17:30	49	86	0	0	135	0	0	0	0	0	0	0	0	0	0	2
17:45	58	83	4	0	145	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	2412	4401	152	0	6965	5	25	4	0	34	0	1	0	0	1	9
GRAND TOTAL	**2412**	**4401**	**152**	**0**	**6965**	**5**	**25**	**4**	**0**	**34**	**0**	**1**	**0**	**0**	**1**	**9**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	07:00:00	From:	09:00:00
To:	10:00:00	To:	10:00:00

Intersection: King St & Heritage Dr (Hwy 12)
Site Code: 2227300001
Count Date: Aug 13, 2022

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Heritage Dr (Hwy 12) runs E/W

North Approach

	Out	In	Total
Cars	317	310	627
Trucks	6	4	10
Bicycles	0	0	0
	323	**314**	**637**

King St

Bicycles	0	0	0	0
Trucks	5	0	1	0
Cars	195	28	94	0
Totals	**200**	**28**	**95**	**0**

East Approach

	Out	In	Total
Cars	553	452	1005
Trucks	14	8	22
Bicycles	0	0	0
	567	**460**	**1027**

Heritage Dr (Hwy 12)

Bicycles	Trucks	Cars	Totals	
0	0	0	**0**	
0	1	161	**162**	
0	3	337	**340**	
0	1	16	**17**	

Peds: 0

Peds: 0

Peds: 0

Heritage Dr (Hwy 12)

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	125	124	1	0
	409	399	10	0
	33	30	3	0

West Approach

	Out	In	Total
Cars	514	614	1128
Trucks	5	16	21
Bicycles	0	0	0
	519	**630**	**1149**

Totals	**21**	**27**	**25**	**0**
Cars	20	25	21	0
Trucks	1	2	4	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	66	74	140
Trucks	7	4	11
Bicycles	0	0	0
	73	**78**	**151**

King St

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: King St & Heritage Dr (Hwy 12)
Site Code: 2227300001
Count Date: Aug 13, 2022
Period: 07:00 - 10:00

Peak Hour Data (09:00 - 10:00)

Start Time	North Approach King St						South Approach King St						East Approach Heritage Dr (Hwy 12)						West Approach Heritage Dr (Hwy 12)						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
09:00	19	6	45	0	0	70	2	7	3	0	0	12	3	91	33	0	0	127	38	86	3	0	0	127	336
09:15	21	7	42	0	0	70	5	4	4	0	0	13	8	86	40	0	0	134	35	81	3	0	0	119	336
09:30	29	9	40	0	0	78	6	6	8	0	0	20	3	102	22	0	0	127	49	91	6	0	0	146	371
09:45	26	6	73	0	0	105	8	10	10	0	0	28	19	130	30	0	0	179	40	82	5	0	0	127	439
Grand Total	**95**	**28**	**200**	**0**	**0**	**323**	**21**	**27**	**25**	**0**	**0**	**73**	**33**	**409**	**125**	**0**	**0**	**567**	**162**	**340**	**17**	**0**	**0**	**519**	**1482**
Approach %	29.4	8.7	61.9	0		-	28.8	37	34.2	0		-	5.8	72.1	22	0		-	31.2	65.5	3.3	0		-	
Totals %	6.4	1.9	13.5	0		21.8	1.4	1.8	1.7	0		4.9	2.2	27.6	8.4	0		38.3	10.9	22.9	1.1	0		35	
PHF	**0.82**	**0.78**	**0.68**	**0**		**0.77**	**0.66**	**0.68**	**0.63**	**0**		**0.65**	**0.43**	**0.79**	**0.78**	**0**		**0.79**	**0.83**	**0.93**	**0.71**	**0**		**0.89**	**0.84**
Cars	94	28	195	0		317	20	25	21	0		66	30	399	124	0		553	161	337	16	0		514	1450
% Cars	98.9	100	97.5	0		98.1	95.2	92.6	84	0		90.4	90.9	97.6	99.2	0		97.5	99.4	99.1	94.1	0		99	97.8
Trucks	1	0	5	0		6	1	2	4	0		7	3	10	1	0		14	1	3	1	0		5	32
% Trucks	1.1	0	2.5	0		1.9	4.8	7.4	16	0		9.6	9.1	2.4	0.8	0		2.5	0.6	0.9	5.9	0		1	2.2
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Peak Hour Diagram

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Specified Period		One Hour Peak	
From:	10:00:00	From:	11:15:00
To:	14:00:00	To:	12:15:00

Intersection: King St & Heritage Dr (Hwy 12)
Site Code: 2227300001
Count Date: Aug 13, 2022

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Heritage Dr (Hwy 12) runs E/W

North Approach

	Out	In	Total
Cars	533	500	1033
Trucks	4	3	7
Bicycles	0	0	0
	537	**503**	**1040**

King St

Bicycles	0	0	0	0
Trucks	2	1	1	0
Cars	350	47	136	0
Totals	**352**	**48**	**137**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	745	689	1434
Trucks	4	6	10
Bicycles	0	0	0
	749	**695**	**1444**

Heritage Dr (Hwy 12)

Bicycles	Trucks	Cars	Totals	
0	0	0	**0**	
0	2	289	**291**	
0	4	534	**538**	
0	0	13	**13**	

Peds: 2

Peds: 0

Heritage Dr (Hwy 12)

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	174	174	0	0
	549	545	4	0
	26	26	0	0

Peds: 0

West Approach

	Out	In	Total
Cars	836	914	1750
Trucks	6	7	13
Bicycles	0	0	0
	842	**921**	**1763**

King St

Totals	**20**	**38**	**20**	**0**
Cars	19	37	19	0
Trucks	1	1	1	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	75	86	161
Trucks	3	1	4
Bicycles	0	0	0
	78	**87**	**165**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: King St & Heritage Dr (Hwy 12)
Site Code: 2227300001
Count Date: Aug 13, 2022
Period: 10:00 - 14:00

Peak Hour Data (11:15 - 12:15)

Start Time	North Approach King St						South Approach King St						East Approach Heritage Dr (Hwy 12)						West Approach Heritage Dr (Hwy 12)						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
11:15	34	8	98	0	0	140	3	9	5	0	0	17	6	149	44	0	0	199	67	131	5	0	1	203	559
11:30	26	16	92	0	0	134	7	5	1	0	0	13	11	121	51	0	0	183	75	136	3	0	0	214	544
11:45	41	17	80	0	0	138	3	18	4	0	0	25	5	131	37	0	0	173	74	123	4	0	0	201	537
12:00	36	7	82	0	0	125	7	6	10	0	0	23	4	148	42	0	0	194	75	148	1	0	1	224	566
Grand Total	**137**	**48**	**352**	**0**	**0**	**537**	**20**	**38**	**20**	**0**	**0**	**78**	**26**	**549**	**174**	**0**	**0**	**749**	**291**	**538**	**13**	**0**	**2**	**842**	**2206**
Approach %	25.5	8.9	65.5	0		-	25.6	48.7	25.6	0		-	3.5	73.3	23.2	0		-	34.6	63.9	1.5	0		-	
Totals %	6.2	2.2	16	0		24.3	0.9	1.7	0.9	0		3.5	1.2	24.9	7.9	0		34	13.2	24.4	0.6	0		38.2	
PHF	**0.84**	**0.71**	**0.9**	**0**		**0.96**	**0.71**	**0.53**	**0.5**	**0**		**0.78**	**0.59**	**0.92**	**0.85**	**0**		**0.94**	**0.97**	**0.91**	**0.65**	**0**		**0.94**	**0.97**
Cars	136	47	350	0		533	19	37	19	0		75	26	545	174	0		745	289	534	13	0		836	2189
% Cars	99.3	97.9	99.4	0		99.3	95	97.4	95	0		96.2	100	99.3	100	0		99.5	99.3	99.3	100	0		99.3	99.2
Trucks	1	1	2	0		4	1	1	1	0		3	0	4	0	0		4	2	4	0	0		6	17
% Trucks	0.7	2.1	0.6	0		0.7	5	2.6	5	0		3.8	0	0.7	0	0		0.5	0.7	0.7	0	0		0.7	0.8
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					2	-	2
% Peds					0	-					0	-					0	-					100	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	14:00:00	From:	14:00:00
To:	18:00:00	To:	15:00:00

Intersection: King St & Heritage Dr (Hwy 12)
Site Code: 2227300001
Count Date: Aug 13, 2022

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Heritage Dr (Hwy 12) runs E/W

North Approach

	Out	In	Total
Cars	444	415	859
Trucks	8	5	13
Bicycles	0	0	0
	452	**420**	**872**

King St

Bicycles	0	0	0	0
Trucks	2	6	0	0
Cars	262	39	143	0
Totals	**264**	**45**	**143**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	622	631	1253
Trucks	6	4	10
Bicycles	0	0	0
	628	**635**	**1263**

Heritage Dr (Hwy 12)

Bicycles	Trucks	Cars	Totals	
0	0	0	**0**	
0	1	274	**275**	
0	3	473	**476**	
0	0	12	**12**	

Peds: 0

Peds: 0

Heritage Dr (Hwy 12)

Totals	Cars	Trucks	Bicycles
0	0	0	0
125	124	1	0
484	479	5	0
19	19	0	0

Peds: 0

West Approach

	Out	In	Total
Cars	759	758	1517
Trucks	4	8	12
Bicycles	0	0	0
	763	**766**	**1529**

Totals	**18**	**20**	**16**	**0**
Cars	17	17	15	0
Trucks	1	3	1	0
Bicycles	0	0	0	0

King St

South Approach

	Out	In	Total
Cars	49	70	119
Trucks	5	6	11
Bicycles	0	0	0
	54	**76**	**130**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: King St & Heritage Dr (Hwy 12)
Site Code: 2227300001
Count Date: Aug 13, 2022
Period: 14:00 - 18:00

Peak Hour Data (14:00 - 15:00)

Start Time	North Approach King St						South Approach King St						East Approach Heritage Dr (Hwy 12)						West Approach Heritage Dr (Hwy 12)						Total Vehicles
	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	
14:00	42	11	74	0	0	127	8	5	5	0	0	18	5	125	37	0	0	167	70	113	3	0	0	186	498
14:15	39	2	68	0	0	109	2	3	5	0	0	10	7	121	37	0	0	165	78	116	3	0	0	197	481
14:30	32	20	61	0	0	113	5	4	1	0	0	10	5	132	33	0	0	170	55	130	3	0	0	188	481
14:45	30	12	61	0	0	103	3	8	5	0	0	16	2	106	18	0	0	126	72	117	3	0	0	192	437
Grand Total	**143**	**45**	**264**	**0**	**0**	**452**	**18**	**20**	**16**	**0**	**0**	**54**	**19**	**484**	**125**	**0**	**0**	**628**	**275**	**476**	**12**	**0**	**0**	**763**	**1897**
Approach %	31.6	10	58.4	0		-	33.3	37	29.6	0		-	3	77.1	19.9	0		-	36	62.4	1.6	0		-	
Totals %	7.5	2.4	13.9	0		23.8	0.9	1.1	0.8	0		2.8	1	25.5	6.6	0		33.1	14.5	25.1	0.6	0		40.2	
PHF	**0.85**	**0.56**	**0.89**	**0**		**0.89**	**0.56**	**0.63**	**0.8**	**0**		**0.75**	**0.68**	**0.92**	**0.84**	**0**		**0.92**	**0.88**	**0.92**	**1**	**0**		**0.97**	**0.95**
Cars	143	39	262	0		444	17	17	15	0		49	19	479	124	0		622	274	473	12	0		759	1874
% Cars	100	86.7	99.2	0		98.2	94.4	85	93.8	0		90.7	100	99	99.2	0		99	99.6	99.4	100	0		99.5	98.8
Trucks	0	6	2	0		8	1	3	1	0		5	0	5	1	0		6	1	3	0	0		4	23
% Trucks	0	13.3	0.8	0		1.8	5.6	15	6.3	0		9.3	0	1	0.8	0		1	0.4	0.6	0	0		0.5	1.2
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #22-273 - IBI Group

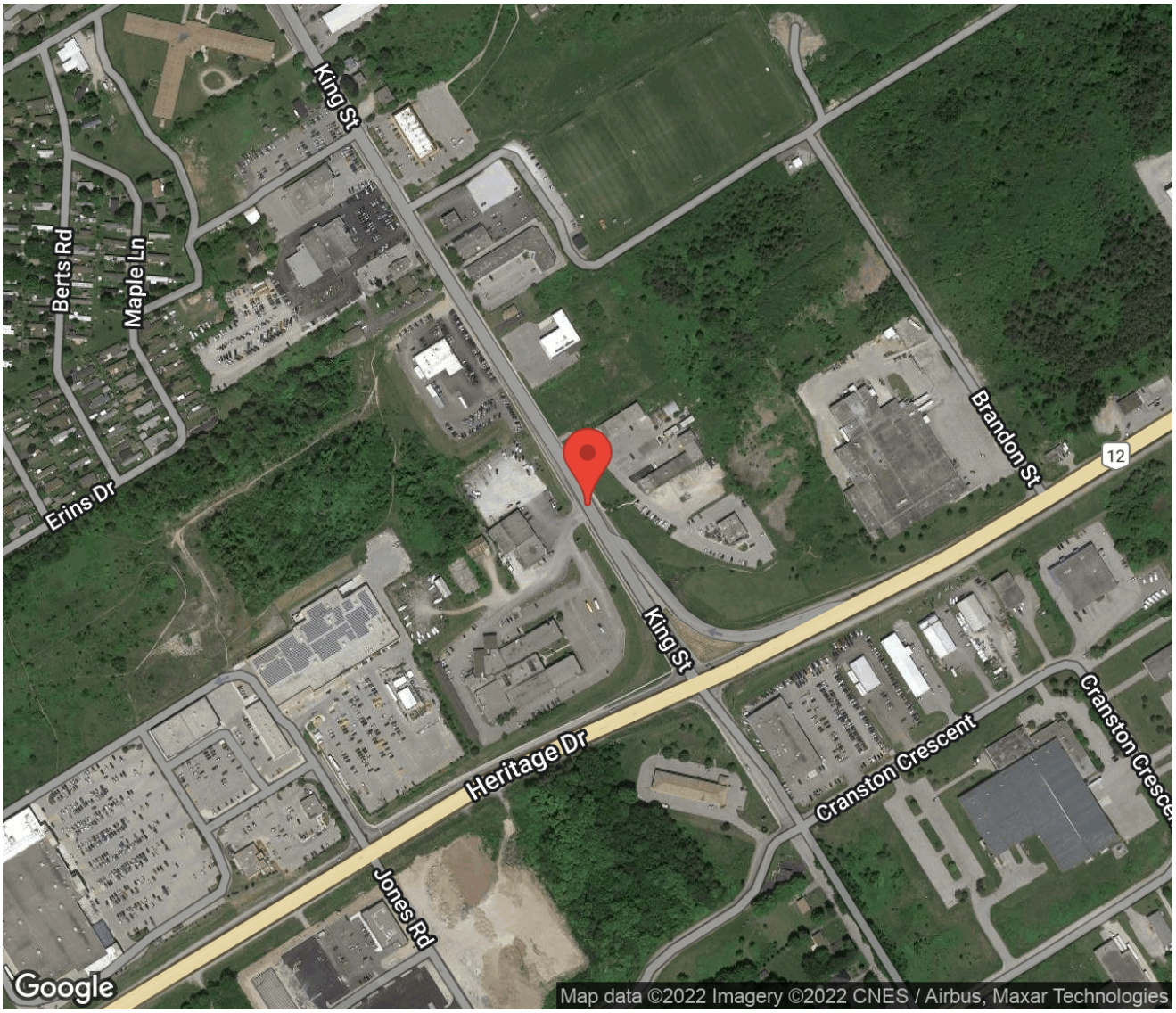
Intersection Count Report

Intersection:	King St & Quality Inn Access
Municipality:	Midland
Count Date:	Saturday, Aug 13, 2022
Site Code:	2227300002
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	King St & Quality Inn Access
Site Code:	2227300002
Municipality:	Midland
Count Date:	Aug 13, 2022



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: King St & Quality Inn Access
Site Code: 2227300002
Municipality: Midland
Count Date: Aug 13, 2022

King St - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	0	142	5	0	147	0	4	127	0	0	131	0	278
08:00 - 09:00	0	227	11	0	238	0	16	208	0	0	224	0	462
09:00 - 10:00	0	314	3	1	318	0	10	306	0	0	316	0	634
10:00 - 11:00	0	411	10	1	422	0	15	377	0	0	392	0	814
11:00 - 12:00	0	507	8	0	515	0	19	472	0	0	491	0	1006
12:00 - 13:00	0	476	10	0	486	0	10	480	0	0	490	0	976
13:00 - 14:00	0	465	15	0	480	0	15	501	0	0	516	0	996
14:00 - 15:00	0	435	14	0	449	1	18	408	0	0	426	0	875
15:00 - 16:00	0	395	10	0	405	1	17	373	0	1	391	0	796
16:00 - 17:00	0	350	11	0	361	0	12	372	0	1	385	0	746
17:00 - 18:00	0	296	23	0	319	0	22	354	0	0	376	0	695
GRAND TOTAL	**0**	**4018**	**120**	**2**	**4140**	**2**	**158**	**3978**	**0**	**2**	**4138**	**0**	**8278**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: King St & Quality Inn Access
Site Code: 2227300002
Municipality: Midland
Count Date: Aug 13, 2022

Quality Inn Access - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	0	0	0	0	0	0	1	0	10	0	11	6	11
08:00 - 09:00	0	0	0	0	0	0	7	0	17	0	24	2	24
09:00 - 10:00	0	0	0	0	0	0	4	0	17	0	21	1	21
10:00 - 11:00	0	0	0	0	0	0	11	0	19	0	30	6	30
11:00 - 12:00	0	0	0	0	0	0	10	0	32	0	42	5	42
12:00 - 13:00	0	0	0	0	0	0	6	0	22	0	28	1	28
13:00 - 14:00	0	0	0	0	0	0	16	0	22	0	38	3	38
14:00 - 15:00	0	0	0	0	0	1	9	0	14	0	23	3	23
15:00 - 16:00	0	0	0	0	0	0	15	0	18	0	33	2	33
16:00 - 17:00	0	0	0	0	0	0	10	0	20	0	30	3	30
17:00 - 18:00	0	0	0	0	0	0	12	0	11	0	23	1	23
GRAND TOTAL	**0**	**0**	**0**	**0**	**0**	**1**	**101**	**0**	**202**	**0**	**303**	**33**	**303**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: King St & Quality Inn Access
Site Code: 2227300002
Municipality: Midland
Count Date: Aug 13, 2022

North Approach - King St

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	0	25	1	0	26	0	0	0	0	0	0	0	0	0	0	0
07:15	0	30	2	0	32	0	0	0	0	0	0	0	0	0	0	0
07:30	0	44	2	0	46	0	1	0	0	1	0	0	0	0	0	0
07:45	0	40	0	0	40	0	2	0	0	2	0	0	0	0	0	0
08:00	0	39	2	0	41	0	0	0	0	0	0	0	0	0	0	0
08:15	0	56	5	0	61	0	2	0	0	2	0	0	0	0	0	0
08:30	0	54	1	0	55	0	0	1	0	1	0	0	0	0	0	0
08:45	0	75	2	0	77	0	1	0	0	1	0	0	0	0	0	0
09:00	0	67	0	0	67	0	1	0	0	1	0	0	0	0	0	0
09:15	0	63	2	1	66	0	0	0	0	0	0	0	0	0	0	0
09:30	0	74	1	0	75	0	4	0	0	4	0	0	0	0	0	0
09:45	0	103	0	0	103	0	2	0	0	2	0	0	0	0	0	0
10:00	0	120	2	0	122	0	0	0	0	0	0	0	0	0	0	0
10:15	0	92	4	1	97	0	2	0	0	2	0	1	0	0	1	0
10:30	0	92	3	0	95	0	0	0	0	0	0	0	0	0	0	0
10:45	0	102	1	0	103	0	2	0	0	2	0	0	0	0	0	0
11:00	0	116	0	0	116	0	0	0	0	0	0	1	0	0	1	0
11:15	0	131	2	0	133	0	3	0	0	3	0	0	0	0	0	0
11:30	0	126	5	0	131	0	0	0	0	0	0	0	0	0	0	0
11:45	0	127	1	0	128	0	3	0	0	3	0	0	0	0	0	0

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
12:00	0	117	2	0	119	0	0	0	0	0	0	0	0	0	0	0
12:15	0	119	1	0	120	0	3	0	0	3	0	0	0	0	0	0
12:30	0	127	4	0	131	0	1	0	0	1	0	1	0	0	1	0
12:45	0	107	3	0	110	0	1	0	0	1	0	0	0	0	0	0
13:00	0	124	7	0	131	0	0	0	0	0	0	0	0	0	0	0
13:15	0	109	4	0	113	0	0	0	0	0	0	1	0	0	1	0
13:30	0	116	2	0	118	0	1	0	0	1	0	0	0	0	0	0
13:45	0	112	2	0	114	0	2	0	0	2	0	0	0	0	0	0
14:00	0	121	5	0	126	0	2	0	0	2	0	0	0	0	0	0
14:15	0	97	1	0	98	0	1	0	0	1	0	0	1	0	1	0
14:30	0	111	4	0	115	0	2	0	0	2	0	0	0	0	0	1
14:45	0	100	3	0	103	0	1	0	0	1	0	0	0	0	0	0
15:00	0	120	0	0	120	0	0	0	0	0	0	0	0	0	0	1
15:15	0	107	2	0	109	0	0	0	0	0	0	0	0	0	0	0
15:30	0	93	6	0	99	0	2	0	0	2	0	1	0	0	1	0
15:45	0	72	2	0	74	0	0	0	0	0	0	0	0	0	0	0
16:00	0	88	1	0	89	0	1	0	0	1	0	0	0	0	0	0
16:15	0	97	4	0	101	0	0	0	0	0	0	0	0	0	0	0
16:30	0	90	1	0	91	0	1	0	0	1	0	0	1	0	1	0
16:45	0	72	4	0	76	0	1	0	0	1	0	0	0	0	0	0
17:00	0	89	4	0	93	0	2	0	0	2	0	0	0	0	0	0
17:15	0	89	5	0	94	0	0	0	0	0	0	0	0	0	0	0
17:30	0	70	8	0	78	0	0	0	0	0	0	0	0	0	0	0
17:45	0	45	6	0	51	0	0	0	0	0	0	1	0	0	1	0
SUBTOTAL	0	3968	117	2	4087	0	44	1	0	45	0	6	2	0	8	2
GRAND TOTAL	**0**	**3968**	**117**	**2**	**4087**	**0**	**44**	**1**	**0**	**45**	**0**	**6**	**2**	**0**	**8**	**2**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: King St & Quality Inn Access
Site Code: 2227300002
Municipality: Midland
Count Date: Aug 13, 2022

South Approach - King St

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	0	14	0	0	14	0	0	0	0	0	0	0	0	0	0	0
07:15	0	19	0	0	19	0	0	0	0	0	0	0	0	0	0	0
07:30	0	45	0	0	45	0	0	0	0	0	0	0	0	0	0	0
07:45	4	49	0	0	53	0	0	0	0	0	0	0	0	0	0	0
08:00	2	37	0	0	39	0	2	0	0	2	0	0	0	0	0	0
08:15	5	48	0	0	53	0	1	0	0	1	0	0	0	0	0	0
08:30	3	55	0	0	58	0	1	0	0	1	0	0	0	0	0	0
08:45	6	63	0	0	69	0	1	0	0	1	0	0	0	0	0	0
09:00	1	76	0	0	77	0	0	0	0	0	0	0	0	0	0	0
09:15	2	77	0	0	79	0	1	0	0	1	0	0	0	0	0	0
09:30	2	74	0	0	76	0	1	0	0	1	0	0	0	0	0	0
09:45	5	75	0	0	80	0	2	0	0	2	0	0	0	0	0	0
10:00	4	80	0	0	84	1	1	0	0	2	0	0	0	0	0	0
10:15	1	100	0	0	101	0	0	0	0	0	0	0	0	0	0	0
10:30	3	94	0	0	97	0	1	0	0	1	0	0	0	0	0	0
10:45	6	98	0	0	104	0	3	0	0	3	0	0	0	0	0	0
11:00	6	112	0	0	118	0	1	0	0	1	0	0	0	0	0	0
11:15	4	109	0	0	113	0	2	0	0	2	0	0	0	0	0	0
11:30	8	122	0	0	130	0	0	0	0	0	0	0	0	0	0	0
11:45	1	125	0	0	126	0	1	0	0	1	0	0	0	0	0	0

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
12:00	1	119	0	0	120	0	1	0	0	1	0	0	0	0	0	0
12:15	4	124	0	0	128	0	0	0	0	0	0	0	0	0	0	0
12:30	4	113	0	0	117	0	2	0	0	2	0	0	0	0	0	0
12:45	1	119	0	0	120	0	2	0	0	2	0	0	0	0	0	0
13:00	4	132	0	0	136	0	0	0	0	0	0	0	0	0	0	0
13:15	2	134	0	0	136	0	0	0	0	0	0	0	0	0	0	0
13:30	6	102	0	0	108	0	0	0	0	0	0	1	0	0	1	0
13:45	3	131	0	0	134	0	1	0	0	1	0	0	0	0	0	0
14:00	2	109	0	0	111	0	1	0	0	1	0	0	0	0	0	0
14:15	4	118	0	0	122	1	1	0	0	2	0	0	0	0	0	0
14:30	6	81	0	0	87	0	1	0	0	1	0	0	0	0	0	0
14:45	5	96	0	0	101	0	1	0	0	1	0	0	0	0	0	0
15:00	6	105	0	1	112	0	0	0	0	0	0	1	0	0	1	0
15:15	4	90	0	0	94	0	0	0	0	0	0	0	0	0	0	0
15:30	4	83	0	0	87	0	0	0	0	0	0	0	0	0	0	0
15:45	3	92	0	0	95	0	2	0	0	2	0	0	0	0	0	0
16:00	4	90	0	1	95	0	3	0	0	3	0	0	0	0	0	0
16:15	4	103	0	0	107	0	0	0	0	0	0	0	0	0	0	0
16:30	4	98	0	0	102	0	0	0	0	0	0	0	0	0	0	0
16:45	0	78	0	0	78	0	0	0	0	0	0	0	0	0	0	0
17:00	5	84	0	0	89	1	1	0	0	2	0	0	0	0	0	0
17:15	0	102	0	0	102	0	0	0	0	0	0	0	0	0	0	0
17:30	3	81	0	0	84	0	0	0	0	0	0	0	0	0	0	0
17:45	13	86	0	0	99	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	155	3942	0	2	4099	3	34	0	0	37	0	2	0	0	2	0
GRAND TOTAL	155	3942	0	2	4099	3	34	0	0	37	0	2	0	0	2	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: King St & Quality Inn Access
Site Code: 2227300002
Municipality: Midland
Count Date: Aug 13, 2022

West Approach - Quality Inn Access

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	4
07:15	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	1
07:45	1	0	2	0	3	0	0	0	0	0	0	0	0	0	0	1
08:00	1	0	6	0	7	0	0	0	0	0	0	0	0	0	0	0
08:15	1	0	5	0	6	0	0	0	0	0	0	0	0	0	0	1
08:30	4	0	3	0	7	0	0	0	0	0	0	0	0	0	0	1
08:45	1	0	3	0	4	0	0	0	0	0	0	0	0	0	0	0
09:00	1	0	3	0	4	0	0	1	0	1	0	0	0	0	0	1
09:15	1	0	4	0	5	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0
09:45	2	0	5	0	7	0	0	0	0	0	0	0	0	0	0	0
10:00	6	0	3	0	9	0	0	0	0	0	0	0	0	0	0	1
10:15	2	0	5	0	7	0	0	0	0	0	0	0	0	0	0	1
10:30	2	0	6	0	8	0	0	0	0	0	0	0	0	0	0	1
10:45	1	0	5	0	6	0	0	0	0	0	0	0	0	0	0	3
11:00	2	0	6	0	8	0	0	0	0	0	0	0	0	0	0	0
11:15	3	0	10	0	13	0	0	0	0	0	0	0	0	0	0	0
11:30	3	0	10	0	13	0	0	0	0	0	0	0	0	0	0	1
11:45	2	0	6	0	8	0	0	0	0	0	0	0	0	0	0	4

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
12:00	1	0	6	0	7	0	0	0	0	0	0	0	0	0	0	0
12:15	1	0	8	0	9	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	1
12:45	4	0	5	0	9	0	0	0	0	0	0	0	0	0	0	0
13:00	5	0	6	0	11	0	0	0	0	0	0	0	0	0	0	1
13:15	4	0	5	0	9	0	0	0	0	0	0	0	0	0	0	0
13:30	2	0	8	0	10	0	0	0	0	0	0	0	0	0	0	1
13:45	5	0	3	0	8	0	0	0	0	0	0	0	0	0	0	1
14:00	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0	1
14:15	2	0	7	0	9	0	0	0	0	0	0	0	0	0	0	0
14:30	2	0	1	0	3	1	0	0	0	1	0	0	0	0	0	1
14:45	2	0	5	0	7	0	0	0	0	0	0	0	0	0	0	1
15:00	3	0	6	0	9	0	0	0	0	0	0	0	0	0	0	1
15:15	4	0	3	0	7	0	0	0	0	0	0	0	0	0	0	0
15:30	2	0	2	0	4	0	0	0	0	0	0	0	0	0	0	1
15:45	6	0	7	0	13	0	0	0	0	0	0	0	0	0	0	0
16:00	2	0	3	0	5	0	0	0	0	0	0	0	0	0	0	1
16:15	1	0	6	0	7	0	0	0	0	0	0	0	0	0	0	0
16:30	3	0	6	0	9	0	0	0	0	0	0	0	0	0	0	1
16:45	4	0	5	0	9	0	0	0	0	0	0	0	0	0	0	1
17:00	1	0	5	0	6	0	0	0	0	0	0	0	0	0	0	0
17:15	4	0	2	0	6	0	0	0	0	0	0	0	0	0	0	0
17:30	3	0	1	0	4	0	0	0	0	0	0	0	0	0	0	1
17:45	4	0	3	0	7	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	100	0	201	0	301	1	0	1	0	2	0	0	0	0	0	33
GRAND TOTAL	100	0	201	0	301	1	0	1	0	2	0	0	0	0	0	33

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	07:00:00	From:	09:00:00
To:	10:00:00	To:	10:00:00

Intersection: King St & Quality Inn Access
Site Code: 2227300002
Count Date: Aug 13, 2022

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: King St runs N/S

North Approach

	Out	In	Total
Cars	311	307	618
Trucks	7	4	11
Bicycles	0	0	0
	318	**311**	**629**

King St

Bicycles	0	0	0
Trucks	0	7	0
Cars	3	307	1
Totals	**3**	**314**	**1**

Quality Inn Access

			Totals
0	0	0	**0**
0	0	4	**4**
0	1	16	**17**

Peds: 0

Peds: 1

Peds: 0

Peds: 0

West Approach

	Out	In	Total
Cars	20	13	33
Trucks	1	0	1
Bicycles	0	0	0
	21	**13**	**34**

Totals	**10**	**306**	**0**
Cars	10	302	0
Trucks	0	4	0
Bicycles	0	0	0

King St

South Approach

	Out	In	Total
Cars	312	323	635
Trucks	4	8	12
Bicycles	0	0	0
	316	**331**	**647**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: King St & Quality Inn Access
Site Code: 2227300002
Count Date: Aug 13, 2022
Period: 07:00 - 10:00

Peak Hour Data (09:00 - 10:00)

Start Time	North Approach King St						South Approach King St						East Approach						West Approach Quality Inn Access						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
09:00		68	0	0	0	68	1	76		0	0	77					0		1		4	0	1	5	150
09:15		63	2	1	0	66	2	78		0	0	80					0		1		4	0	0	5	151
09:30		78	1	0	0	79	2	75		0	0	77					0		0		4	0	0	4	160
09:45		105	0	0	0	105	5	77		0	0	82					0		2		5	0	0	7	194
Grand Total		**314**	**3**	**1**	**0**	**318**	**10**	**306**		**0**	**0**	**316**					**0**	**0**	**4**		**17**	**0**	**1**	**21**	**655**
Approach %		98.7	0.9	0.3		-	3.2	96.8		0		-						-	19		81	0		-	
Totals %		47.9	0.5	0.2		48.5	1.5	46.7		0		48.2						0	0.6		2.6	0		3.2	
PHF		**0.75**	**0.38**	**0.25**		**0.76**	**0.5**	**0.98**		**0**		**0.96**						**0**	**0.5**		**0.85**	**0**		**0.75**	**0.84**
Cars		307	3	1		311	10	302		0		312						0	4		16	0		20	643
% Cars		97.8	100	100		97.8	100	98.7		0		98.7						0	100		94.1	0		95.2	98.2
Trucks		7	0	0		7	0	4		0		4						0	0		1	0		1	12
% Trucks		2.2	0	0		2.2	0	1.3		0		1.3						0	0		5.9	0		4.8	1.8
Bicycles		0	0	0		0	0	0		0		0						0	0		0	0		0	0
% Bicycles		0	0	0		0	0	0		0		0						0	0		0	0		0	0
Peds					0	-					0	-					0	-					1	-	1
% Peds					0	-					0	-					0	-					100	-	

Peak Hour Diagram

Specified Period
From: 10:00:00
To: 14:00:00

One Hour Peak
From: 11:15:00
To: 12:15:00

Intersection: King St & Quality Inn Access
Site Code: 2227300002
Count Date: Aug 13, 2022

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: King St runs N/S

North Approach

	Out	In	Total
Cars	511	484	995
Trucks	6	4	10
Bicycles	0	0	0
	517	**488**	**1005**

King St

Bicycles	0	0	0
Trucks	0	6	0
Cars	10	501	0
Totals	**10**	**507**	**0**

Peds: 0

Quality Inn Access

			Totals
0	0	0	**0**
0	0	9	**9**
0	0	32	**32**

Peds: 5

Peds: 0

Peds: 0

West Approach

	Out	In	Total
Cars	41	24	65
Trucks	0	0	0
Bicycles	0	0	0
	41	**24**	**65**

Totals	**14**	**479**	**0**
Cars	14	475	0
Trucks	0	4	0
Bicycles	0	0	0

King St

South Approach

	Out	In	Total
Cars	489	533	1022
Trucks	4	6	10
Bicycles	0	0	0
	493	**539**	**1032**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: King St & Quality Inn Access
Site Code: 2227300002
Count Date: Aug 13, 2022
Period: 10:00 - 14:00

Peak Hour Data (11:15 - 12:15)

Start Time	North Approach King St						South Approach King St						East Approach						West Approach Quality Inn Access						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
11:15		134	2	0	0	136	4	111		0	0	115					0		3		10	0	0	13	264
11:30		126	5	0	0	131	8	122		0	0	130					0		3		10	0	1	13	274
11:45		130	1	0	0	131	1	126		0	0	127					0		2		6	0	4	8	266
12:00		117	2	0	0	119	1	120		0	0	121					0		1		6	0	0	7	247
Grand Total		**507**	**10**	**0**	**0**	**517**	**14**	**479**		**0**	**0**	**493**					**0**	**0**	**9**		**32**	**0**	**5**	**41**	**1051**
Approach %		98.1	1.9	0		-	2.8	97.2		0		-						-	22		78	0		-	
Totals %		48.2	1	0		49.2	1.3	45.6		0		46.9						0	0.9		3	0		3.9	
PHF		**0.95**	**0.5**	**0**		**0.95**	**0.44**	**0.95**		**0**		**0.95**						**0**	**0.75**		**0.8**	**0**		**0.79**	**0.96**
Cars		501	10	0		511	14	475		0		489						0	9		32	0		41	1041
% Cars		98.8	100	0		98.8	100	99.2		0		99.2						0	100		100	0		100	99
Trucks		6	0	0		6	0	4		0		4						0	0		0	0		0	10
% Trucks		1.2	0	0		1.2	0	0.8		0		0.8						0	0		0	0		0	1
Bicycles		0	0	0		0	0	0		0		0						0	0		0	0		0	0
% Bicycles		0	0	0		0	0	0		0		0						0	0		0	0		0	0
Peds					0	-					0	-					0	-					5	-	5
% Peds					0	-					0	-					0	-					100	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	14:00:00	From:	14:00:00
To:	18:00:00	To:	15:00:00

Intersection: King St & Quality Inn Access
Site Code: 2227300002
Count Date: Aug 13, 2022

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: King St runs N/S

North Approach

	Out	In	Total
Cars	442	412	854
Trucks	6	5	11
Bicycles	1	0	1
	449	**417**	**866**

King St

Bicycles	1	0	0
Trucks	0	6	0
Cars	13	429	0
Totals	**14**	**435**	**0**

Quality Inn Access

			Totals
0	0	0	**0**
0	1	8	**9**
0	0	14	**14**

Peds: 1

Peds: 3

Peds: 1

Peds: 0

West Approach

	Out	In	Total
Cars	22	30	52
Trucks	1	1	2
Bicycles	0	1	1
	23	**32**	**55**

Totals	**18**	**408**	**0**
Cars	17	404	0
Trucks	1	4	0
Bicycles	0	0	0

King St

South Approach

	Out	In	Total
Cars	421	443	864
Trucks	5	6	11
Bicycles	0	0	0
	426	**449**	**875**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: King St & Quality Inn Access
Site Code: 2227300002
Count Date: Aug 13, 2022
Period: 14:00 - 18:00

Peak Hour Data (14:00 - 15:00)

Start Time	North Approach King St						South Approach King St						East Approach						West Approach Quality Inn Access						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
14:00		123	5	0	0	128	2	110		0	0	112					0		2		1	0	1	3	243
14:15		98	2	0	0	100	5	119		0	0	124					0		2		7	0	0	9	233
14:30		113	4	0	1	117	6	82		0	0	88					0		3		1	0	1	4	209
14:45		101	3	0	0	104	5	97		0	0	102					1		2		5	0	1	7	213
Grand Total		**435**	**14**	**0**	**1**	**449**	**18**	**408**		**0**	**0**	**426**					**1**	**0**	**9**		**14**	**0**	**3**	**23**	**898**
Approach %		96.9	3.1	0		-	4.2	95.8		0		-						-	39.1		60.9	0		-	
Totals %		48.4	1.6	0		50	2	45.4		0		47.4						0	1		1.6	0		2.6	
PHF		**0.88**	**0.7**	**0**		**0.88**	**0.75**	**0.86**		**0**		**0.86**						**0**	**0.75**		**0.5**	**0**		**0.64**	**0.92**
Cars		429	13	0		442	17	404		0		421						0	8		14	0		22	885
% Cars		98.6	92.9	0		98.4	94.4	99		0		98.8						0	88.9		100	0		95.7	98.6
Trucks		6	0	0		6	1	4		0		5						0	1		0	0		1	12
% Trucks		1.4	0	0		1.3	5.6	1		0		1.2						0	11.1		0	0		4.3	1.3
Bicycles		0	1	0		1	0	0		0		0						0	0		0	0		0	1
% Bicycles		0	7.1	0		0.2	0	0		0		0						0	0		0	0		0	0.1
Peds					1	-					0	-					1	-					3	-	5
% Peds					20	-					0	-					20	-					60	-	

Appendix B: Signal Timing Plans

Pretimed

Ontario

PHASE	1	2	3	4	5	6	7	8
WALK	-	12	-	7	-	12	-	7
DON'T WALK	-	19	-	27	-	19	-	27
MIN INTIAL	7	45		15	7	45		15
TYPE 3 LIMIT	-		-		-		-	
ADD PER VEH	-	1.0	-		-	1.0	-	
VEH EXT	3.0	5.4		3.0	3.0	5.4		3.0
MAX GAP	3.0	5.4		3.0	3.0	5.4		3.0
MIN GAP	3.0	5.4		3.0	3.0	5.4		3.0
MAX LIMIT	10	50		30	10	50		30
MAXIMUM 2	-		-		-		-	
ADV / DLY WALK	-		-		-		-	
SEQUENCE TO	4	-		-	8	-		-
COND SRV MIN	-		-		-		-	
REDUCE EVERY	-		-		-		-	
YELLOW	3.0	5.0		4.5	3.0	5.0		4.5
RED CLEAR		2.0		2.8		2.0		2.8

PHASE BANK # < C + O + F = 1 >

Column F

		PHASES 1	2	3	4	5	6	7	8
0	PERMIT	X	X		X	X	X		X
1	RED LOCK								
2	YELLOW LOCK								
3	VEH MIN CALL	X			X	X			X
4	PED RECALL		X				X		
5	PEDESTRIANS								
6	REST IN WALK								
7	RED REST								
8	DOUBLE ENTRY		X		X		X		X
9	VEH MAX CALL								
A	SOFT RECALL								
B	MAXIMUM 2								
C	CORD SERVICE								
D	MAN CONT CALL								
E	YELLOW START		X				X		
F	FIRST PHASES				X				X

< C + O + F = 1 >

LOCATION: Highway 12 & King Street

Issued Date: 06-May-20

Installed Date:

BI Tran Systems, Inc.
510 Bercut Dr., Sacremento, Calif. 95814
916/441-0260

Traffic Signal Program ***233*** *Ontario*
Timing Sheet #2
Revised (02/95)

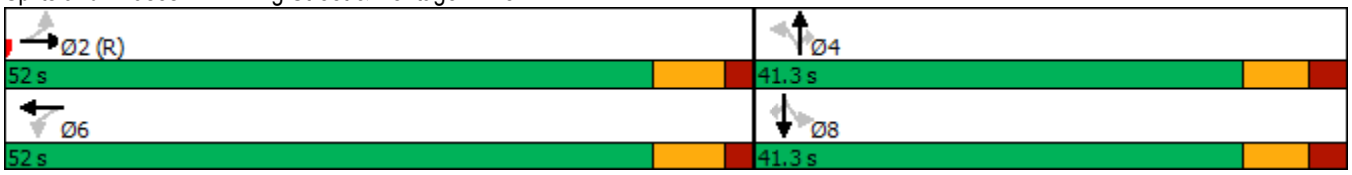
Appendix C: 2022 Existing Synchro Analysis

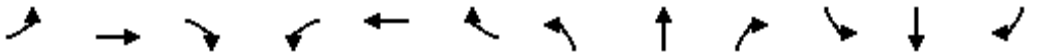
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	112	271	13	299	13	25	13	68	29	149
Future Volume (vph)	112	271	13	299	13	25	13	68	29	149
Lane Group Flow (vph)	156	346	20	472	20	64	28	100	40	199
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		6		4			8	
Permitted Phases	2		6		4		4	8		8
Minimum Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (%)	55.7%	55.7%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag										
Lead-Lag Optimize?										
v/c Ratio	0.36	0.20	0.04	0.27	0.04	0.09	0.04	0.20	0.06	0.28
Control Delay	18.0	13.9	13.2	12.8	19.5	20.1	3.0	21.7	19.7	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	13.9	13.2	12.8	19.5	20.1	3.0	21.7	19.7	4.1
Queue Length 50th (m)	16.8	17.5	1.8	21.6	2.3	7.5	0.0	12.1	4.6	0.0
Queue Length 95th (m)	23.5	23.1	4.0	28.6	5.0	6.6	0.0	17.2	9.0	6.8
Internal Link Dist (m)		206.0		262.9		103.6			160.6	
Turn Bay Length (m)	193.0		240.0		120.0			212.0		
Base Capacity (vph)	439	1752	504	1728	511	700	624	500	700	721
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.20	0.04	0.27	0.04	0.09	0.04	0.20	0.06	0.28

Intersection Summary

Cycle Length: 93.3
Actuated Cycle Length: 93.3
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 95
Control Type: Pretimed

Splits and Phases: 1: King Street & Heritage Drive

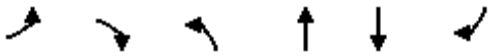




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	271	9	13	299	87	13	25	13	68	29	149
Future Volume (vph)	112	271	9	13	299	87	13	25	13	68	29	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3625		1825	3516		1825	1921	1633	1825	1921	1633
Flt Permitted	0.47	1.00		0.54	1.00		0.73	1.00	1.00	0.72	1.00	1.00
Satd. Flow (perm)	910	3625		1045	3516		1404	1921	1633	1374	1921	1633
Peak-hour factor, PHF	0.72	0.82	0.56	0.65	0.84	0.75	0.65	0.39	0.46	0.68	0.73	0.75
Adj. Flow (vph)	156	330	16	20	356	116	20	64	28	100	40	199
RTOR Reduction (vph)	0	4	0	0	34	0	0	0	18	0	0	126
Lane Group Flow (vph)	156	342	0	20	438	0	20	64	10	100	40	73
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Actuated Green, G (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Grp Cap (vph)	438	1748		504	1695		511	700	595	500	700	595
v/s Ratio Prot		0.09			0.12			0.03			0.02	
v/s Ratio Perm	c0.17			0.02			0.01		0.01	c0.07		0.04
v/c Ratio	0.36	0.20		0.04	0.26		0.04	0.09	0.02	0.20	0.06	0.12
Uniform Delay, d1	15.1	13.8		12.7	14.3		19.1	19.5	19.0	20.3	19.2	19.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.3		0.1	0.4		0.1	0.3	0.1	0.9	0.2	0.4
Delay (s)	17.4	14.1		12.9	14.7		19.3	19.8	19.0	21.2	19.4	20.1
Level of Service	B	B		B	B		B	B	B	C	B	C
Approach Delay (s)		15.1			14.6			19.5			20.4	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	105.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	17	16	208	227	11
Future Volume (Veh/h)	7	17	16	208	227	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.44	0.71	0.67	0.81	0.75	0.55
Hourly flow rate (vph)	16	24	24	257	303	20
Pedestrians				5		
Lane Width (m)				3.7		
Walking Speed (m/s)				1.1		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				185		
pX, platoon unblocked						
vC, conflicting volume	490	166	323			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	490	166	323			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	97	98			
cM capacity (veh/h)	503	851	1248			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	40	110	171	202	121
Volume Left	16	24	0	0	0
Volume Right	24	0	0	0	20
cSH	666	1248	1700	1700	1700
Volume to Capacity	0.06	0.02	0.10	0.12	0.07
Queue Length 95th (m)	1.5	0.4	0.0	0.0	0.0
Control Delay (s)	10.7	1.9	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	10.7	0.7		0.0	
Approach LOS	B				

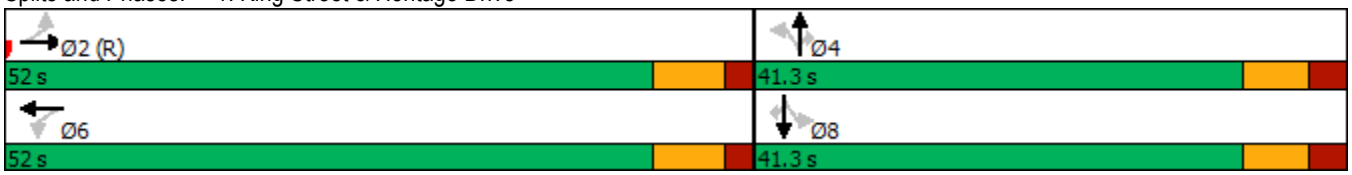
Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	26.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	293	542	26	549	20	38	20	137	48	352
Future Volume (vph)	293	542	26	549	20	38	20	137	48	352
Lane Group Flow (vph)	302	616	44	802	28	72	40	163	68	391
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		6		4			8	
Permitted Phases	2		6		4		4	8		8
Minimum Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (%)	55.7%	55.7%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag										
Lead-Lag Optimize?										
v/c Ratio	1.14	0.35	0.12	0.46	0.06	0.10	0.06	0.33	0.10	0.53
Control Delay	123.4	15.6	14.5	15.6	19.8	20.2	5.5	23.7	20.1	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	123.4	15.6	14.5	15.6	19.8	20.2	5.5	23.7	20.1	13.0
Queue Length 50th (m)	~63.6	34.5	4.2	43.9	3.2	8.4	0.0	20.8	7.9	22.3
Queue Length 95th (m)	#112.7	46.5	6.5	58.9	6.8	9.9	0.7	33.8	12.9	49.1
Internal Link Dist (m)		206.0		262.9		103.6			160.6	
Turn Bay Length (m)	193.0		240.0		120.0			212.0		
Base Capacity (vph)	266	1754	356	1729	499	700	624	497	700	732
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.14	0.35	0.12	0.46	0.06	0.10	0.06	0.33	0.10	0.53

Intersection Summary

Cycle Length: 93.3
Actuated Cycle Length: 93.3
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 95
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

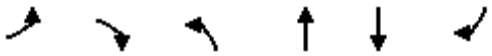
Splits and Phases: 1: King Street & Heritage Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	542	13	26	549	174	20	38	20	137	48	352
Future Volume (vph)	293	542	13	26	549	174	20	38	20	137	48	352
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3632		1825	3510		1825	1921	1633	1825	1921	1633
Flt Permitted	0.29	1.00		0.38	1.00		0.71	1.00	1.00	0.71	1.00	1.00
Satd. Flow (perm)	554	3632		740	3510		1369	1921	1633	1364	1921	1633
Peak-hour factor, PHF	0.97	0.91	0.65	0.59	0.92	0.85	0.71	0.53	0.50	0.84	0.71	0.90
Adj. Flow (vph)	302	596	20	44	597	205	28	72	40	163	68	391
RTOR Reduction (vph)	0	3	0	0	36	0	0	0	25	0	0	137
Lane Group Flow (vph)	302	613	0	44	766	0	28	72	15	163	68	254
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Actuated Green, G (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Grp Cap (vph)	267	1751		356	1692		498	700	595	497	700	595
v/s Ratio Prot		0.17			0.22			0.04			0.04	
v/s Ratio Perm	c0.55			0.06			0.02		0.01	0.12		c0.16
v/c Ratio	1.13	0.35		0.12	0.45		0.06	0.10	0.02	0.33	0.10	0.43
Uniform Delay, d1	24.1	15.0		13.3	16.0		19.2	19.6	19.0	21.4	19.5	22.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	95.1	0.6		0.7	0.9		0.2	0.3	0.1	1.8	0.3	2.2
Delay (s)	119.2	15.6		14.0	16.9		19.5	19.9	19.1	23.2	19.8	24.5
Level of Service	F	B		B	B		B	B	B	C	B	C
Approach Delay (s)		49.7			16.7			19.6			23.7	
Approach LOS		D			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	107.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	32	14	479	507	10
Future Volume (Veh/h)	9	32	14	479	507	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.80	0.44	0.95	0.95	0.50
Hourly flow rate (vph)	12	40	32	504	534	20
Pedestrians				5		
Lane Width (m)				3.7		
Walking Speed (m/s)				1.1		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				185		
pX, platoon unblocked						
vC, conflicting volume	860	282	554			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	860	282	554			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	94	97			
cM capacity (veh/h)	290	718	1026			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	52	200	336	356	198
Volume Left	12	32	0	0	0
Volume Right	40	0	0	0	20
cSH	535	1026	1700	1700	1700
Volume to Capacity	0.10	0.03	0.20	0.21	0.12
Queue Length 95th (m)	2.4	0.7	0.0	0.0	0.0
Control Delay (s)	12.4	1.6	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	12.4	0.6		0.0	
Approach LOS	B				

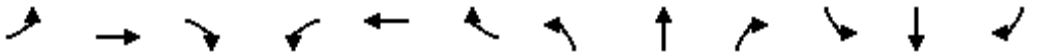
Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	33.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	238	383	15	440	9	45	13	126	38	202
Future Volume (vph)	238	383	15	440	9	45	13	126	38	202
Lane Group Flow (vph)	277	419	28	642	28	83	24	177	58	238
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		6		4			8	
Permitted Phases	2		6		4		4	8		8
Minimum Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (%)	55.7%	55.7%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag										
Lead-Lag Optimize?										
v/c Ratio	0.81	0.24	0.06	0.37	0.06	0.12	0.04	0.36	0.08	0.32
Control Delay	41.6	14.4	13.4	14.9	19.8	20.4	2.4	24.3	20.0	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.6	14.4	13.4	14.9	19.8	20.4	2.4	24.3	20.0	4.1
Queue Length 50th (m)	40.6	21.8	2.6	34.0	3.2	9.8	0.0	22.9	6.7	0.0
Queue Length 95th (m)	#80.2	31.1	4.1	43.0	3.0	11.2	0.0	29.9	10.6	11.9
Internal Link Dist (m)		206.0		262.9		103.6			160.6	
Turn Bay Length (m)	193.0		240.0		120.0			212.0		
Base Capacity (vph)	342	1752	469	1731	503	700	624	492	700	746
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.24	0.06	0.37	0.06	0.12	0.04	0.36	0.08	0.32

Intersection Summary

Cycle Length: 93.3
Actuated Cycle Length: 93.3
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 95
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

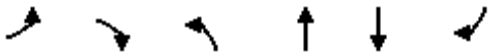
Splits and Phases: 1: King Street & Heritage Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	238	383	11	15	440	103	9	45	13	126	38	202
Future Volume (vph)	238	383	11	15	440	103	9	45	13	126	38	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3629		1825	3544		1825	1921	1633	1825	1921	1633
Flt Permitted	0.37	1.00		0.51	1.00		0.72	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	711	3629		974	3544		1382	1921	1633	1351	1921	1633
Peak-hour factor, PHF	0.86	0.95	0.69	0.54	0.85	0.83	0.32	0.54	0.54	0.71	0.66	0.85
Adj. Flow (vph)	277	403	16	28	518	124	28	83	24	177	58	238
RTOR Reduction (vph)	0	3	0	0	22	0	0	0	15	0	0	151
Lane Group Flow (vph)	277	416	0	28	620	0	28	83	9	177	58	87
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Actuated Green, G (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Grp Cap (vph)	342	1750		469	1709		503	700	595	492	700	595
v/s Ratio Prot		0.11			0.17			0.04			0.03	
v/s Ratio Perm	c0.39			0.03			0.02		0.01	c0.13		0.05
v/c Ratio	0.81	0.24		0.06	0.36		0.06	0.12	0.01	0.36	0.08	0.15
Uniform Delay, d1	20.5	14.1		12.9	15.2		19.2	19.7	18.9	21.7	19.4	19.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.4	0.3		0.2	0.6		0.2	0.3	0.0	2.0	0.2	0.5
Delay (s)	39.0	14.4		13.1	15.8		19.4	20.0	19.0	23.7	19.7	20.4
Level of Service	D	B		B	B		B	C	B	C	B	C
Approach Delay (s)		24.2			15.6			19.7			21.6	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	106.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	20	12	372	350	10
Future Volume (Veh/h)	10	20	12	372	350	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.63	0.83	0.75	0.90	0.90	0.69
Hourly flow rate (vph)	16	24	16	413	389	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				185		
pX, platoon unblocked						
vC, conflicting volume	634	202	403			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	634	202	403			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	97	99			
cM capacity (veh/h)	410	812	1167			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	40	154	275	259	144
Volume Left	16	16	0	0	0
Volume Right	24	0	0	0	14
cSH	583	1167	1700	1700	1700
Volume to Capacity	0.07	0.01	0.16	0.15	0.08
Queue Length 95th (m)	1.7	0.3	0.0	0.0	0.0
Control Delay (s)	11.6	1.0	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	11.6	0.3		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		

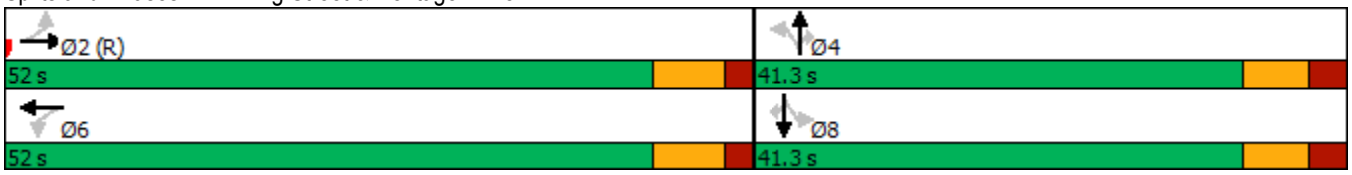
Appendix D: 2029 Future Background Synchro Analysis

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	131	330	13	355	18	30	13	84	36	172
Future Volume (vph)	131	330	13	355	18	30	13	84	36	172
Lane Group Flow (vph)	182	429	20	548	28	77	28	124	49	229
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		6		4			8	
Permitted Phases	2		6		4		4	8		8
Minimum Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (%)	55.7%	55.7%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag										
Lead-Lag Optimize?										
v/c Ratio	0.46	0.25	0.04	0.32	0.06	0.11	0.04	0.25	0.07	0.31
Control Delay	21.0	14.3	13.2	13.7	19.8	20.3	3.0	22.5	19.8	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	14.3	13.2	13.7	19.8	20.3	3.0	22.5	19.8	4.1
Queue Length 50th (m)	20.9	22.2	1.8	26.8	3.2	9.0	0.0	15.4	5.7	0.0
Queue Length 95th (m)	28.6	28.3	4.0	34.4	6.2	7.6	0.0	20.7	10.4	6.9
Internal Link Dist (m)		206.0		262.9		103.6			160.6	
Turn Bay Length (m)	193.0		240.0		120.0			212.0		
Base Capacity (vph)	393	1749	464	1730	507	700	624	494	700	740
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.25	0.04	0.32	0.06	0.11	0.04	0.25	0.07	0.31

Intersection Summary

Cycle Length: 93.3
Actuated Cycle Length: 93.3
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 95
Control Type: Pretimed

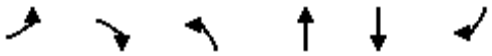
Splits and Phases: 1: King Street & Heritage Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	330	15	13	355	94	18	30	13	84	36	172
Future Volume (vph)	131	330	15	13	355	94	18	30	13	84	36	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3616		1825	3525		1825	1921	1633	1825	1921	1633
Flt Permitted	0.43	1.00		0.50	1.00		0.73	1.00	1.00	0.71	1.00	1.00
Satd. Flow (perm)	817	3616		965	3525		1393	1921	1633	1358	1921	1633
Peak-hour factor, PHF	0.72	0.82	0.56	0.65	0.84	0.75	0.65	0.39	0.46	0.68	0.73	0.75
Adj. Flow (vph)	182	402	27	20	423	125	28	77	28	124	49	229
RTOR Reduction (vph)	0	5	0	0	30	0	0	0	18	0	0	146
Lane Group Flow (vph)	182	424	0	20	518	0	28	77	10	124	49	83
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Actuated Green, G (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Grp Cap (vph)	394	1744		465	1700		507	700	595	494	700	595
v/s Ratio Prot		0.12			0.15			0.04			0.03	
v/s Ratio Perm	c0.22			0.02			0.02		0.01	c0.09		0.05
v/c Ratio	0.46	0.24		0.04	0.30		0.06	0.11	0.02	0.25	0.07	0.14
Uniform Delay, d1	16.1	14.2		12.8	14.7		19.2	19.6	19.0	20.7	19.3	19.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.9	0.3		0.2	0.5		0.2	0.3	0.1	1.2	0.2	0.5
Delay (s)	19.9	14.5		12.9	15.1		19.4	19.9	19.0	22.0	19.5	20.4
Level of Service	B	B		B	B		B	B	B	C	B	C
Approach Delay (s)		16.1			15.0			19.6			20.7	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	105.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	17	16	238	261	11
Future Volume (Veh/h)	7	17	16	238	261	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.44	0.71	0.67	0.81	0.75	0.55
Hourly flow rate (vph)	16	24	24	294	348	20
Pedestrians				5		
Lane Width (m)				3.7		
Walking Speed (m/s)				1.1		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				185		
pX, platoon unblocked						
vC, conflicting volume	553	189	368			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	553	189	368			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	97	98			
cM capacity (veh/h)	459	823	1202			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	40	122	196	232	136
Volume Left	16	24	0	0	0
Volume Right	24	0	0	0	20
cSH	624	1202	1700	1700	1700
Volume to Capacity	0.06	0.02	0.12	0.14	0.08
Queue Length 95th (m)	1.6	0.5	0.0	0.0	0.0
Control Delay (s)	11.2	1.7	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	11.2	0.7		0.0	
Approach LOS	B				

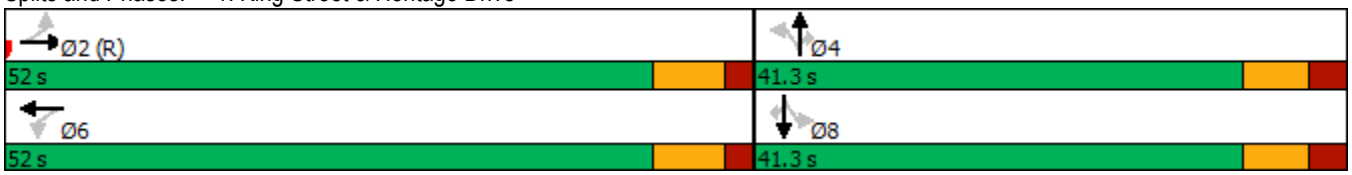
Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

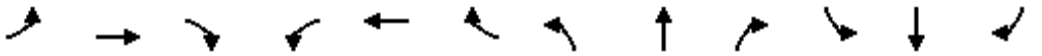
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	293	623	26	630	20	44	20	137	55	352
Future Volume (vph)	293	623	26	630	20	44	20	137	55	352
Lane Group Flow (vph)	302	705	44	890	28	83	40	163	77	391
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		6		4			8	
Permitted Phases	2		6		4		4	8		8
Minimum Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (%)	55.7%	55.7%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag										
Lead-Lag Optimize?										
v/c Ratio	1.31	0.40	0.14	0.52	0.06	0.12	0.06	0.33	0.11	0.56
Control Delay	194.0	16.3	15.0	16.7	19.8	20.4	5.5	23.8	20.3	16.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	194.0	16.3	15.0	16.7	19.8	20.4	5.5	23.8	20.3	16.4
Queue Length 50th (m)	~70.5	40.8	4.2	51.8	3.2	9.8	0.0	20.9	9.0	30.0
Queue Length 95th (m)	#119.5	54.1	6.6	68.4	6.8	11.0	0.7	33.9	14.3	57.8
Internal Link Dist (m)		206.0		262.9		103.6			160.6	
Turn Bay Length (m)	193.0		240.0		120.0			212.0		
Base Capacity (vph)	230	1755	311	1728	494	700	624	492	700	702
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.40	0.14	0.52	0.06	0.12	0.06	0.33	0.11	0.56

Intersection Summary

Cycle Length: 93.3
Actuated Cycle Length: 93.3
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 115
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: King Street & Heritage Drive

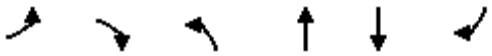




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	623	13	26	630	174	20	44	20	137	55	352
Future Volume (vph)	293	623	13	26	630	174	20	44	20	137	55	352
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3635		1825	3524		1825	1921	1633	1825	1921	1633
Flt Permitted	0.25	1.00		0.34	1.00		0.71	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	478	3635		646	3524		1358	1921	1633	1351	1921	1633
Peak-hour factor, PHF	0.97	0.91	0.65	0.59	0.92	0.85	0.71	0.53	0.50	0.84	0.71	0.90
Adj. Flow (vph)	302	685	20	44	685	205	28	83	40	163	77	391
RTOR Reduction (vph)	0	2	0	0	30	0	0	0	25	0	0	107
Lane Group Flow (vph)	302	703	0	44	860	0	28	83	15	163	77	284
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Actuated Green, G (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Grp Cap (vph)	230	1753		311	1699		494	700	595	492	700	595
v/s Ratio Prot		0.19			0.24			0.04			0.04	
v/s Ratio Perm	c0.63			0.07			0.02		0.01	0.12		c0.17
v/c Ratio	1.31	0.40		0.14	0.51		0.06	0.12	0.02	0.33	0.11	0.48
Uniform Delay, d1	24.1	15.5		13.4	16.5		19.2	19.7	19.0	21.4	19.6	22.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	168.3	0.7		1.0	1.1		0.2	0.3	0.1	1.8	0.3	2.7
Delay (s)	192.5	16.2		14.4	17.6		19.5	20.0	19.1	23.2	19.9	25.5
Level of Service	F	B		B	B		B	C	B	C	B	C
Approach Delay (s)		69.1			17.5			19.7			24.3	
Approach LOS		E			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	38.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	107.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	32	14	550	582	10
Future Volume (Veh/h)	9	32	14	550	582	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.80	0.44	0.95	0.95	0.50
Hourly flow rate (vph)	12	40	32	579	613	20
Pedestrians				5		
Lane Width (m)				3.7		
Walking Speed (m/s)				1.1		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				185		
pX, platoon unblocked						
vC, conflicting volume	976	322	633			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	976	322	633			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	94	97			
cM capacity (veh/h)	243	677	960			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	52	225	386	409	224
Volume Left	12	32	0	0	0
Volume Right	40	0	0	0	20
cSH	480	960	1700	1700	1700
Volume to Capacity	0.11	0.03	0.23	0.24	0.13
Queue Length 95th (m)	2.8	0.8	0.0	0.0	0.0
Control Delay (s)	13.4	1.5	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	13.4	0.6		0.0	
Approach LOS	B				

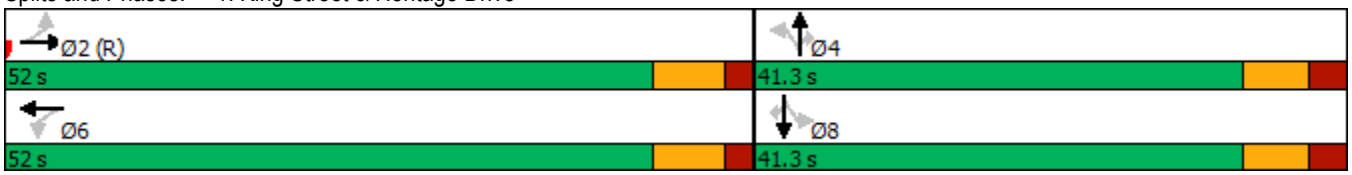
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	259	458	15	533	17	54	13	133	45	232
Future Volume (vph)	259	458	15	533	17	54	13	133	45	232
Lane Group Flow (vph)	301	507	28	767	53	100	24	187	68	273
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		6		4			8	
Permitted Phases	2		6		4		4	8		8
Minimum Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (%)	55.7%	55.7%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag										
Lead-Lag Optimize?										
v/c Ratio	1.07	0.29	0.07	0.44	0.11	0.14	0.04	0.39	0.10	0.38
Control Delay	99.7	14.8	13.6	16.0	20.5	20.6	2.4	24.9	20.1	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	99.7	14.8	13.6	16.0	20.5	20.6	2.4	24.9	20.1	8.1
Queue Length 50th (m)	~60.2	27.2	2.6	43.3	6.2	11.9	0.0	24.5	7.9	8.7
Queue Length 95th (m)	#101.7	37.6	4.1	53.1	4.8	13.0	0.0	31.7	11.9	22.6
Internal Link Dist (m)		206.0		262.9		103.6			160.6	
Turn Bay Length (m)	193.0		240.0		120.0			212.0		
Base Capacity (vph)	282	1752	417	1733	499	700	624	484	700	721
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.07	0.29	0.07	0.44	0.11	0.14	0.04	0.39	0.10	0.38

Intersection Summary

Cycle Length: 93.3
Actuated Cycle Length: 93.3
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 95
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

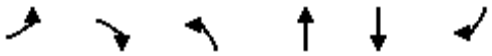
Splits and Phases: 1: King Street & Heritage Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	458	17	15	533	116	17	54	13	133	45	232
Future Volume (vph)	259	458	17	15	533	116	17	54	13	133	45	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3623		1825	3550		1825	1921	1633	1825	1921	1633
Flt Permitted	0.31	1.00		0.45	1.00		0.71	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	586	3623		866	3550		1369	1921	1633	1330	1921	1633
Peak-hour factor, PHF	0.86	0.95	0.69	0.54	0.85	0.83	0.32	0.54	0.54	0.71	0.66	0.85
Adj. Flow (vph)	301	482	25	28	627	140	53	100	24	187	68	273
RTOR Reduction (vph)	0	4	0	0	21	0	0	0	15	0	0	126
Lane Group Flow (vph)	301	503	0	28	746	0	53	100	9	187	68	147
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Actuated Green, G (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Grp Cap (vph)	282	1747		417	1712		498	700	595	484	700	595
v/s Ratio Prot		0.14			0.21			0.05			0.04	
v/s Ratio Perm	c0.51			0.03			0.04		0.01	c0.14		0.09
v/c Ratio	1.07	0.29		0.07	0.44		0.11	0.14	0.01	0.39	0.10	0.25
Uniform Delay, d1	24.1	14.5		12.9	15.8		19.6	19.9	18.9	21.9	19.5	20.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	72.6	0.4		0.3	0.8		0.4	0.4	0.0	2.3	0.3	1.0
Delay (s)	96.7	14.9		13.2	16.6		20.0	20.3	19.0	24.3	19.8	21.7
Level of Service	F	B		B	B		C	C	B	C	B	C
Approach Delay (s)		45.4			16.5			20.0			22.4	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	106.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	20	12	427	402	10
Future Volume (Veh/h)	10	20	12	427	402	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.63	0.83	0.75	0.90	0.90	0.69
Hourly flow rate (vph)	16	24	16	474	447	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				185		
pX, platoon unblocked						
vC, conflicting volume	723	230	461			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	723	230	461			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	97	99			
cM capacity (veh/h)	360	778	1111			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	40	174	316	298	163
Volume Left	16	16	0	0	0
Volume Right	24	0	0	0	14
cSH	531	1111	1700	1700	1700
Volume to Capacity	0.08	0.01	0.19	0.18	0.10
Queue Length 95th (m)	1.8	0.3	0.0	0.0	0.0
Control Delay (s)	12.3	0.9	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	12.3	0.3		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		

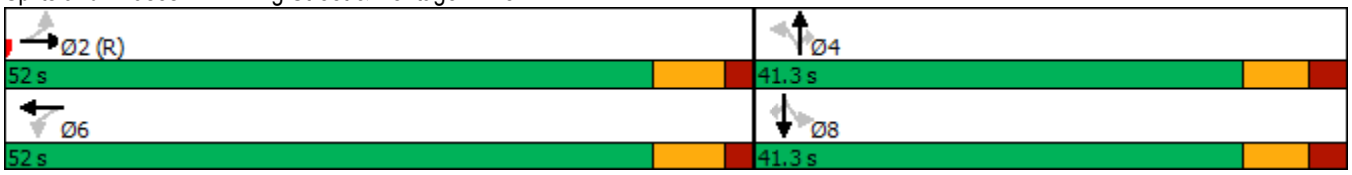
Appendix E: 2034 Future Background Synchro Analysis

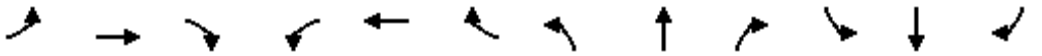
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	131	362	13	391	18	33	13	84	39	172
Future Volume (vph)	131	362	13	391	18	33	13	84	39	172
Lane Group Flow (vph)	182	468	20	590	28	85	28	124	53	229
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		6		4			8	
Permitted Phases	2		6		4		4	8		8
Minimum Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (%)	55.7%	55.7%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag										
Lead-Lag Optimize?										
v/c Ratio	0.49	0.27	0.05	0.34	0.06	0.12	0.04	0.25	0.08	0.31
Control Delay	22.1	14.6	13.3	14.2	19.8	20.4	3.0	22.5	19.9	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.1	14.6	13.3	14.2	19.8	20.4	3.0	22.5	19.9	4.1
Queue Length 50th (m)	21.3	24.7	1.8	30.0	3.2	10.0	0.0	15.4	6.1	0.0
Queue Length 95th (m)	29.4	30.8	4.0	37.9	6.2	8.2	0.0	20.7	11.0	6.9
Internal Link Dist (m)		206.0		262.9		103.6			160.6	
Turn Bay Length (m)	193.0		240.0		120.0			212.0		
Base Capacity (vph)	370	1749	440	1729	505	700	624	491	700	740
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.27	0.05	0.34	0.06	0.12	0.04	0.25	0.08	0.31

Intersection Summary

Cycle Length: 93.3
Actuated Cycle Length: 93.3
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 95
Control Type: Pretimed

Splits and Phases: 1: King Street & Heritage Drive

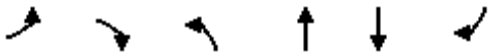




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	362	15	13	391	94	18	33	13	84	39	172
Future Volume (vph)	131	362	15	13	391	94	18	33	13	84	39	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3619		1825	3534		1825	1921	1633	1825	1921	1633
Flt Permitted	0.40	1.00		0.48	1.00		0.72	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	768	3619		915	3534		1388	1921	1633	1348	1921	1633
Peak-hour factor, PHF	0.72	0.82	0.56	0.65	0.84	0.75	0.65	0.39	0.46	0.68	0.73	0.75
Adj. Flow (vph)	182	441	27	20	465	125	28	85	28	124	53	229
RTOR Reduction (vph)	0	5	0	0	26	0	0	0	18	0	0	146
Lane Group Flow (vph)	182	463	0	20	564	0	28	85	10	124	53	83
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Actuated Green, G (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Grp Cap (vph)	370	1745		441	1704		505	700	595	491	700	595
v/s Ratio Prot		0.13			0.16			0.04			0.03	
v/s Ratio Perm	c0.24			0.02			0.02		0.01	c0.09		0.05
v/c Ratio	0.49	0.27		0.05	0.33		0.06	0.12	0.02	0.25	0.08	0.14
Uniform Delay, d1	16.4	14.3		12.8	14.9		19.2	19.7	19.0	20.8	19.4	19.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.6	0.4		0.2	0.5		0.2	0.4	0.1	1.2	0.2	0.5
Delay (s)	21.0	14.7		13.0	15.4		19.4	20.1	19.0	22.0	19.6	20.4
Level of Service	C	B		B	B		B	C	B	C	B	C
Approach Delay (s)		16.5			15.3			19.7			20.8	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	105.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	17	16	263	288	11
Future Volume (Veh/h)	7	17	16	263	288	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.44	0.71	0.67	0.81	0.75	0.55
Hourly flow rate (vph)	16	24	24	325	384	20
Pedestrians				5		
Lane Width (m)				3.7		
Walking Speed (m/s)				1.1		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				185		
pX, platoon unblocked						
vC, conflicting volume	604	207	404			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	604	207	404			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	97	98			
cM capacity (veh/h)	425	802	1166			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	40	132	217	256	148
Volume Left	16	24	0	0	0
Volume Right	24	0	0	0	20
cSH	592	1166	1700	1700	1700
Volume to Capacity	0.07	0.02	0.13	0.15	0.09
Queue Length 95th (m)	1.6	0.5	0.0	0.0	0.0
Control Delay (s)	11.5	1.6	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	11.5	0.6		0.0	
Approach LOS	B				

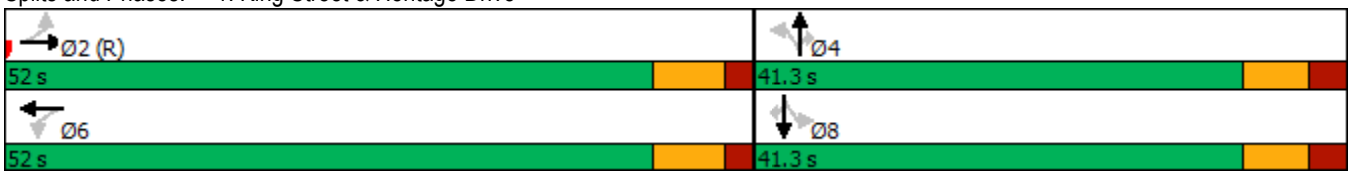
Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		

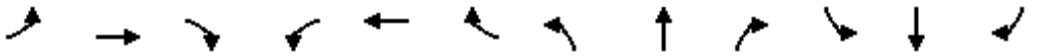
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	293	688	26	696	20	49	20	137	61	352
Future Volume (vph)	293	688	26	696	20	49	20	137	61	352
Lane Group Flow (vph)	302	776	44	962	28	92	40	163	86	391
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		6		4			8	
Permitted Phases	2		6		4		4	8		8
Minimum Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (%)	55.7%	55.7%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag										
Lead-Lag Optimize?										
v/c Ratio	1.49	0.44	0.16	0.56	0.06	0.13	0.06	0.33	0.12	0.57
Control Delay	268.3	16.8	15.5	17.6	19.8	20.5	5.5	23.9	20.4	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	268.3	16.8	15.5	17.6	19.8	20.5	5.5	23.9	20.4	18.8
Queue Length 50th (m)	~75.6	46.1	4.3	58.4	3.2	10.9	0.0	20.9	10.1	35.1
Queue Length 95th (m)	#90.1	60.6	6.7	76.2	6.8	12.0	0.7	33.9	15.6	63.6
Internal Link Dist (m)		206.0		262.9		103.6			160.6	
Turn Bay Length (m)	193.0		240.0		120.0			212.0		
Base Capacity (vph)	203	1755	278	1730	490	700	624	487	700	682
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.49	0.44	0.16	0.56	0.06	0.13	0.06	0.33	0.12	0.57

Intersection Summary

Cycle Length: 93.3
Actuated Cycle Length: 93.3
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 125
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: King Street & Heritage Drive

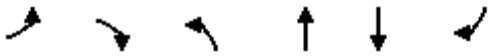




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	688	13	26	696	174	20	49	20	137	61	352
Future Volume (vph)	293	688	13	26	696	174	20	49	20	137	61	352
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3636		1825	3533		1825	1921	1633	1825	1921	1633
Flt Permitted	0.22	1.00		0.30	1.00		0.70	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	421	3636		578	3533		1347	1921	1633	1340	1921	1633
Peak-hour factor, PHF	0.97	0.91	0.65	0.59	0.92	0.85	0.71	0.53	0.50	0.84	0.71	0.90
Adj. Flow (vph)	302	756	20	44	757	205	28	92	40	163	86	391
RTOR Reduction (vph)	0	2	0	0	26	0	0	0	25	0	0	88
Lane Group Flow (vph)	302	774	0	44	936	0	28	92	15	163	86	303
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Actuated Green, G (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Grp Cap (vph)	203	1753		278	1704		490	700	595	488	700	595
v/s Ratio Prot		0.21			0.26			0.05			0.04	
v/s Ratio Perm	c0.72			0.08			0.02		0.01	0.12		c0.19
v/c Ratio	1.49	0.44		0.16	0.55		0.06	0.13	0.02	0.33	0.12	0.51
Uniform Delay, d1	24.1	15.9		13.5	17.0		19.2	19.8	19.0	21.5	19.7	23.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	243.8	0.8		1.2	1.3		0.2	0.4	0.1	1.8	0.4	3.1
Delay (s)	268.0	16.7		14.7	18.3		19.5	20.2	19.1	23.3	20.1	26.2
Level of Service	F	B		B	B		B	C	B	C	C	C
Approach Delay (s)		87.1			18.1			19.8			24.7	
Approach LOS		F			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	45.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	107.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	32	14	607	643	10
Future Volume (Veh/h)	9	32	14	607	643	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.80	0.44	0.95	0.95	0.50
Hourly flow rate (vph)	12	40	32	639	677	20
Pedestrians				5		
Lane Width (m)				3.7		
Walking Speed (m/s)				1.1		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				185		
pX, platoon unblocked						
vC, conflicting volume	1070	354	697			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1070	354	697			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	94	96			
cM capacity (veh/h)	211	645	909			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	52	245	426	451	246
Volume Left	12	32	0	0	0
Volume Right	40	0	0	0	20
cSH	438	909	1700	1700	1700
Volume to Capacity	0.12	0.04	0.25	0.27	0.14
Queue Length 95th (m)	3.0	0.8	0.0	0.0	0.0
Control Delay (s)	14.3	1.5	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	14.3	0.6		0.0	
Approach LOS	B				

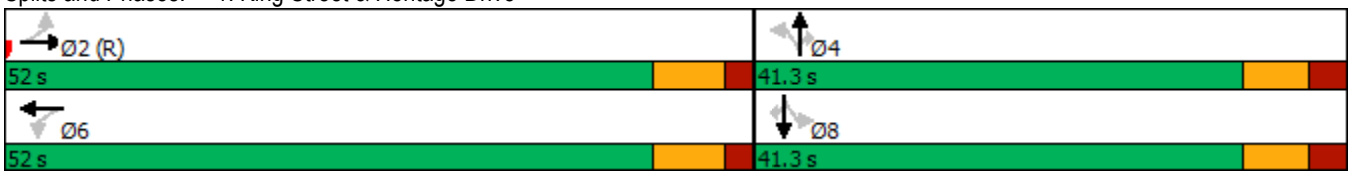
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	259	504	15	586	17	59	13	133	50	232
Future Volume (vph)	259	504	15	586	17	59	13	133	50	232
Lane Group Flow (vph)	301	556	28	829	53	109	24	187	76	273
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		6		4			8	
Permitted Phases	2		6		4		4	8		8
Minimum Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (%)	55.7%	55.7%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag										
Lead-Lag Optimize?										
v/c Ratio	1.18	0.32	0.07	0.48	0.11	0.16	0.04	0.39	0.11	0.39
Control Delay	140.5	15.2	13.7	16.6	20.5	20.8	2.4	25.0	20.2	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	140.5	15.2	13.7	16.6	20.5	20.8	2.4	25.0	20.2	10.3
Queue Length 50th (m)	~65.4	30.4	2.6	48.3	6.2	13.0	0.0	24.5	8.9	12.8
Queue Length 95th (m)	#106.8	41.4	4.2	58.7	4.8	14.0	0.0	31.7	13.0	27.8
Internal Link Dist (m)		206.0		262.9		103.6			160.6	
Turn Bay Length (m)	193.0		240.0		120.0			212.0		
Base Capacity (vph)	255	1752	389	1734	495	700	624	481	700	701
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.32	0.07	0.48	0.11	0.16	0.04	0.39	0.11	0.39

Intersection Summary

Cycle Length: 93.3
Actuated Cycle Length: 93.3
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 105
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

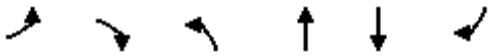
Splits and Phases: 1: King Street & Heritage Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	504	17	15	586	116	17	59	13	133	50	232
Future Volume (vph)	259	504	17	15	586	116	17	59	13	133	50	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3625		1825	3558		1825	1921	1633	1825	1921	1633
Flt Permitted	0.28	1.00		0.42	1.00		0.71	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	530	3625		808	3558		1359	1921	1633	1319	1921	1633
Peak-hour factor, PHF	0.86	0.95	0.69	0.54	0.85	0.83	0.32	0.54	0.54	0.71	0.66	0.85
Adj. Flow (vph)	301	531	25	28	689	140	53	109	24	187	76	273
RTOR Reduction (vph)	0	4	0	0	18	0	0	0	15	0	0	106
Lane Group Flow (vph)	301	552	0	28	811	0	53	109	9	187	76	167
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Actuated Green, G (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Grp Cap (vph)	255	1748		389	1716		495	700	595	480	700	595
v/s Ratio Prot		0.15			0.23			0.06			0.04	
v/s Ratio Perm	c0.57			0.03			0.04		0.01	c0.14		0.10
v/c Ratio	1.18	0.32		0.07	0.47		0.11	0.16	0.01	0.39	0.11	0.28
Uniform Delay, d1	24.1	14.8		13.0	16.2		19.6	20.0	18.9	22.0	19.6	21.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	114.1	0.5		0.4	0.9		0.4	0.5	0.0	2.4	0.3	1.2
Delay (s)	138.2	15.2		13.3	17.1		20.0	20.5	19.0	24.3	19.9	22.2
Level of Service	F	B		B	B		C	C	B	C	B	C
Approach Delay (s)		58.4			17.0			20.1			22.6	
Approach LOS		E			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	106.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	20	12	471	444	10
Future Volume (Veh/h)	10	20	12	471	444	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.63	0.83	0.75	0.90	0.90	0.69
Hourly flow rate (vph)	16	24	16	523	493	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				185		
pX, platoon unblocked						
vC, conflicting volume	794	254	507			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	794	254	507			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	97	99			
cM capacity (veh/h)	325	752	1068			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	40	190	349	329	178
Volume Left	16	16	0	0	0
Volume Right	24	0	0	0	14
cSH	493	1068	1700	1700	1700
Volume to Capacity	0.08	0.01	0.21	0.19	0.10
Queue Length 95th (m)	2.0	0.3	0.0	0.0	0.0
Control Delay (s)	13.0	0.8	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	13.0	0.3		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

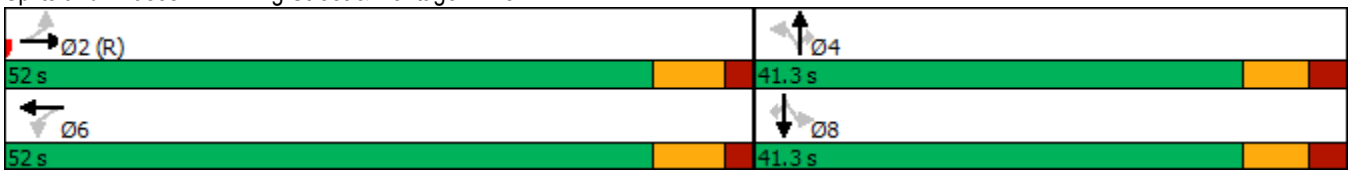
Appendix F: 2029 Future Total Synchro Analysis

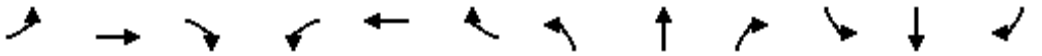
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	173	330	13	355	18	40	13	105	45	196
Future Volume (vph)	173	330	13	355	18	40	13	105	45	196
Lane Group Flow (vph)	240	429	20	592	28	103	28	154	62	261
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		6		4			8	
Permitted Phases	2		6		4		4	8		8
Minimum Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (%)	55.7%	55.7%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag										
Lead-Lag Optimize?										
v/c Ratio	0.65	0.25	0.04	0.34	0.06	0.15	0.04	0.32	0.09	0.34
Control Delay	28.3	14.3	13.2	13.2	19.8	20.7	3.0	23.6	20.0	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.3	14.3	13.2	13.2	19.8	20.7	3.0	23.6	20.0	4.1
Queue Length 50th (m)	31.2	22.2	1.8	27.7	3.2	12.3	0.0	19.6	7.2	0.0
Queue Length 95th (m)	41.0	28.3	4.0	35.7	6.2	9.5	0.0	25.1	12.4	6.9
Internal Link Dist (m)		206.0		262.9		103.6			160.6	
Turn Bay Length (m)	193.0		240.0		120.0			212.0		
Base Capacity (vph)	369	1749	464	1730	501	700	624	483	700	760
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.25	0.04	0.34	0.06	0.15	0.04	0.32	0.09	0.34

Intersection Summary

Cycle Length: 93.3
Actuated Cycle Length: 93.3
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 95
Control Type: Pretimed

Splits and Phases: 1: King Street & Heritage Drive

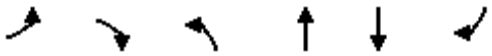




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	330	15	13	355	127	18	40	13	105	45	196
Future Volume (vph)	173	330	15	13	355	127	18	40	13	105	45	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3616		1825	3494		1825	1921	1633	1825	1921	1633
Flt Permitted	0.40	1.00		0.50	1.00		0.72	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	766	3616		965	3494		1377	1921	1633	1326	1921	1633
Peak-hour factor, PHF	0.72	0.82	0.56	0.65	0.84	0.75	0.65	0.39	0.46	0.68	0.73	0.75
Adj. Flow (vph)	240	402	27	20	423	169	28	103	28	154	62	261
RTOR Reduction (vph)	0	5	0	0	46	0	0	0	18	0	0	166
Lane Group Flow (vph)	240	424	0	20	546	0	28	103	10	154	62	95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Actuated Green, G (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Grp Cap (vph)	369	1744		465	1685		501	700	595	483	700	595
v/s Ratio Prot		0.12			0.16			0.05			0.03	
v/s Ratio Perm	c0.31			0.02			0.02		0.01	c0.12		0.06
v/c Ratio	0.65	0.24		0.04	0.32		0.06	0.15	0.02	0.32	0.09	0.16
Uniform Delay, d1	18.2	14.2		12.8	14.8		19.2	19.9	19.0	21.3	19.5	20.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.6	0.3		0.2	0.5		0.2	0.4	0.1	1.7	0.2	0.6
Delay (s)	26.8	14.5		12.9	15.3		19.4	20.4	19.0	23.1	19.7	20.6
Level of Service	C	B		B	B		B	C	B	C	B	C
Approach Delay (s)		18.9			15.3			20.0			21.3	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	105.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	71	101	238	261	15
Future Volume (Veh/h)	9	71	101	238	261	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.44	0.71	0.67	0.81	0.75	0.55
Hourly flow rate (vph)	20	100	151	294	348	27
Pedestrians				5		
Lane Width (m)				3.7		
Walking Speed (m/s)				1.1		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				185		
pX, platoon unblocked						
vC, conflicting volume	810	192	375			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	810	192	375			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	88	87			
cM capacity (veh/h)	281	819	1195			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	120	249	196	232	143
Volume Left	20	151	0	0	0
Volume Right	100	0	0	0	27
cSH	621	1195	1700	1700	1700
Volume to Capacity	0.19	0.13	0.12	0.14	0.08
Queue Length 95th (m)	5.4	3.3	0.0	0.0	0.0
Control Delay (s)	12.2	5.6	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	12.2	3.1		0.0	
Approach LOS	B				

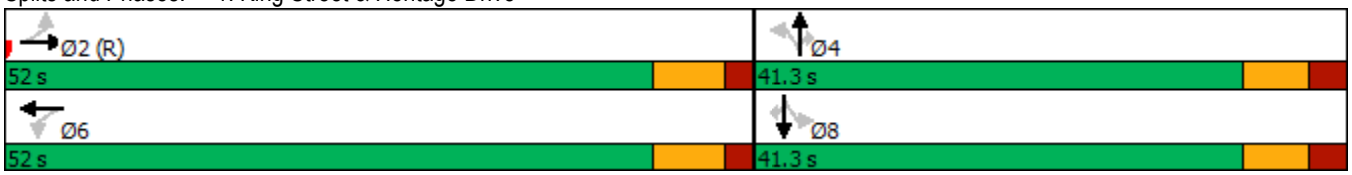
Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	32.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	353	623	26	630	20	51	20	163	64	419
Future Volume (vph)	353	623	26	630	20	51	20	163	64	419
Lane Group Flow (vph)	364	705	44	931	28	96	40	194	90	466
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		6		4			8	
Permitted Phases	2		6		4		4	8		8
Minimum Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (%)	55.7%	55.7%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag										
Lead-Lag Optimize?										
v/c Ratio	1.70	0.40	0.14	0.54	0.06	0.14	0.06	0.40	0.13	0.66
Control Delay	357.5	16.3	15.0	16.8	19.8	20.6	5.5	25.1	20.5	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	357.5	16.3	15.0	16.8	19.8	20.6	5.5	25.1	20.5	20.7
Queue Length 50th (m)	~96.9	40.8	4.2	54.1	3.2	11.4	0.0	25.6	10.6	43.8
Queue Length 95th (m)	#113.3	54.1	6.6	71.3	6.8	12.4	0.7	40.2	16.1	77.9
Internal Link Dist (m)		206.0		262.9		103.6			160.6	
Turn Bay Length (m)	193.0		240.0		120.0			212.0		
Base Capacity (vph)	214	1755	311	1728	489	700	624	486	700	702
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.70	0.40	0.14	0.54	0.06	0.14	0.06	0.40	0.13	0.66

Intersection Summary

Cycle Length: 93.3
Actuated Cycle Length: 93.3
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 145
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

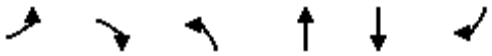
Splits and Phases: 1: King Street & Heritage Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	623	13	26	630	209	20	51	20	163	64	419
Future Volume (vph)	353	623	13	26	630	209	20	51	20	163	64	419
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3635		1825	3505		1825	1921	1633	1825	1921	1633
Flt Permitted	0.23	1.00		0.34	1.00		0.70	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	445	3635		646	3505		1342	1921	1633	1335	1921	1633
Peak-hour factor, PHF	0.97	0.91	0.65	0.59	0.92	0.85	0.71	0.53	0.50	0.84	0.71	0.90
Adj. Flow (vph)	364	685	20	44	685	246	28	96	40	194	90	466
RTOR Reduction (vph)	0	2	0	0	39	0	0	0	25	0	0	107
Lane Group Flow (vph)	364	703	0	44	892	0	28	96	15	194	90	359
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Actuated Green, G (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Grp Cap (vph)	214	1753		311	1690		489	700	595	486	700	595
v/s Ratio Prot		0.19			0.25			0.05			0.05	
v/s Ratio Perm	c0.82			0.07			0.02		0.01	0.15		c0.22
v/c Ratio	1.70	0.40		0.14	0.53		0.06	0.14	0.02	0.40	0.13	0.60
Uniform Delay, d1	24.1	15.5		13.4	16.8		19.2	19.8	19.0	22.1	19.8	24.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	334.7	0.7		1.0	1.2		0.2	0.4	0.1	2.4	0.4	4.5
Delay (s)	358.8	16.2		14.4	18.0		19.5	20.2	19.1	24.5	20.2	28.6
Level of Service	F	B		B	B		B	C	B	C	C	C
Approach Delay (s)		132.9			17.8			19.8			26.5	
Approach LOS		F			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	61.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	108.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	134	116	550	582	12
Future Volume (Veh/h)	11	134	116	550	582	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.80	0.44	0.95	0.95	0.50
Hourly flow rate (vph)	15	168	264	579	613	24
Pedestrians				5		
Lane Width (m)				3.7		
Walking Speed (m/s)				1.1		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				185		
pX, platoon unblocked						
vC, conflicting volume	1442	324	637			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1442	324	637			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	83	75	72			
cM capacity (veh/h)	91	675	956			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	183	457	386	409	228
Volume Left	15	264	0	0	0
Volume Right	168	0	0	0	24
cSH	442	956	1700	1700	1700
Volume to Capacity	0.41	0.28	0.23	0.24	0.13
Queue Length 95th (m)	15.2	8.6	0.0	0.0	0.0
Control Delay (s)	18.8	7.2	0.0	0.0	0.0
Lane LOS	C	A			
Approach Delay (s)	18.8	3.9		0.0	
Approach LOS	C				

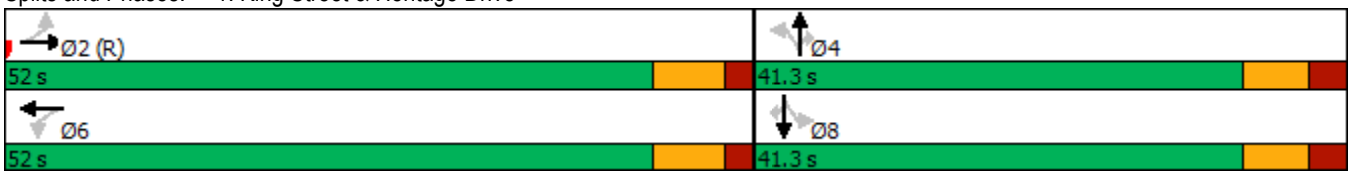
Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

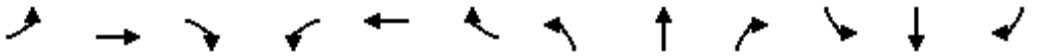
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	299	458	15	533	17	61	13	155	52	267
Future Volume (vph)	299	458	15	533	17	61	13	155	52	267
Lane Group Flow (vph)	348	507	28	787	53	113	24	218	79	314
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		6		4			8	
Permitted Phases	2		6		4		4	8		8
Minimum Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (%)	55.7%	55.7%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag										
Lead-Lag Optimize?										
v/c Ratio	1.27	0.29	0.07	0.45	0.11	0.16	0.04	0.46	0.11	0.44
Control Delay	174.7	14.8	13.6	16.0	20.5	20.9	2.4	26.4	20.3	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	174.7	14.8	13.6	16.0	20.5	20.9	2.4	26.4	20.3	10.2
Queue Length 50th (m)	~79.7	27.2	2.6	44.3	6.2	13.5	0.0	29.4	9.3	13.9
Queue Length 95th (m)	#123.5	37.6	4.1	54.4	4.8	14.4	0.0	36.8	13.4	30.3
Internal Link Dist (m)		206.0		262.9		103.6			160.6	
Turn Bay Length (m)	193.0		240.0		120.0			212.0		
Base Capacity (vph)	273	1752	417	1732	494	700	624	478	700	721
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.27	0.29	0.07	0.45	0.11	0.16	0.04	0.46	0.11	0.44

Intersection Summary

Cycle Length: 93.3
Actuated Cycle Length: 93.3
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 115
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: King Street & Heritage Drive

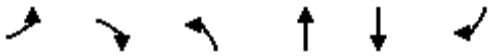




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	299	458	17	15	533	133	17	61	13	155	52	267
Future Volume (vph)	299	458	17	15	533	133	17	61	13	155	52	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3623		1825	3539		1825	1921	1633	1825	1921	1633
Flt Permitted	0.30	1.00		0.45	1.00		0.71	1.00	1.00	0.68	1.00	1.00
Satd. Flow (perm)	567	3623		866	3539		1356	1921	1633	1314	1921	1633
Peak-hour factor, PHF	0.86	0.95	0.69	0.54	0.85	0.83	0.32	0.54	0.54	0.71	0.66	0.85
Adj. Flow (vph)	348	482	25	28	627	160	53	113	24	218	79	314
RTOR Reduction (vph)	0	4	0	0	24	0	0	0	15	0	0	126
Lane Group Flow (vph)	348	503	0	28	763	0	53	113	9	218	79	188
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Actuated Green, G (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Grp Cap (vph)	273	1747		417	1706		494	700	595	478	700	595
v/s Ratio Prot		0.14			0.22			0.06			0.04	
v/s Ratio Perm	c0.61			0.03			0.04		0.01	c0.17		0.11
v/c Ratio	1.27	0.29		0.07	0.45		0.11	0.16	0.01	0.46	0.11	0.32
Uniform Delay, d1	24.1	14.5		12.9	15.9		19.6	20.0	18.9	22.6	19.7	21.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	149.0	0.4		0.3	0.9		0.4	0.5	0.0	3.1	0.3	1.4
Delay (s)	173.2	14.9		13.2	16.8		20.0	20.5	19.0	25.7	20.0	22.7
Level of Service	F	B		B	B		C	C	B	C	B	C
Approach Delay (s)		79.3			16.7			20.2			23.4	
Approach LOS		E			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	40.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	108.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	84	76	427	402	12
Future Volume (Veh/h)	12	84	76	427	402	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.63	0.83	0.75	0.90	0.90	0.69
Hourly flow rate (vph)	19	101	101	474	447	17
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				185		
pX, platoon unblocked						
vC, conflicting volume	894	232	464			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	894	232	464			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	87	91			
cM capacity (veh/h)	258	776	1108			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	120	259	316	298	166
Volume Left	19	101	0	0	0
Volume Right	101	0	0	0	17
cSH	589	1108	1700	1700	1700
Volume to Capacity	0.20	0.09	0.19	0.18	0.10
Queue Length 95th (m)	5.8	2.3	0.0	0.0	0.0
Control Delay (s)	12.7	3.9	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	12.7	1.7		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

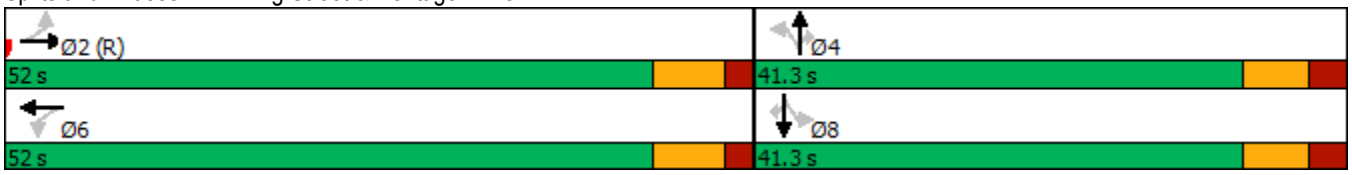
Appendix G: 2034 Future Total Synchro Analysis

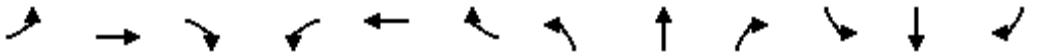
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	173	362	13	391	18	43	13	105	48	196
Future Volume (vph)	173	362	13	391	18	43	13	105	48	196
Lane Group Flow (vph)	240	468	20	634	28	110	28	154	66	261
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		6		4			8	
Permitted Phases	2		6		4		4	8		8
Minimum Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (%)	55.7%	55.7%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag										
Lead-Lag Optimize?										
v/c Ratio	0.69	0.27	0.05	0.37	0.06	0.16	0.04	0.32	0.09	0.34
Control Delay	31.5	14.6	13.3	13.9	19.8	20.8	3.0	23.7	20.1	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	14.6	13.3	13.9	19.8	20.8	3.0	23.7	20.1	4.1
Queue Length 50th (m)	32.2	24.7	1.8	31.4	3.2	13.2	0.0	19.6	7.7	0.0
Queue Length 95th (m)	42.6	30.8	4.0	39.5	6.2	10.0	0.0	25.2	13.0	6.9
Internal Link Dist (m)		206.0		262.9		103.6			160.6	
Turn Bay Length (m)	193.0		240.0		120.0			212.0		
Base Capacity (vph)	347	1749	440	1729	499	700	624	480	700	760
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.27	0.05	0.37	0.06	0.16	0.04	0.32	0.09	0.34

Intersection Summary

Cycle Length: 93.3
Actuated Cycle Length: 93.3
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 95
Control Type: Pretimed

Splits and Phases: 1: King Street & Heritage Drive

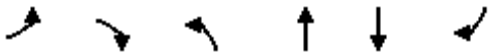




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	362	15	13	391	127	18	43	13	105	48	196
Future Volume (vph)	173	362	15	13	391	127	18	43	13	105	48	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3619		1825	3504		1825	1921	1633	1825	1921	1633
Flt Permitted	0.37	1.00		0.48	1.00		0.71	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	720	3619		915	3504		1372	1921	1633	1318	1921	1633
Peak-hour factor, PHF	0.72	0.82	0.56	0.65	0.84	0.75	0.65	0.39	0.46	0.68	0.73	0.75
Adj. Flow (vph)	240	441	27	20	465	169	28	110	28	154	66	261
RTOR Reduction (vph)	0	5	0	0	39	0	0	0	18	0	0	166
Lane Group Flow (vph)	240	463	0	20	595	0	28	110	10	154	66	95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Actuated Green, G (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Grp Cap (vph)	347	1745		441	1690		499	700	595	480	700	595
v/s Ratio Prot		0.13			0.17			0.06			0.03	
v/s Ratio Perm	c0.33			0.02			0.02		0.01	c0.12		0.06
v/c Ratio	0.69	0.27		0.05	0.35		0.06	0.16	0.02	0.32	0.09	0.16
Uniform Delay, d1	18.8	14.3		12.8	15.1		19.2	20.0	19.0	21.3	19.5	20.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.8	0.4		0.2	0.6		0.2	0.5	0.1	1.8	0.3	0.6
Delay (s)	29.6	14.7		13.0	15.6		19.5	20.5	19.0	23.1	19.8	20.6
Level of Service	C	B		B	B		B	C	B	C	B	C
Approach Delay (s)		19.7			15.6			20.1			21.3	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	105.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	71	101	263	288	15
Future Volume (Veh/h)	9	71	101	263	288	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.44	0.71	0.67	0.81	0.75	0.55
Hourly flow rate (vph)	20	100	151	325	384	27
Pedestrians				5		
Lane Width (m)				3.7		
Walking Speed (m/s)				1.1		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				185		
pX, platoon unblocked						
vC, conflicting volume	862	210	411			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	862	210	411			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	87	87			
cM capacity (veh/h)	259	797	1159			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	120	259	217	256	155
Volume Left	20	151	0	0	0
Volume Right	100	0	0	0	27
cSH	592	1159	1700	1700	1700
Volume to Capacity	0.20	0.13	0.13	0.15	0.09
Queue Length 95th (m)	5.7	3.4	0.0	0.0	0.0
Control Delay (s)	12.6	5.5	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	12.6	3.0		0.0	
Approach LOS	B				

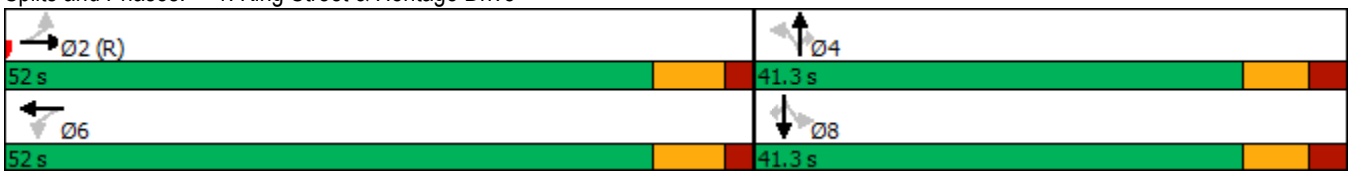
Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	33.5%	ICU Level of Service	A
Analysis Period (min)	15		

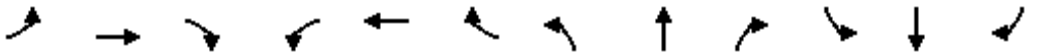
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	353	688	26	696	20	56	20	163	70	419
Future Volume (vph)	353	688	26	696	20	56	20	163	70	419
Lane Group Flow (vph)	364	776	44	1003	28	106	40	194	99	466
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		6		4			8	
Permitted Phases	2		6		4		4	8		8
Minimum Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (%)	55.7%	55.7%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag										
Lead-Lag Optimize?										
v/c Ratio	1.94	0.44	0.16	0.58	0.06	0.15	0.06	0.40	0.14	0.68
Control Delay	461.6	16.8	15.5	17.8	19.8	20.7	5.5	25.2	20.6	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	461.6	16.8	15.5	17.8	19.8	20.7	5.5	25.2	20.6	23.3
Queue Length 50th (m)	~101.8	46.1	4.3	61.1	3.2	12.6	0.0	25.6	11.8	49.2
Queue Length 95th (m)	#123.1	60.6	6.7	79.6	6.8	13.4	0.7	40.4	17.4	84.2
Internal Link Dist (m)		206.0		262.9		103.6			160.6	
Turn Bay Length (m)	193.0		240.0		120.0			212.0		
Base Capacity (vph)	188	1755	278	1728	485	700	624	482	700	682
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.94	0.44	0.16	0.58	0.06	0.15	0.06	0.40	0.14	0.68

Intersection Summary

Cycle Length: 93.3
Actuated Cycle Length: 93.3
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 145
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: King Street & Heritage Drive

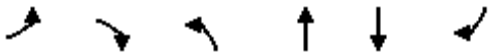




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	688	13	26	696	209	20	56	20	163	70	419
Future Volume (vph)	353	688	13	26	696	209	20	56	20	163	70	419
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3636		1825	3516		1825	1921	1633	1825	1921	1633
Flt Permitted	0.20	1.00		0.30	1.00		0.69	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	390	3636		578	3516		1331	1921	1633	1323	1921	1633
Peak-hour factor, PHF	0.97	0.91	0.65	0.59	0.92	0.85	0.71	0.53	0.50	0.84	0.71	0.90
Adj. Flow (vph)	364	756	20	44	757	246	28	106	40	194	99	466
RTOR Reduction (vph)	0	2	0	0	34	0	0	0	25	0	0	88
Lane Group Flow (vph)	364	774	0	44	969	0	28	106	15	194	99	378
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Actuated Green, G (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Grp Cap (vph)	188	1753		278	1695		485	700	595	482	700	595
v/s Ratio Prot		0.21			0.28			0.06			0.05	
v/s Ratio Perm	c0.93			0.08			0.02		0.01	0.15		c0.23
v/c Ratio	1.94	0.44		0.16	0.57		0.06	0.15	0.02	0.40	0.14	0.64
Uniform Delay, d1	24.1	15.9		13.5	17.3		19.3	19.9	19.0	22.1	19.9	24.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	440.2	0.8		1.2	1.4		0.2	0.5	0.1	2.5	0.4	5.1
Delay (s)	464.4	16.7		14.7	18.7		19.5	20.4	19.1	24.6	20.3	29.6
Level of Service	F	B		B	B		B	C	B	C	C	C
Approach Delay (s)		159.6			18.5			20.0			27.1	
Approach LOS		F			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	72.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	108.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	134	116	607	643	12
Future Volume (Veh/h)	11	134	116	607	643	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.80	0.44	0.95	0.95	0.50
Hourly flow rate (vph)	15	168	264	639	677	24
Pedestrians				5		
Lane Width (m)				3.7		
Walking Speed (m/s)				1.1		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				185		
pX, platoon unblocked						
vC, conflicting volume	1536	356	701			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1536	356	701			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	74	71			
cM capacity (veh/h)	77	644	905			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	183	477	426	451	250
Volume Left	15	264	0	0	0
Volume Right	168	0	0	0	24
cSH	402	905	1700	1700	1700
Volume to Capacity	0.46	0.29	0.25	0.27	0.15
Queue Length 95th (m)	17.6	9.2	0.0	0.0	0.0
Control Delay (s)	21.3	7.4	0.0	0.0	0.0
Lane LOS	C	A			
Approach Delay (s)	21.3	3.9		0.0	
Approach LOS	C				

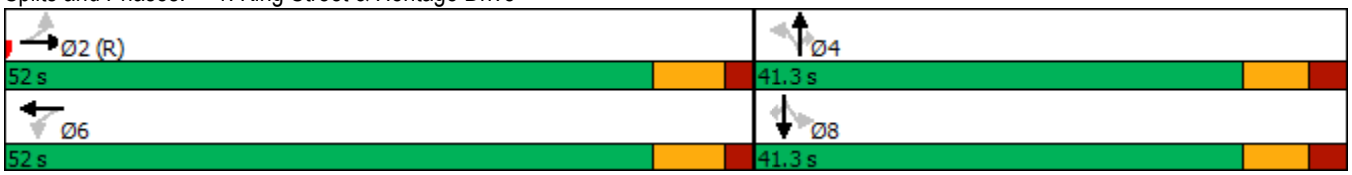
Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	299	504	15	586	17	66	13	155	57	267
Future Volume (vph)	299	504	15	586	17	66	13	155	57	267
Lane Group Flow (vph)	348	556	28	849	53	122	24	218	86	314
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		6		4			8	
Permitted Phases	2		6		4		4	8		8
Minimum Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (s)	52.0	52.0	52.0	52.0	41.3	41.3	41.3	41.3	41.3	41.3
Total Split (%)	55.7%	55.7%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag										
Lead-Lag Optimize?										
v/c Ratio	1.41	0.32	0.07	0.49	0.11	0.17	0.04	0.46	0.12	0.45
Control Delay	231.3	15.2	13.7	16.7	20.5	21.0	2.4	26.5	20.4	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	231.3	15.2	13.7	16.7	20.5	21.0	2.4	26.5	20.4	12.4
Queue Length 50th (m)	~84.6	30.4	2.6	49.4	6.2	14.7	0.0	29.5	10.1	18.2
Queue Length 95th (m)	#128.4	41.4	4.2	60.1	4.8	15.3	0.0	36.9	14.3	35.8
Internal Link Dist (m)		206.0		262.9		103.6			160.6	
Turn Bay Length (m)	193.0		240.0		120.0			212.0		
Base Capacity (vph)	247	1752	389	1732	490	700	624	475	700	701
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.41	0.32	0.07	0.49	0.11	0.17	0.04	0.46	0.12	0.45

Intersection Summary

Cycle Length: 93.3
Actuated Cycle Length: 93.3
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle: 125
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

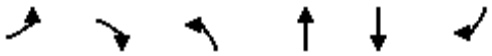
Splits and Phases: 1: King Street & Heritage Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	299	504	17	15	586	133	17	66	13	155	57	267
Future Volume (vph)	299	504	17	15	586	133	17	66	13	155	57	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3625		1825	3547		1825	1921	1633	1825	1921	1633
Flt Permitted	0.27	1.00		0.42	1.00		0.70	1.00	1.00	0.68	1.00	1.00
Satd. Flow (perm)	512	3625		808	3547		1347	1921	1633	1304	1921	1633
Peak-hour factor, PHF	0.86	0.95	0.69	0.54	0.85	0.83	0.32	0.54	0.54	0.71	0.66	0.85
Adj. Flow (vph)	348	531	25	28	689	160	53	122	24	218	86	314
RTOR Reduction (vph)	0	4	0	0	22	0	0	0	15	0	0	106
Lane Group Flow (vph)	348	552	0	28	827	0	53	122	9	218	86	208
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Actuated Green, G (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	45.0	45.0		45.0	45.0		34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	7.0	7.0		7.0	7.0		7.3	7.3	7.3	7.3	7.3	7.3
Lane Grp Cap (vph)	246	1748		389	1710		490	700	595	475	700	595
v/s Ratio Prot		0.15			0.23			0.06			0.04	
v/s Ratio Perm	c0.68			0.03			0.04		0.01	c0.17		0.13
v/c Ratio	1.41	0.32		0.07	0.48		0.11	0.17	0.01	0.46	0.12	0.35
Uniform Delay, d1	24.1	14.8		13.0	16.3		19.6	20.1	18.9	22.6	19.7	21.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	208.9	0.5		0.4	1.0		0.4	0.5	0.0	3.2	0.4	1.6
Delay (s)	233.0	15.2		13.3	17.3		20.1	20.7	19.0	25.8	20.1	23.2
Level of Service	F	B		B	B		C	C	B	C	C	C
Approach Delay (s)		99.1			17.2			20.3			23.7	
Approach LOS		F			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	47.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	14.3
Intersection Capacity Utilization	108.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

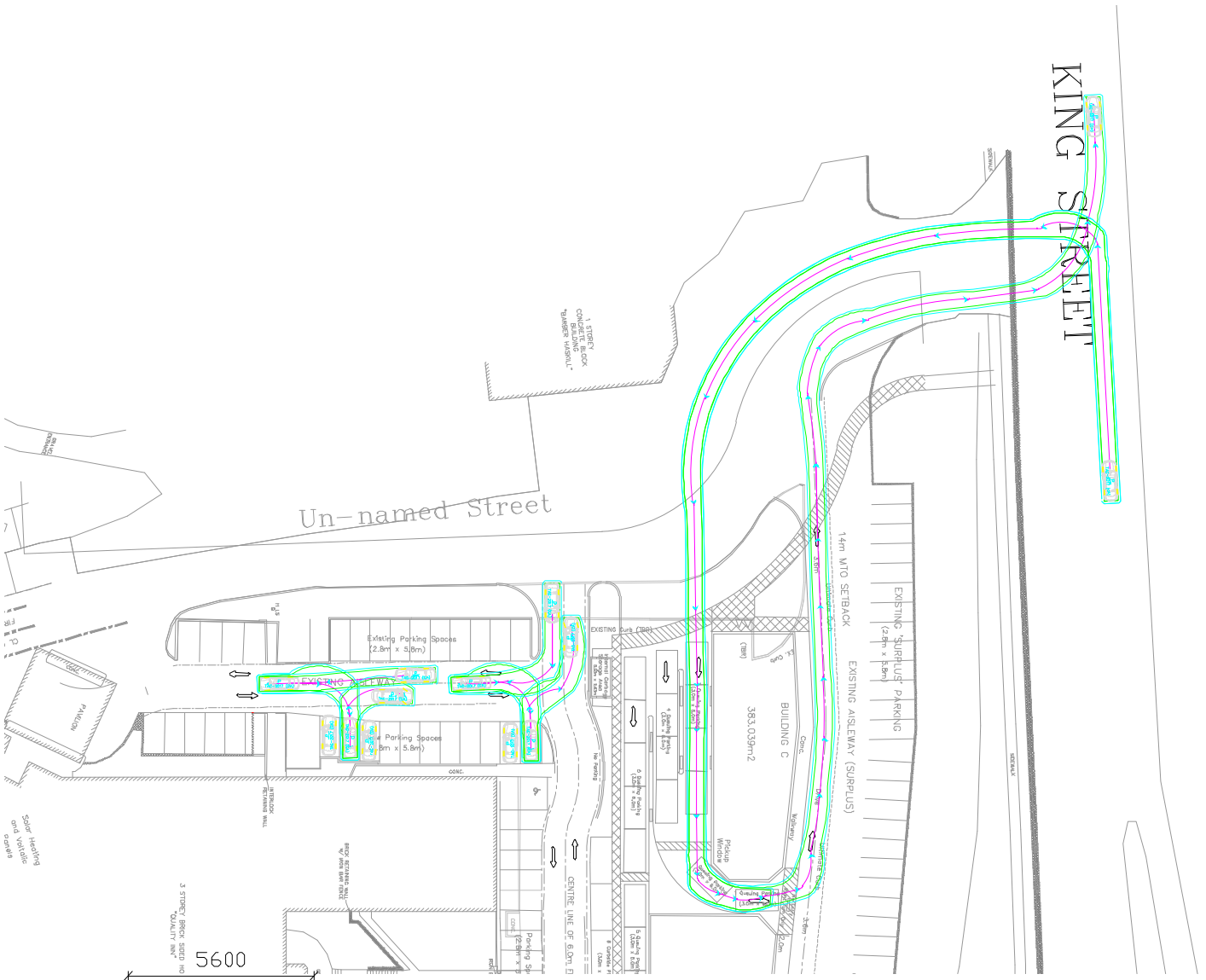


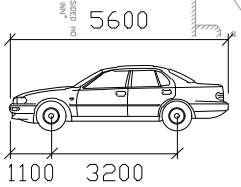
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	84	76	471	444	12
Future Volume (Veh/h)	12	84	76	471	444	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.63	0.83	0.75	0.90	0.90	0.69
Hourly flow rate (vph)	19	101	101	523	493	17
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				185		
pX, platoon unblocked						
vC, conflicting volume	965	255	510			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	965	255	510			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	87	91			
cM capacity (veh/h)	232	750	1065			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	120	275	349	329	181
Volume Left	19	101	0	0	0
Volume Right	101	0	0	0	17
cSH	554	1065	1700	1700	1700
Volume to Capacity	0.22	0.09	0.21	0.19	0.11
Queue Length 95th (m)	6.2	2.4	0.0	0.0	0.0
Control Delay (s)	13.3	3.8	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	13.3	1.7		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix H: Site Circulation Analysis



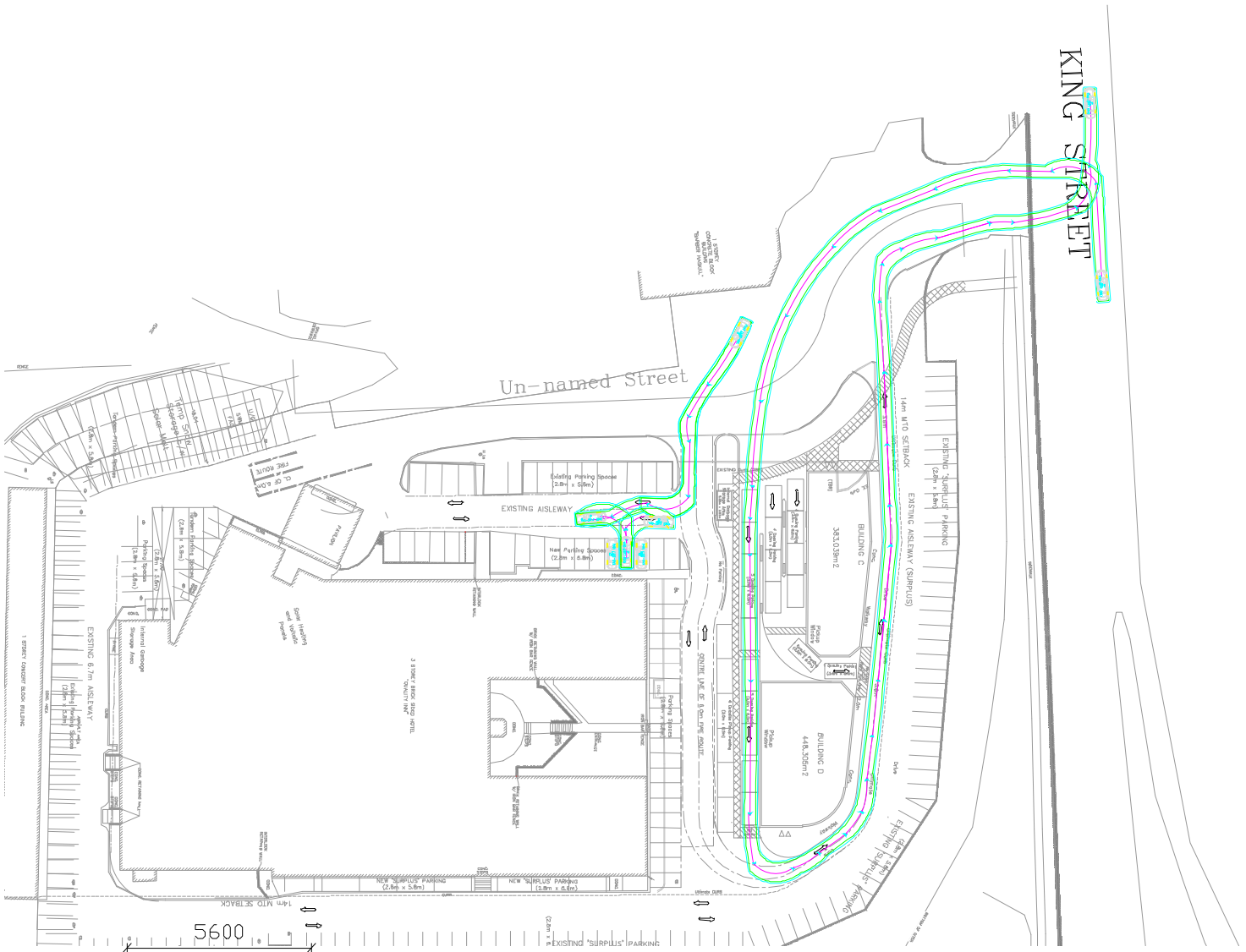


P

	mm
Width	: 2000
Track	: 2000
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

CLIENT	1489338 Ontario Inc. c/o Quality Inn and Conference Center, Midland 924 King Street, Midland, ON LR4 0B8
PROJECT NAME	924 King Street, Midland 924 King Street, Midland, ON LR4 0B8
SCALE:	1:900
DATE:	2023-01-18
PROJECT ENG:	P.R.
DRAWN BY:	H.O.
CHECKED BY:	H.C
APPROVED BY:	H.C.
PROJECT NO:	141453
FIGURE NAME	Vehicle Maneuvering Diagram
FIGURE NO.	AT-1
REVISION	0.2

ARCADIS | IBI GROUP



P

	mm
Width	: 2000
Track	: 2000
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

CLIENT
1489338 Ontario Inc.
c/o Quality Inn and Conference Center, Midland

924 King Street, Midland, ON LR4 0B8

PROJECT NAME
924 King Street, Midland

924 King Street, Midland, ON LR4 0B8

ARCADIS | IBI GROUP

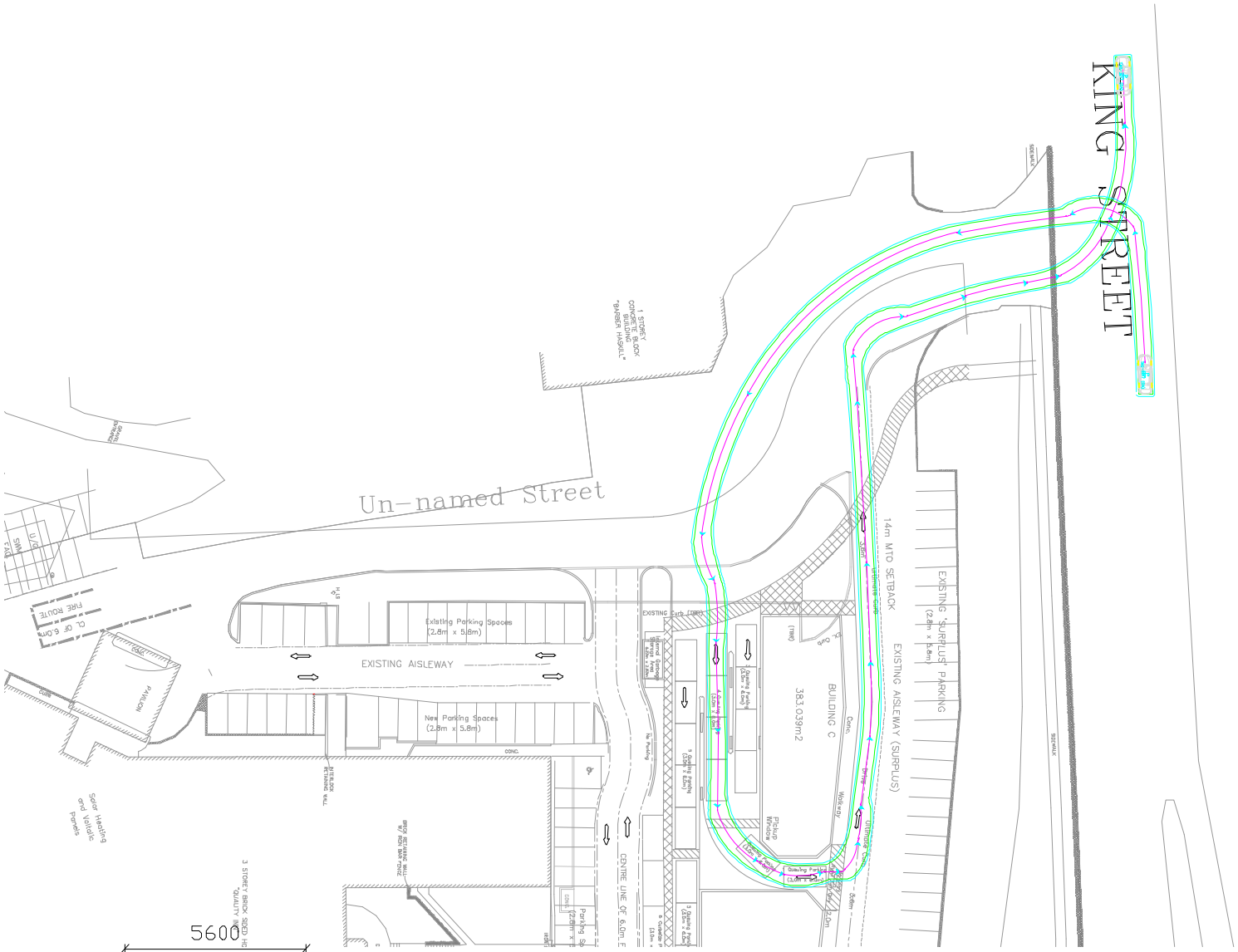
SCALE:	DATE:
1:1200	2023-01-18
PROJECT ENG: P.R.	DRAWN BY: H.O.
CHECKED BY: H.C	APPROVED BY: H.C.
PROJECT NO: 141453	

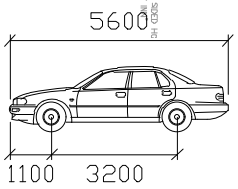
FIGURE NAME
Vehicle Maneuvering Diagram

FIGURE NO.	REVISION
AT-2	0.2

SCALE CHECK
1 in
10mm

File Location: J:\141453_Transportation\7.0_Production\7.03_Design\23_Traffic\04_Design Analysis\AutoTURN\TTY_924KingSt_AutoTURN_2023-01-20.dwg Last Saved: January 20, 2023, by habeeb.olorode Plotted: Monday, February 13, 2023 10:54:41 by Habeeb Olorode





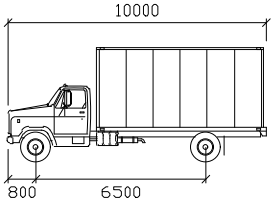
P

	mm
Width	: 2000
Track	: 2000
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

CLIENT: 1489338 Ontario Inc. c/o Quality Inn and Conference Center, Midland 924 King Street, Midland, ON LR4 0B8	PROJECT NAME: 924 King Street, Midland 924 King Street, Midland, ON LR4 0B8	ARCADIS | IBI GROUP	
	SCALE: 1:900 / DATE: 2023-01-18 PROJECT ENG: P.R. / DRAWN BY: H.O. CHECKED BY: H.C / APPROVED BY: H.C. PROJECT NO: 141453	FIGURE NAME: Vehicle Maneuvering Diagram	FIGURE NO.: AT-3 / REVISION: 0.2

File Location: J:\141453_Transportation\7.0_Production\7.03_Design\23_Traffic\04_Design Analysis\AutoTURN\TTY_924KingSt_AutoTURN_2023-01-20.dwg Last Saved: January 20, 2023, by habeeb.olorode Plotted: Monday, February 13, 2023 10:56:58 by Habeeb Olorode

SCALE CHECK 1 in 10mm



MSU

	mm
Width	: 2600
Track	: 2600
Lock to Lock Time	6.0
Steering Angle	: 40.2

CLIENT
1489338 Ontario Inc. c/o Quality Inn and Conference Center, Midland

924 King Street, Midland, ON LR4 0B8

PROJECT NAME
924 King Street, Midland

924 King Street, Midland, ON LR4 0B8

ARCADIS | IBI GROUP

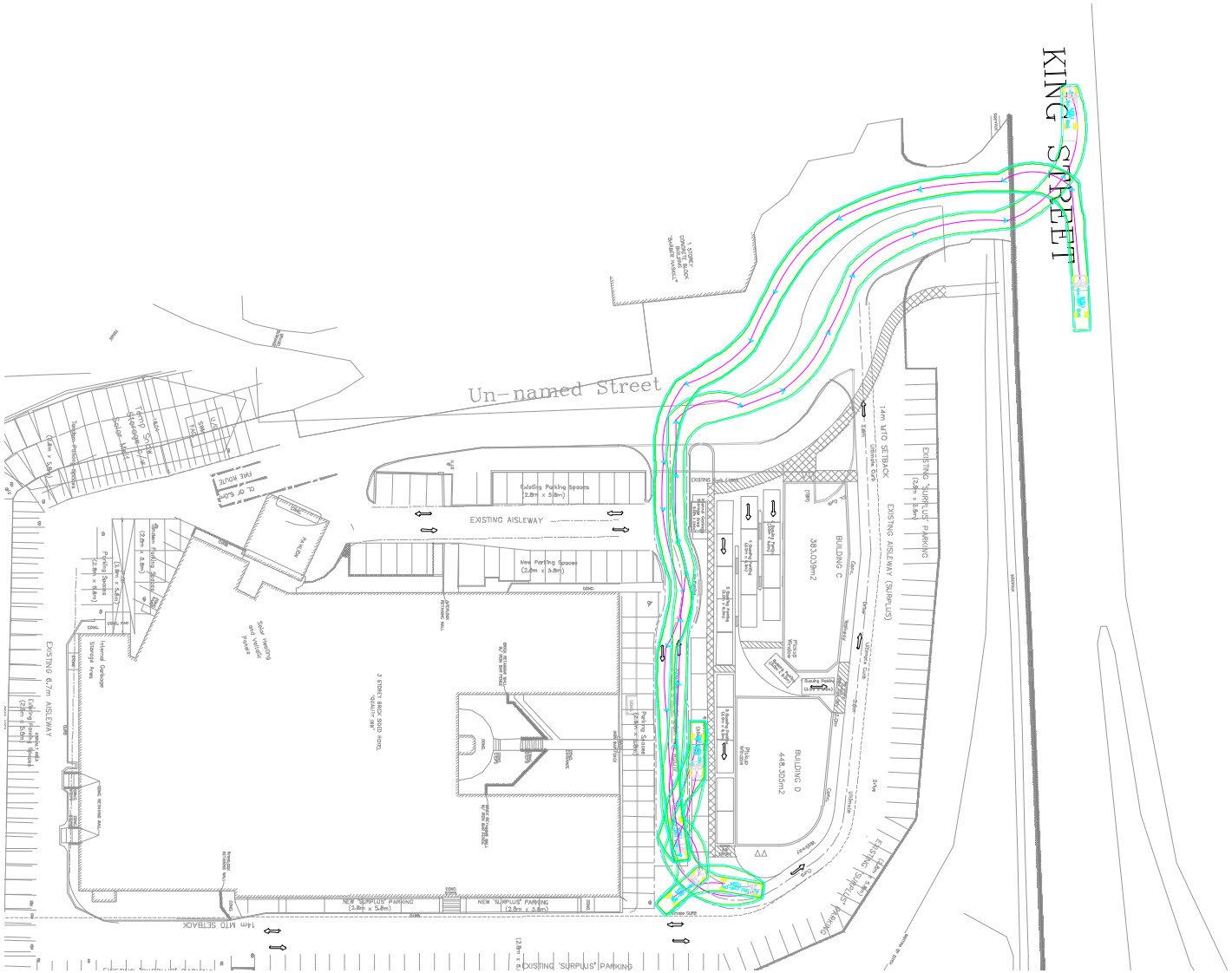
SCALE: 1:1200	DATE: 2023-01-18
PROJECT ENG: P.R.	DRAWN BY: H.O.
CHECKED BY: H.C	APPROVED BY: H.C.
PROJECT NO: 141453	

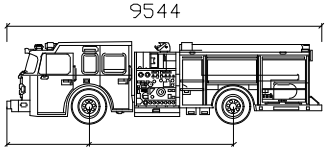
FIGURE NAME
Vehicle Maneuvering Diagram

FIGURE NO.	REVISION
AT-4	0.2

SCALE CHECK
1 in
10mm

File Location: J:\141453_Transportation\7.0_Production\7.03_Design\23_Traffic\04_Design Analysis\AutoTURN\TTY_924KingSt_AutoTURN_2023-01-20.dwg Last Saved: January 20, 2023, by habeeb.olorode Plotted: Monday, February 13, 2023 11:00:52 by Habeeb Olorode





Spartan Gladiator

	mm
Width	: 2514
Track	: 2500
Lock to Lock Time	: 6.0
Steering Angle	: 29.3

CLIENT: 1489338 Ontario Inc. c/o Quality Inn and Conference Center, Midland 924 King Street, Midland, ON LR4 0B8	PROJECT NAME: 924 King Street, Midland 924 King Street, Midland, ON LR4 0B8	ARCADIS | IBI GROUP	
	SCALE: 1:1200 / DATE: 2023-01-18 PROJECT ENG: P.R. / DRAWN BY: H.O. CHECKED BY: H.C / APPROVED BY: H.C. PROJECT NO: 141453	FIGURE NAME: Vehicle Maneuvering Diagram	FIGURE NO.: AT-5 / REVISION: 0.2

File Location: J:\141453_Transportation\7.0_Production\7.03_Design\23_Traffic\04_Design Analysis\AutoTURN\TTY_924KingSt_AutoTURN_2023-01-20.dwg Last Saved: January 20, 2023, by habeeb.olorode Plotted: Monday, February 13, 2023 11:02:55 by Habeeb Olorode

SCALE CHECK 1 in 10mm