DEVELOPMENT OF REGIONAL IMPACT
(DRI #3594)

TRAFFIC STUDY
FOR
EMPIRE MIXED-USE DEVELOPMENT AT SR 306 AND FREEDOM PARKWAY

FORSYTH COUNTY, GEORGIA

Prepared for:

EAH Land Acquisitions & Development
5775 Glenridge Drive Building D
Suite 350
Atlanta, Georgia 30328

Prepared By:

A&R Engineering Inc.
2160 Kingston Court, Suite O
Marietta, GA 30067
Tel: (770) 690-9255 Fax: (770) 690-9210
www.areng.com

May 10, 2022
A & R Project # 22-024

EXECUTIVE SUMMARY

Traffic impacts were evaluated for the proposed EMPIRE mixed-use development located to the southeast of the intersection of SR 306 (Keith Bridge Road) and Freedom Parkway in Forsyth County, Georgia. The development will consist of:

- Single-Family Detached Housing: 60 units
- Townhomes: 69 units
- Multifamily Housing: 303 units
- Office space: 13,000 sf
- Retail space: 10,000 sf
- Restaurant space: 20,000 sf

The development proposes one full access and one right-in/right-out driveways on SR 306 (Keith Bridge Road) as well as one full access driveway on Freedom Parkway. The driveway on Freedom Parkway will align with the existing Kroger's signalized driveway.

Existing and future operations during the AM peak hour (7:00 AM – 9:00 AM) and PM peak hour (4:00 PM – 6:00 PM) before and after completion of the project were analyzed at the following intersections:

1. SR 306 (Keith Bridge Road) @ GA 400 Southbound Ramps
2. SR 306 (Keith Bridge Road) @ GA 400 Northbound Ramps
3. SR 306 (Keith Bridge Road) @ Freedom Parkway
4. Freedom Parkway @ Kroger Development's (signalized) driveway

Traffic Operations Summary

Table E1 below provides a summary of traffic operations for the "No-Build" and "Build" conditions for the year 2025 for three scenarios: without any improvements, with system improvements only, and with system improvements plus additional improvements. As per GRTA requirements, all approaches that do not meet the level-of-service (LOS) standard (considered failing) are highlighted in Table E1.

TABLE E1 – FUTURE INTERSECTION OPERATIONS AT FAILING APPROACHES

	Intersection	*No-Build Condition: LOS (Delay)*				*Build Condition: LOS (Delay)*									
		NO IMPROVEMENTS		SYSTEM IMPROVEMENTS		NO IMPROVEMENTS		SYSTEM IMPROVEMENTS ONLY		SYSTEM AND SITE IMPROVEMENTS		SITE VOLUMES AT FAILING APPROACH BUILD WITH IMPROVEMENTS		PRECENT SITE TRIPS OF TOTAL APPROACH TRIPS AT FAILING APPROACHES	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
3	**SR 306 (Keith Bridge Road) @ Freedom Parkway**	**B (19.8)**	**E (56.5)**	**B (11.0)**	**B (19.9)**	**C (25.9)**	**E (72.5)**	**B (11.5)**	**C (20.4)**						
	-Eastbound Approach	A (1.9)	C (23.7)	A (0.5)	A (2.9)	A (2.3)	C (27.4)	A (0.6)	A (3.3)						
	-Westbound Approach	C (23.3)	E (65.4)	A (9.3)	C (21.1)	C (33.6)	F (97.7)	B (10.1)	C (23.0)	N/A	N/A	No failing approaches	No failing approaches	No failing approaches	No failing approaches
	-Northbound Approach	D (48.0)	E (78.4)	D (48.0)	D (44.4)	D (45.4)	E (74.3)	D (45.4)	D (42.6)						
	-Southbound Approach	D (43.4)	E (77.7)	D (43.4)	C (34.0)	D (44.5)	E (79.6)	D (44.5)	D (35.5)						
5	**SR 306 (Keith Bridge Road) @ Site Driveway 2**									**A (4.4)**	**A (5.2)**				
	-Eastbound Approach	-	-	-	-	-	-	-	-	A (0.2)	A (0.3)	No failing approaches	No failing approaches	No failing approaches	No failing approaches
	-Westbound Left / *Approach*	-	-	-	-	A (9.0)	B (11.2)	A (9.0)	B (11.2)	A (2.7)	A (4.2)				
	-Northbound Approach	-	-	-	-	F (203.1)	F (*)	E (48.1)	F (*)	D (53.5)	D (51.0)				

Intersection 3 (SR 306/Keith Bridge Road and Freedom Parkway) was improved to achieve the LOS standard after implementation of the identified system improvements. The LOS standard was achieved at intersection 5 (SR 306/Keith Bridge Road and Site Driveway 2) by addition of a traffic signal as a site mitigation improvement. It is recommended that a traffic signal be installed at this intersection if warranted per MUTCD guidelines.

Recommended System Improvements

The following are system improvements that were identified from the "No-Build" condition analysis.

Intersection 3: SR 306 (Keith Bridge Road) @ Freedom Parkway

- Addition of an eastbound through lane on SR 306
- Addition of a westbound through lane on SR 306

Recommended Site Mitigation Improvements

Intersection 4: Freedom Parkway and Kroger Driveway / Proposed Driveway (Full Access)

- Addition of westbound leg to existing signalized intersection
- Provide sidewalk along site frontage on Freedom Parkway
- Provide crosswalks across Site Driveway 1

Intersection 5: SR 306 (Keith Bridge Road) and Site Driveway 2 (Full Access)

- One entering and two (separate left turn and right turn) exiting lanes
- Addition of a left-turn lane on SR 306 (Keith Bridge Road)
- Addition of a deceleration lane on SR 306 (Keith Bridge Road)
- Installation of a traffic signal if warranted

Intersection 6: SR 306 (Keith Bridge Road) and Site Driveway 3 (RIRO), east of Driveway 2

- Driveway approach to consist of one entering and one right-turn-only exiting lanes and to be stop-sign controlled
- Addition of deceleration lane on SR 306 (Keith Bridge Road)
- Provide crosswalk across driveway

TABLE OF CONTENTS

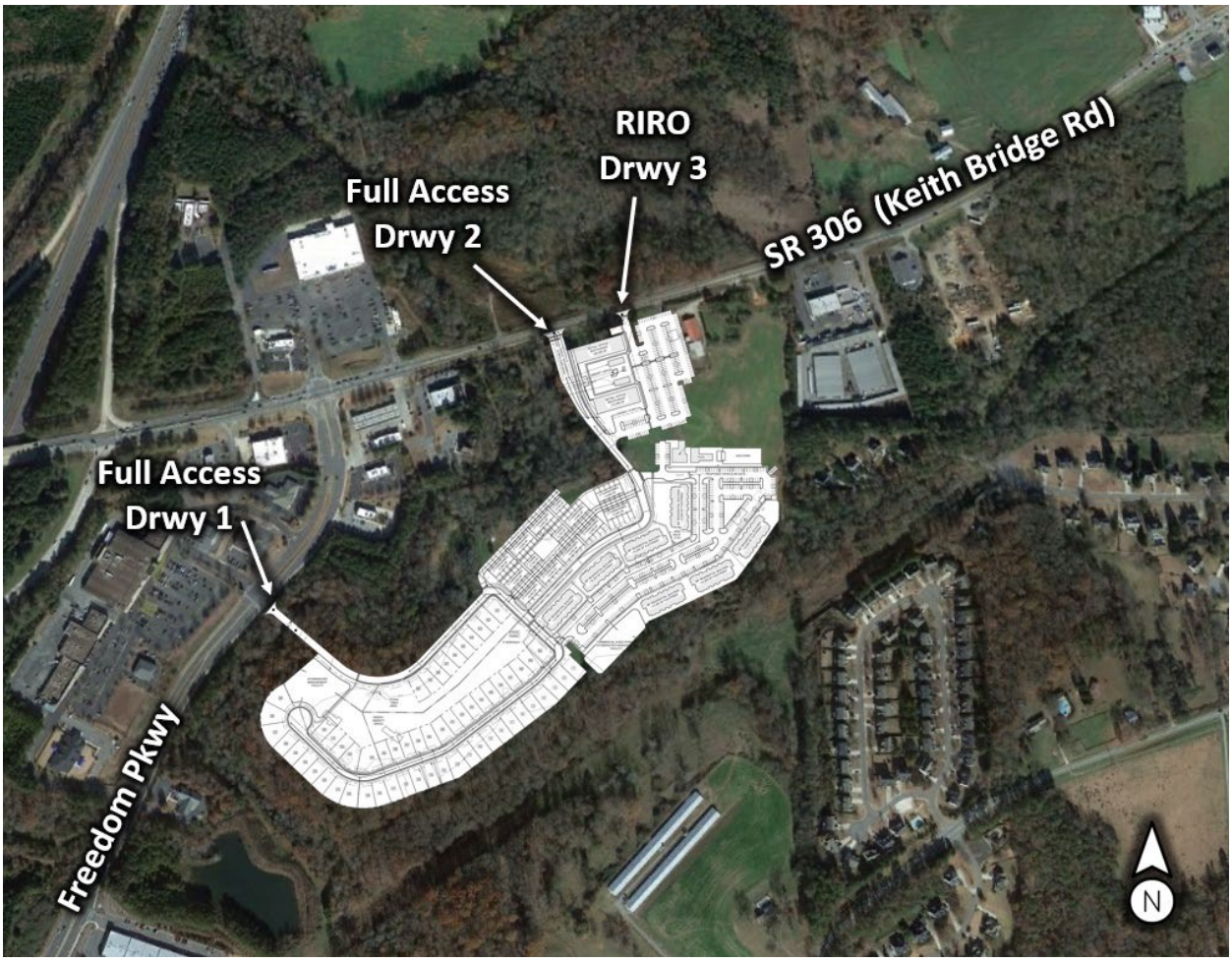
LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

The purpose of this study is to determine the traffic impact that will result from the proposed EMPIRE mixed-use development located to the southeast of the intersection of SR 306 (Keith Bridge Road) and Freedom Parkway in Forsyth County, Georgia. The traffic analysis evaluates the current operations and the future conditions with the traffic generated by the development. The development will consist of:

- Single-Family Detached Housing: 60 units
- Townhomes: 69 units
- Multifamily Housing: 303 units
- Office space: 13,000 sf
- Retail space: 10,000 sf
- Restaurant space: 20,000 sf



The development proposes access at the following locations:

- Site Driveway 1: Full access driveway on Freedom Parkway, aligning with the existing signal to Kroger development
- Site Driveway 2: Full access driveway on SR 306 (Keith Bridge Road)
- Site Driveway 3: Right-in/right-out driveway on SR 306 (Keith Bridge Road), east of Driveway 2

The AM and PM peak hours have been analyzed in this study. In addition to the site access points, this study includes the evaluation of traffic operations at the intersections of:

1. SR 306 (Keith Bridge Road) @ GA 400 Southbound Ramps
2. SR 306 (Keith Bridge Road) @ GA 400 Northbound Ramps
3. SR 306 (Keith Bridge Road) @ Freedom Parkway
4. Freedom Parkway @ Kroger Development's (signalized) driveway

Recommendations to improve traffic operations have been identified as appropriate and are discussed in detail in the following sections of the report.

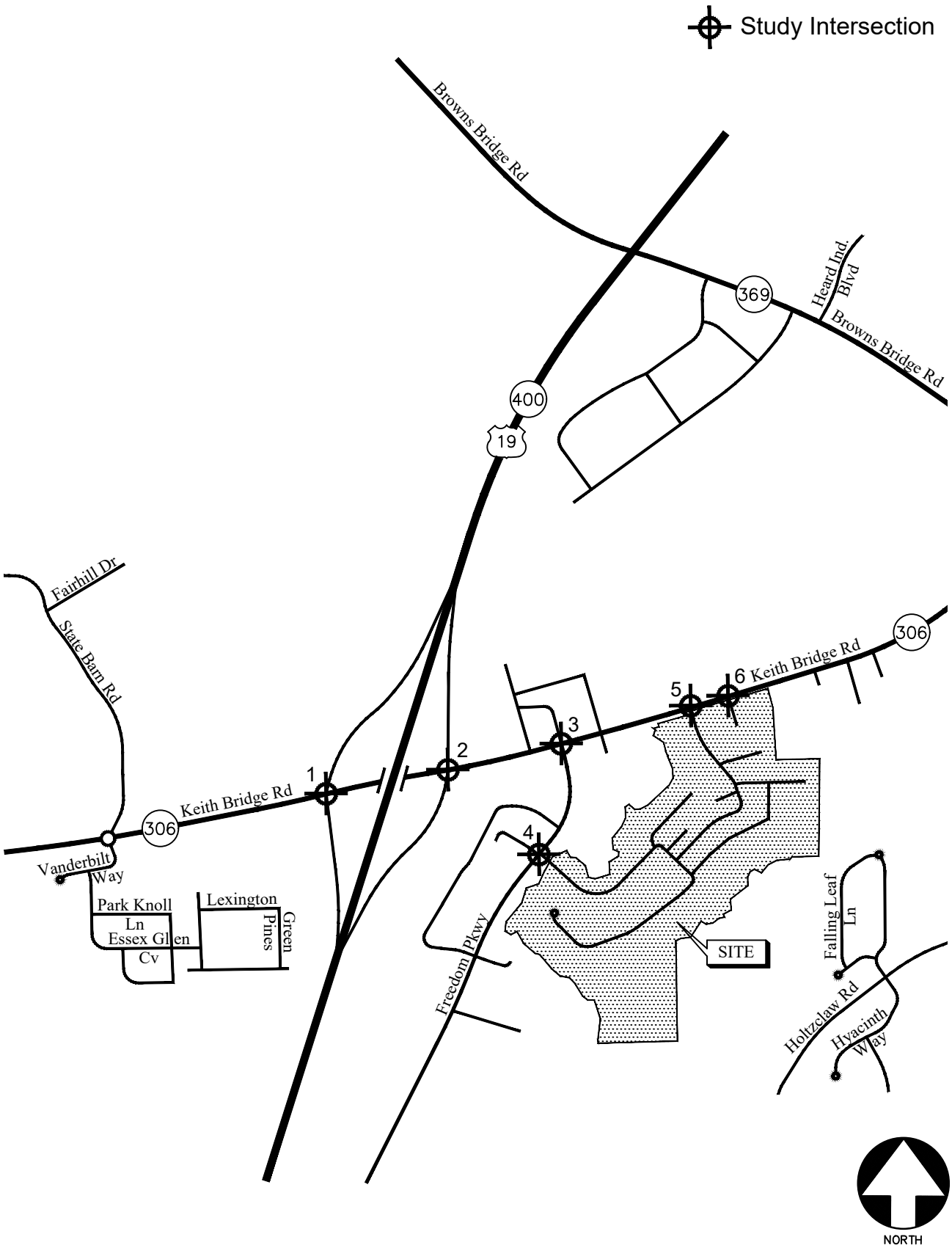
STUDY NETWORK DETERMINATION

The study network was determined by evaluating the amount of traffic that the proposed development will add to each roadway segment in the area. According to GRTA requirements, a roadway segment carries a "significant" amount of traffic if the project contributes 7% or more trips to the two-way daily service volumes of the roadway at the appropriate level of service standard. Upon agreement with GRTA a level of service standard of "D" was used for determining the study area network.

The traffic generated by the proposed project was then assigned to the area roadways using the trip distribution to determine the site-generated traffic on each roadway segment. The boundaries of the study network extend to the most distant intersections where at least 7% of the service volumes on the segment are attributed to project traffic. The following study intersections fell within the 7% rule and/or have been selected as being suitable for evaluation in discussions with ARC, GRTA, GDOT, Forsyth County and City of Cumming:

1. SR 306 (Keith Bridge Road) @ GA 400 Southbound Ramps
2. SR 306 (Keith Bridge Road) @ GA 400 Northbound Ramps
3. SR 306 (Keith Bridge Road) @ Freedom Parkway
4. Freedom Parkway @ Kroger Development's (signalized) driveway

The location of the development and the surrounding study network is shown in Figure 1. Other intersections within this corridor, such as unsignalized side streets, right-in / right-out driveways or private driveways have not been included in the study network.



LOCATION MAP AND STUDY INTERSECTIONS FIGURE 1

A&R Engineering Inc.

EXISTING ROADWAY FACILITIES

The following is a brief description of each of the roadway facilities located in proximity to the site:

GA 400/US 19

GA 400/US 19 is a north-south, six-lane, median-divided roadway with a speed limit of 65 mph in the vicinity of the site. GDOT traffic counts (Station ID's 117-0087 & 117-0089) indicate that the daily traffic volume on GA 400 in 2019 was 55,900 vehicles per day south of SR 306 (Keith Bridge Road) and 40,800 vehicles per day north of SR 306 (Keith Bridge Road).

SR 306 (Keith Bridge Road)

SR 306 (Keith Bridge Road) is an east-west, two-lane, undivided roadway with a posted speed limit of 50 mph in the vicinity of the site. GDOT traffic counts (Station ID's 117-0051 & 117-0053) indicate that the daily traffic volume on SR 306 (Keith Bridge Road) in 2019 was 8,610 vehicles per day west of GA 400 and 22,800 vehicles per day east of GA 400. GDOT classifies SR 306 (Keith Bridge Road) as an Urban Minor Arterial roadway.

Freedom Parkway

Freedom Parkway is a north-south, four-lane, median-divided roadway with a posted speed limit of 45 mph in the vicinity of the site.

Existing Bicycle and Pedestrian Facilities

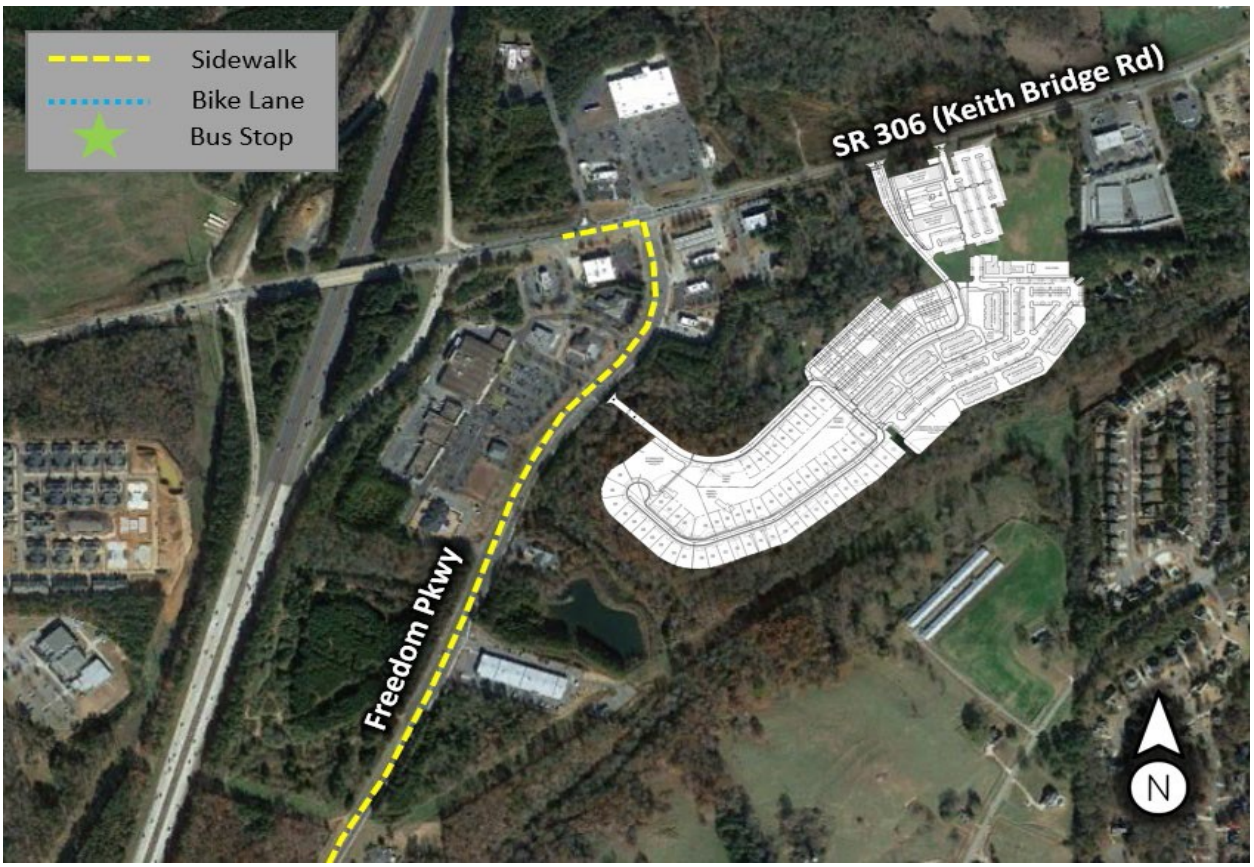
- Sidewalk is present on the east side of Freedom Parkway
- Sidewalk is present on the west side of Freedom Parkway south of the intersection with SR 306 (Keith Bridge Road) for approximately 270 feet
- Sidewalk is not present on either side of SR 306 (Keith Bridge Road)
- Crosswalks are present at two approaches at the intersection of the Kroger Shopping Center and Freedom Parkway
- Crosswalks are present at all approaches at the intersection of SR 306 (Keith Bridge Road) and Freedom Parkway
- Bike paths are not present in the study network

Alternative Modes of Access

- Existing transit routes were not identified in the study network.
- No high-capacity transit stations were identified in the vicinity of the proposed development.

The graphic below includes the location of existing sidewalks in the study network.

Existing Alternative Transportation Map



STUDY METHODOLOGY

In this study, the methodology used for evaluating traffic operations at each of the subject intersections is based on the criteria set forth in the Transportation Research Board's Highway Capacity Manual, 6th edition (HCM 6). Synchro software, which utilizes the HCM methodology, was used for the analysis. The following is a description of the methodology employed for the analysis of unsignalized and signalized intersections.

Unsignalized Intersections

For unsignalized intersections controlled by a stop sign on minor streets, the level-of-service (LOS) for motor vehicles with controlled movements is determined by the computed control delay according to the thresholds stated in Table 1 below. LOS is determined for each minor street movement (or shared movement), as well as major street left turns. LOS is not defined for the intersection as a whole or for major street approaches. The LOS of any controlled movement which experiences a volume to capacity ratio greater than 1 is designed as "F" regardless of the control delay.

Control delay for unsignalized intersections includes initial deceleration delay, queue move-up time, stopped delay and final acceleration delay. Several factors affect the control delay for unsignalized intersections, such as the availability and distribution of gaps in the conflicting traffic stream, critical gaps and follow-up time for a vehicle in the queue.

Level-of-service is assigned a letter designation from "A" through "F". Level-of-service "A" indicates excellent operations with little delay to motorists, while level-of-service "F" exists when there are insufficient gaps of acceptable size to allow vehicles on the side street to cross the main road without experiencing long total delays.

TABLE 1 – LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Control Delay (sec/vehicle)	LOS by Volume-to-Capacity Ratio*	
	v/c ≤ 1.0	**v/c ≥ 1.0**
≤ 10	A	F
> 10 and ≤ 15	B	F
> 15 and ≤ 25	C	F
> 25 and ≤ 35	D	F
> 35 and ≤ 50	E	F
> 50	F	F

*The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection.

Source: Highway Capacity Manual, 6th edition, Exhibit 20-2 *LOS Criteria: Motorized Vehicle Mode*

Signalized Intersections

According to HCM procedures, LOS can be calculated for the entire intersection, each intersection approach, and each lane group. HCM uses control delay alone to characterize LOS for the entire intersection or an approach. Control delay per vehicle is composed of initial deceleration delay, queue move-up time, stopped delay and final acceleration delay. Both control delay and volume-to-capacity ratio are used to characterize LOS for a lane group. A volume-to-capacity ratio of 1.0 or more for a lane group indicates failure from capacity perspective. Therefore, such a lane group is assigned LOS F regardless of the amount of control delay.

Table 2 below summarizes the LOS criteria from HCM for motorized vehicles at signalized intersections.

TABLE 2 – LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Control Delay (sec/vehicle)*	LOS for Lane Group by Volume-to-Capacity Ratio*	
	v/c ≤ 1.0	**v/c ≥ 1.0**
≤ 10	A	F
> 10 and ≤ 20	B	F
> 20 and ≤ 35	C	F
> 35 and ≤ 55	D	F
> 55 and ≤ 80	E	F
> 80	F	F

*For approach-based and intersection wide assessments, LOS is defined solely by control delay

Source: Highway Capacity Manual, 6th edition, Exhibit 19-8 *LOS Criteria: Motorized Vehicle Mode*

LOS A is typically assigned when the volume-to-capacity (v/c) ratio is low and either progression is exceptionally favorable, or the cycle length is very short. LOS B is typically assigned when the v/c ratio is low and either progression is highly favorable, or the cycle length is short. However, more vehicles are stopped than with LOS A. LOS C is typically assigned when progression is favorable, or the cycle length is moderate. Individual cycle failures (one or more queued vehicles are not able to depart because of insufficient capacity during the cycle) may begin to appear at this level. Many vehicles still pass through the intersection without stopping, but the number of vehicles stopping is significant. LOS D is typically assigned when the v/c ratio is high and either progression is ineffective, or the cycle length is long. There are many vehicle-stops and individual cycle failures are noticeable. LOS E is typically assigned when the v/c ratio is high, progression is very poor, the cycle length is long, and individual cycle failures are frequent. LOS F is typically assigned when the v/c ratio is very high, progression is very poor, the cycle length is long, and most cycles fail to clear the queue.

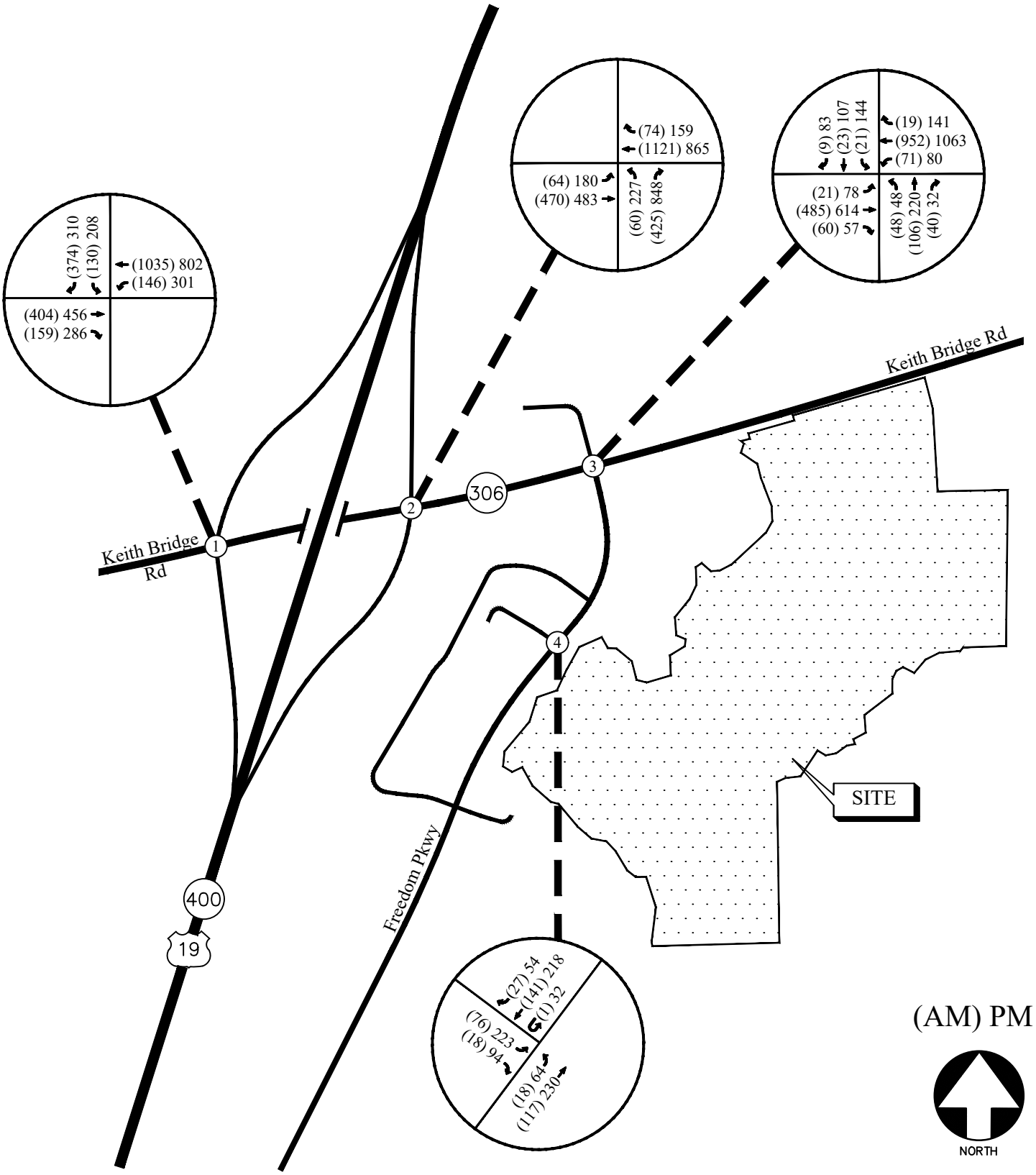
EXISTING 2022 TRAFFIC ANALYSIS

Existing Traffic Volumes

Existing traffic counts were obtained at the following study intersections:

1. SR 306 (Keith Bridge Road) @ GA 400 Southbound Ramps
2. SR 306 (Keith Bridge Road) @ GA 400 Northbound Ramps
3. SR 306 (Keith Bridge Road) @ Freedom Parkway
4. Freedom Parkway @ Kroger Development's (signalized) driveway

Turning movement counts were collected on Wednesday, April 20, 2022. All turning movement counts were recorded during the AM and PM peak hours between 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM, respectively. The four consecutive 15-minute interval volumes that summed to produce the highest volume at the intersections were then determined. These volumes make up the peak hour traffic volumes for the intersections counted and are shown in Figure 2.



EXISTING WEEKDAY PEAK-HOUR VOLUMES FIGURE 2

A&R Engineering Inc.

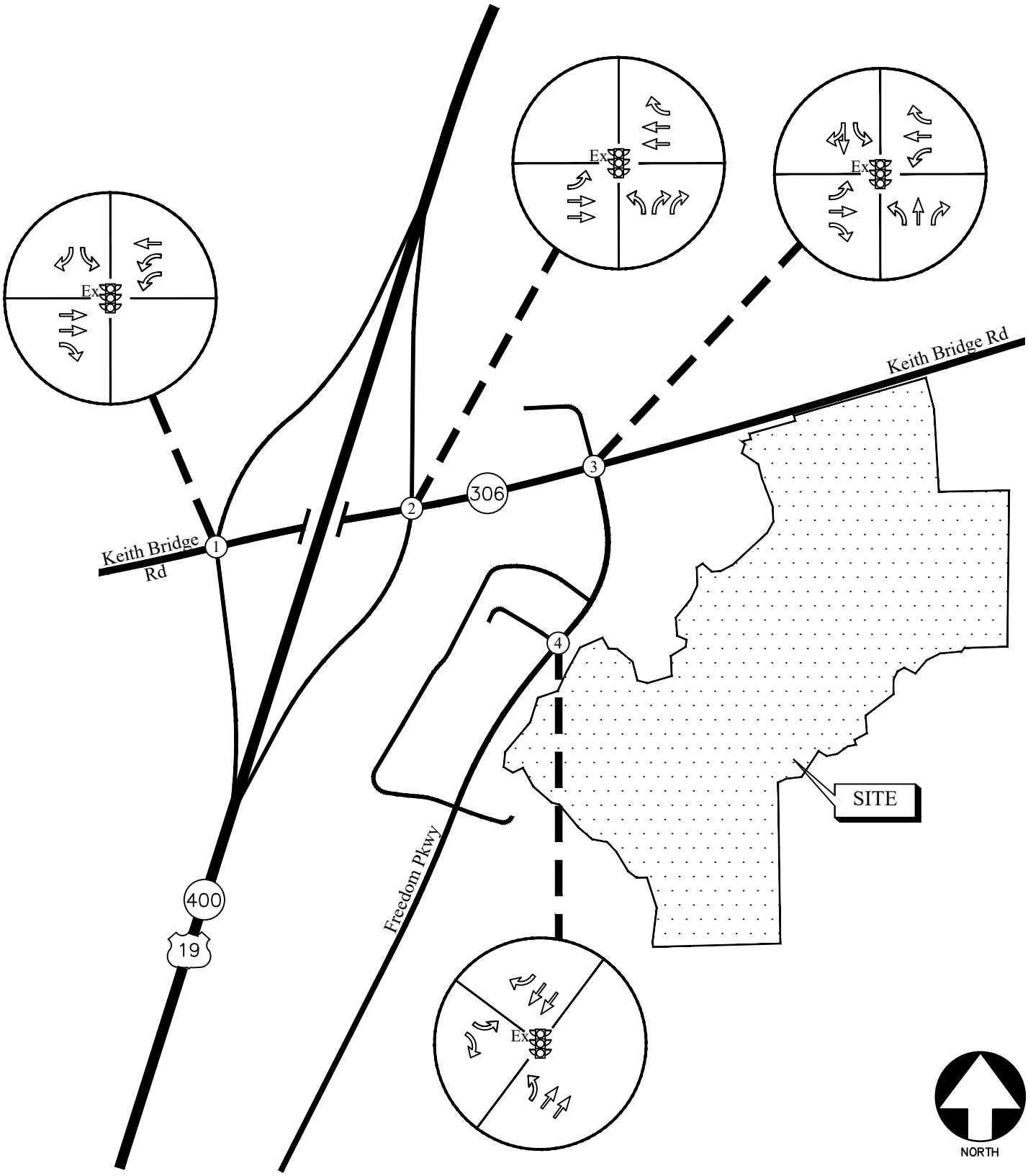
Existing Traffic Operations

Existing 2022 traffic operations were analyzed at the study intersections in accordance with the HCM methodology. The results of the analyses are shown in Table 3. The existing traffic control and lane geometry for the intersections are shown in Figure 3.

TABLE 3 – EXISTING INTERSECTION OPERATIONS

	Intersection	Traffic Control	AM Peak	PM Peak	LOS Standard
1	**SR 306 (Keith Bridge Road) @ GA 400 SB Ramps**	Signalized	**C (31.4)**	**C (22.4)**	**D/D**
	-Eastbound Approach		B (15.0)	B (15.6)	D/D
	-Westbound Approach		C (28.6)	B (14.4)	D/D
	-Southbound Approach		D (51.3)	D (45.5)	D/D
2	**SR 306 (Keith Bridge Road) @ GA 400 NB Ramps**	Signalized	**B (10.7)**	**C (25.1)**	**D/D**
	-Eastbound Approach		A (0.8)	A (5.2)	D/D
	-Westbound Approach		A (0.5)	C (25.0)	D/D
	-Northbound Approach		D (45.1)	D (37.5)	D/D
3	**SR 306 (Keith Bridge Road) @ Freedom Parkway**	Signalized	**B (17.4)**	**D (46.9)**	**D/D**
	-Eastbound Approach		A (1.7)	C (22.3)	D/D
	-Westbound Approach		B (19.4)	D (48.8)	D/D
	-Northbound Approach		D (48.2)	E (77.6)	D/D
	-Southbound Approach		D (43.7)	E (72.2)	D/D
4	**Freedom Parkway @ Kroger Driveway**	Signalized	**B (13.2)**	**B (18.1)**	**D/D**
	-Eastbound Approach		D (47.0)	D (39.1)	D/D
	-Northbound Approach		A (1.9)	A (4.7)	D/D
	-Southbound Approach		A (3.6)	A (8.2)	D/D

The results of existing traffic operations analysis indicate that all the study intersections (signalized) are operating at an overall level-of-service “D” or better in both the AM and PM peak hours. In the PM peak hour, the northbound and southbound approaches to the intersection of SR 306 at Freedom Parkway are operating at LOS “E”. These areas are addressed in the future traffic operations sections.



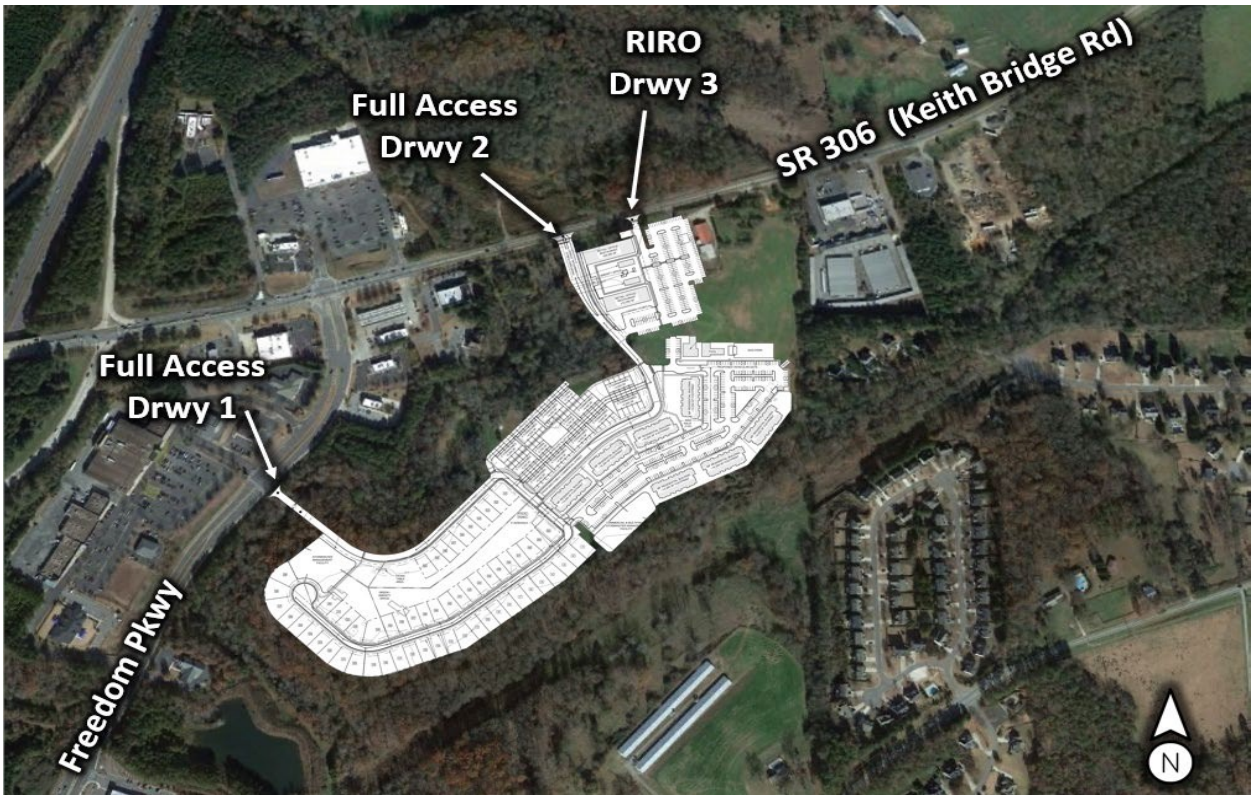
EXISTING TRAFFIC CONTROL AND LANE GEOMETRY FIGURE 3

A&R Engineering Inc.

PROJECT DESCRIPTION

The proposed EMPIRE mixed-use development will be located to the southeast of the intersection of SR 306 (Keith Bridge Road) and Freedom Parkway in Forsyth County, Georgia. In general, the development is located to the east of GA 400. The development will consist of:

- Single-Family Detached Housing: 60 units
- Townhomes: 69 units
- Multifamily Housing: 303 units
- Office space: 13,000 sf
- Retail space: 10,000 sf
- Restaurant space: 20,000 sf

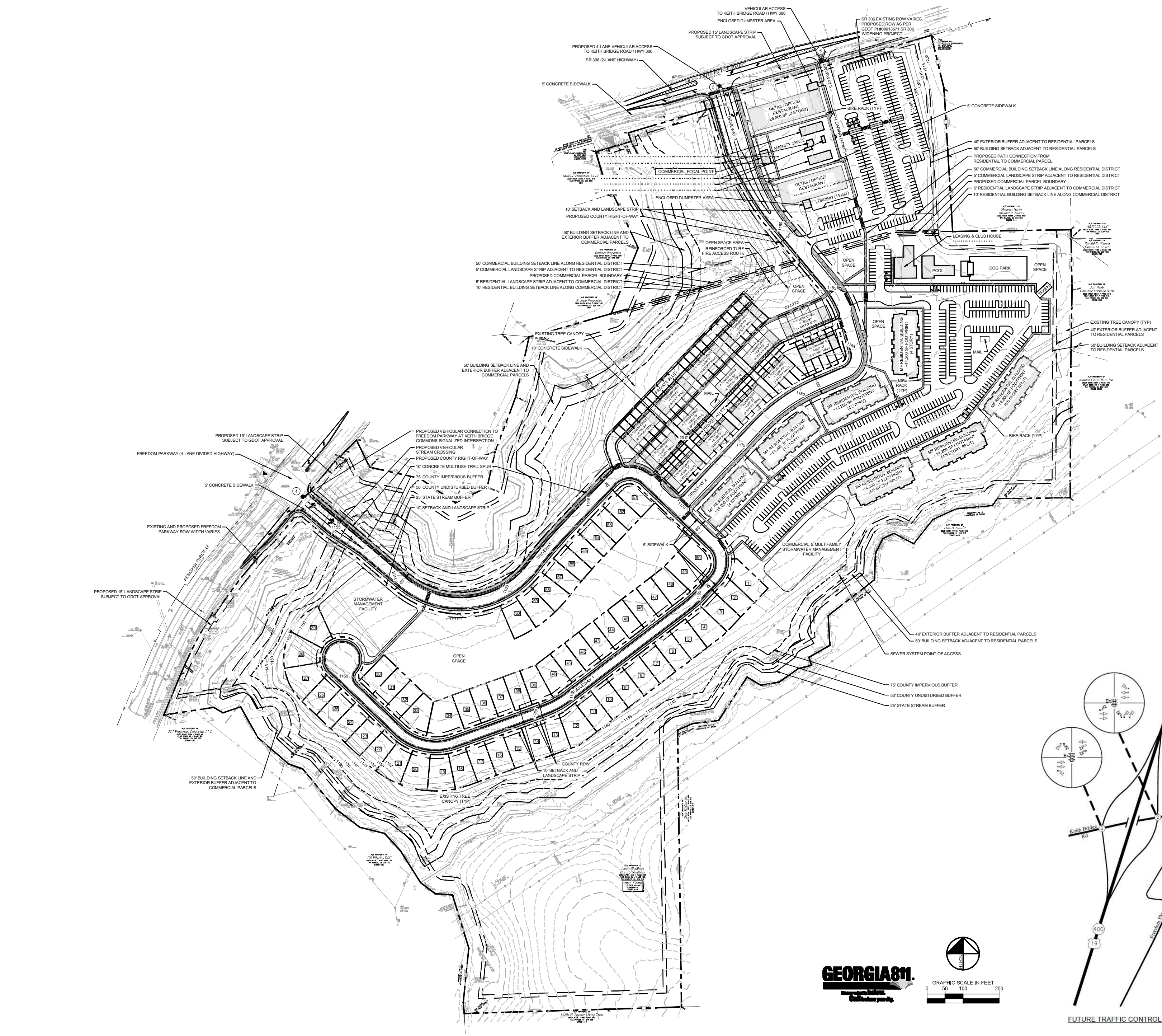


The development proposes access at the following locations:

- Site Driveway 1: Full access driveway on Freedom Parkway, aligning with the existing signal to Kroger development
- Site Driveway 2: Full access driveway on SR 306 (Keith Bridge Road)
- Site Driveway 3: Right-in/right-out driveway on SR 306 (Keith Bridge Road), east of Driveway 2

Site Plan

A site plan is shown in Figure 4. A digital copy of the site plan is also provided with this report.



SITE NOTES:

DRI INFORMAITON:

DRI NUMBER: 3594
TRAFFIC CONSULTANT: A&R ENGINEERING, INC
ABDUL K. AMER
770-690-9255

ZONING SUMMARY:

CURRENT ZONING: A-1 & CBD
PROPOSED ZONING: MASTER PLANNED DISTRICT (MPD)

EXISTING PARCELS:

PARCEL ID: 218-014 400 PILGRIM, LLC
PARCEL ID: 218-016 LANNY & BEVERLY SHADBURN
PARCEL ID: 218-018 MACHE SHADBURN BENNETT
PARCEL ID: 218 020 LANNY & BEVERLY SHADBURN
PARCEL ID: 218 024 BOBBY & A. DELORES SHADBURN
PARCEL ID: 218-025 ROBERT SMITH
PARCEL ID: 218-026 MACHE SHADBURN BENNETT
PARCEL ID: 218-036 KASEY TODD SHADBURN
PARCEL ID: 218-039 ROBERT SMITH
PARCEL ID: 218-053 BETTY RUTH SHADBURN

PROJECT AREA & DENSITY SUMMARY:

TOTAL SITE AREA: 72.899 AC

OPEN SPACE*: 35.820 AC (49.14% OF TOTAL SITE)

RESIDENTIAL SPACE: 22.500 AC (30.86% OF TOTAL SITE)

COMMERCIAL AREA: 14.579 AC (20.00% OF TOTAL SITE)

COMMERCIAL FLOOR AREA **43000 SF**
FLOOR AREA RATIO 0.01

PROPOSED RESIDENTIAL DENSITY: 5.82 UNITS/AC (424 UNITS)
MULTIFAMILY RESIDENTIAL 295 UNITS
TOWNHOME 69 UNITS
SINGLE FAMILY 60 UNITS

RESIDENTIAL LOT SUMMARY

SINGLE FAMILY LOT SIZE 50'x100' (0.11 AC) MINIMUM
TOWNHOME LOT SIZE 22'x68' (0.03 AC) MINIMUM

PROPOSED PARKING SUMMARY

USE	REQUIRED	PROVIDED	ADA	VAN
MULTIFAMILY RESIDENTIAL	370	472	10	2
TOWNHOME	87	138	-	-
SINGLE-FAMILY	76	240	-	-
COMMERCIAL PARKING	144	276	6	2
TOTAL	677	**1,126**	16	4

PARKING DIMENSIONS: 9X18 (HEAD-END)

* THE ANTICIPATED COMMERCIAL MIX (RETAIL/ RESTAURANT/ OFFICE) MAY CHANGE, THEREFORE PARKING WILL BE ADJUSTED ACCORDINGLY

PUBLIC STREET DIMENSIONS:

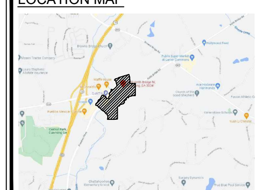
COMMERCIAL (FCDOE STD #121) 30' WIDE (BOC TO BOC)
RESIDENTIAL (FCDOE STD #120) 24' WIDE (BOC TO BOC)

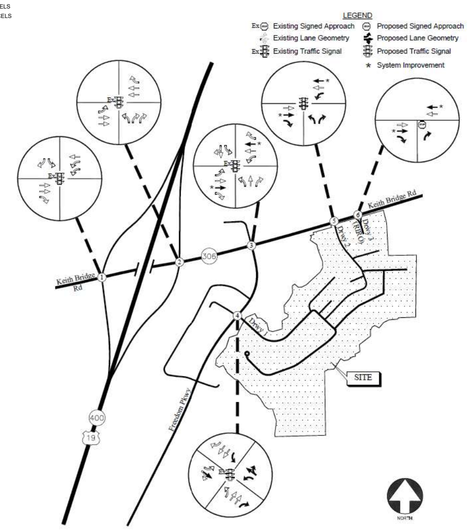
PRIVATE STREET DIMENSIONS

TOWNHOME ALLEY* 24' WIDE (FOC TO FOC)
COMMERCIAL AISLE* 24' WIDE MIN. (FOC TO FOC)

* *PRIVATE DRIVES AND OPEN SPACE TO BE MAINTAINED BY PRIVATE COMMUNITY ASSOCIATION (UDC 20B-1.4 (B)(4)(c))*

LOCATION MAP





FUTURE TRAFFIC CONTROL AND LANE GEOMETRY — FIGURE 8
A&R Engineering Inc.

Kimley»Horn
© 2021 KIMLEY-HORN AND ASSOCIATES, INC.
817 W. PEACHTREE STREET, NW
THE BILTMORE, SUITE 601
ATLANTA, GEORGIA 30308
PHONE (404) 419-8700
WWW.KIMLEY-HORN.COM

CLIENT: EMPIRE COMMUNITIES
5775 GLENRIDGE DRIVE, BUILDING D, SUITE 350
ATLANTA, GA 30328
PHONE: 770-541-6810

PROJECT: ELYSION
2962 KEITH BRIDGE ROAD, CUMMING, GA 30041

No.	REVISION DESCRIPTIONS	DATE	BY

PRELIMINARY NOT FOR CONSTRUCTION

GSWCC CERT. (LEVEL II)	0000078213
DRAWN BY	ECF
DESIGNED BY	CRG
REVIEWED BY	BWS
DATE	01/18/2022
PROJECT NO.	018754023
TITLE	DRI SITE PLAN
SHEET NUMBER	C1-95

PRELIMINARY: NOT FOR CONSTRUCTION

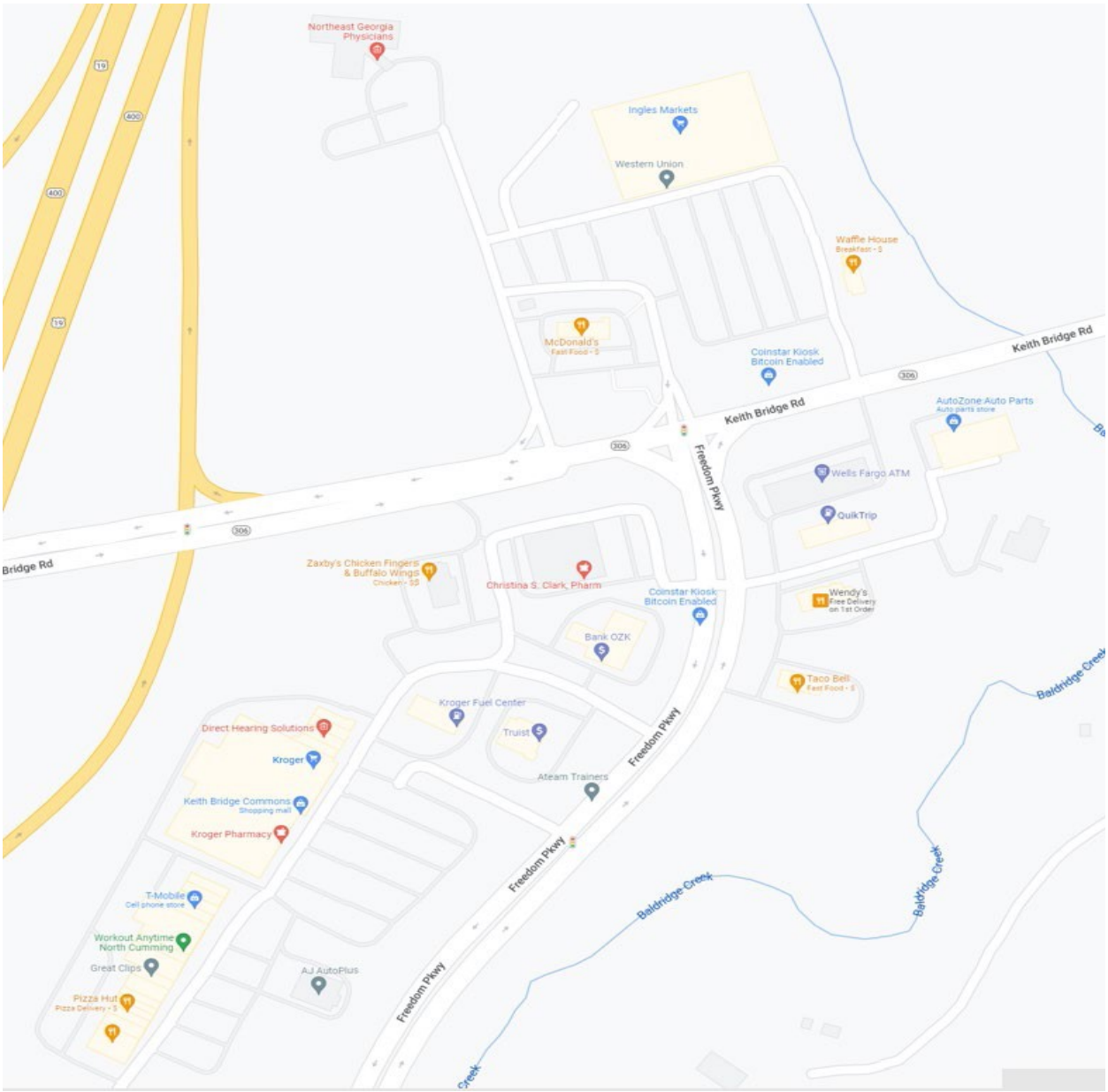
Drawing name: K:\AMT_CIVIL\018754023_Empire - HWY 306\CAD\PlanSheets\C1-95 DRI SITE PLAN.dwg C1-95 DRI SITE PLAN May 09, 2022 4:18pm by: Connor.Galloway

Planned Bicycle and Pedestrian Facilities

Pedestrian sidewalks are proposed along SR 306 (Keith Bridge Road) and throughout the internal roadway network inside the development. The development proposes a 10 ft concrete trail spur from the access on Freedom Parkway along the proposed internal street.

Potential Pedestrian and Bicycle Destinations

Potential pedestrian and bicycle destinations in the vicinity of the proposed development include Kroger and Ingles Market. Additional potential destinations are shown in the aerial below.



Planned Transit Facilities

There is no existing or planned public transit service near the proposed development. An alternate mode of transportation reduction of 4% was considered in the trip generation analysis based on discussions with ARC/GRTA and local reviewing agencies based on the proximity of pedestrian destinations near the site.

Consistency with Adopted Comprehensive Plan

The proposed development will include residential, office, retail, and restaurant space. The residential Component of the development will include single family detached homes, townhomes, and apartments. The property includes 67.948 acres of land. The site is currently zoned as Agricultural District (A-1) & Commercial Business District (CBD) and is requesting a rezoning to Master Planned District (MPD).

Future Land Use Map

Future Land Use Map Zoning	Primarily located in Hammond Node and partially located in the Lanier Character Area and community node
Character Area Definition for Forsyth County	**Hammond Crossing Regional Node** (located within the North GA 400 character area; See Appendix): • *"Permit up to 6 Stories for Non-Residential and Mixed Use structures.* • *Encourage retrofitting existing commercial and retail strip development in areas that are likely to undergo renovation or potential demolition in the long-range planning period.* • *Support lodging services and meeting facilities to provide further opportunities for visitors to enjoy local amenities.* • *Support economic development activities, particularly office development, to increase and diversify the county's tax base.* • *Encourage civic and cultural uses as well as entertainment establishments that will promote community interaction and public open space.* • *Limited parking between buildings and public roadways."* **Lanier Node:** • *"The Lanier character area's existing residential uses vary greatly in age, size, and character. The southern areas along Lake Lanier provide an opportunity for residential infill on medium- to large-sized lots. Although areas in northern Forsyth County near the lake may be redeveloped over the coming decade, there is a need to create a strategy to maintain affordability in areas north of the City of Cumming. Commercial development should be limited except for locally serving retail and restaurants on major corridors near GA 400 and a potential hospitality attraction in the Lake Lanier/Mary Alice Park Community Node." See Appendix for more information.*
Relation to Existing Land Use Plans	The proposed EMPIRE mixed-use development is consistent with the land use vision and goals listed above.

The proposed mixed-use development is consistent with the land use vision and goals listed above.

Project Phasing

This project has been evaluated for the complete build-out of the development in 2025.

Trip Generation

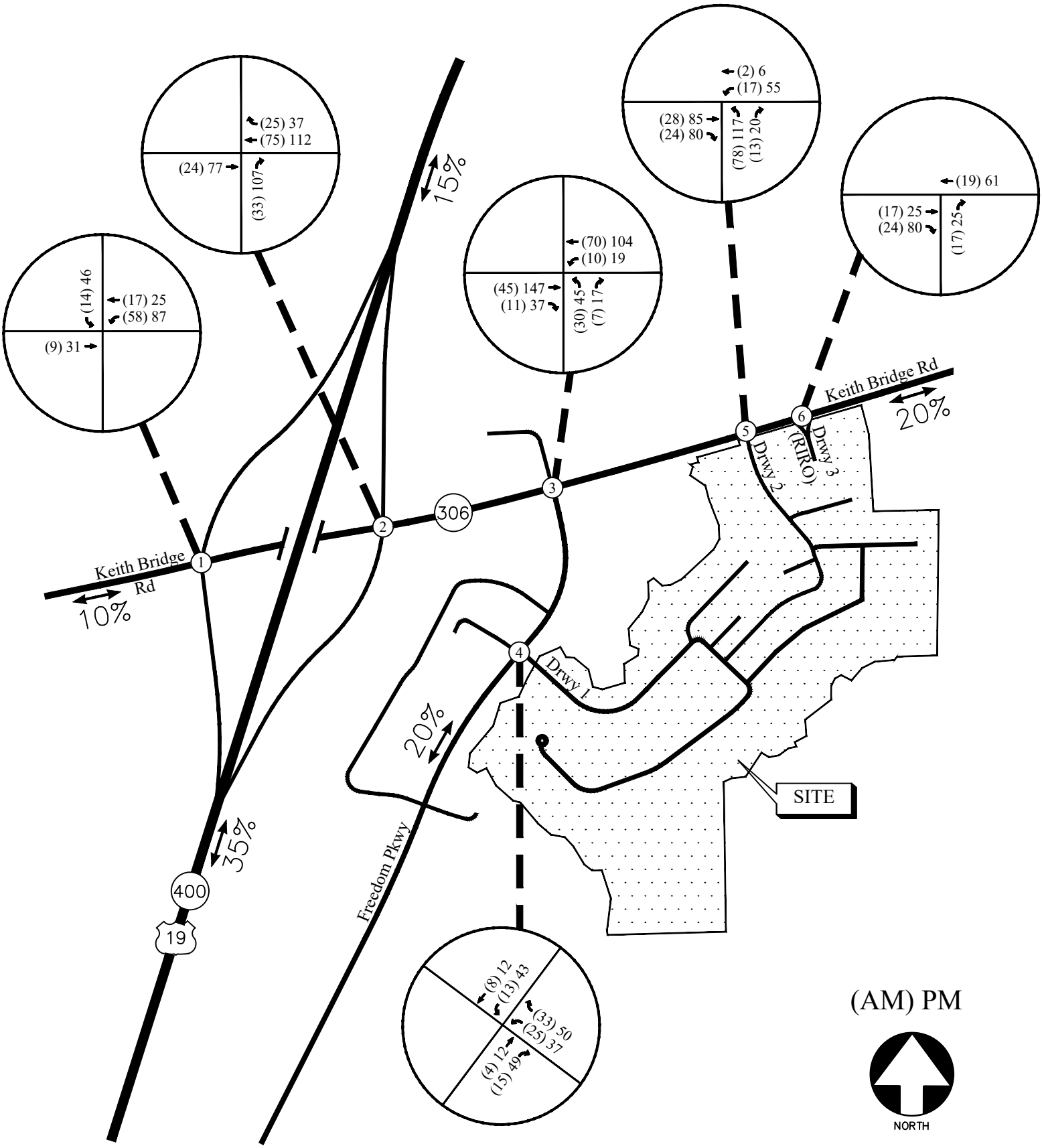
Trip generation estimates for the project were based on the rates and equations published in the 11th edition of the Institute of Transportation Engineers (ITE) Trip Generation report. This reference contains traffic volume count data collected at similar facilities nationwide. The trip generation was based on the following ITE Land Uses: *210 – Single-Family Detached Housing, 215 – Single-Family Attached Housing, 221 – Multifamily Housing (Mid-Rise) - Not Close to Rail Transit, 710 – General Office Building, 822 – Strip Retail Plaza (<40k)* and *930 – Fast Casual Restaurant.* Due to the nature of the development mixed-use reductions have been applied per ITE standards. A 4% alternate mode reduction was also applied. The calculated total trip generation for the proposed development is shown in Table 4.

TABLE 4 – TRIP GENERATION

Land Use	Size	AM Peak Hour			PM Peak Hour			24-Hour
		Enter	Exit	Total	Enter	Exit	Total	2-way
ITE 210 – Single-Family Detached Housing	60 Units	12	35	47	38	23	61	631
Mixed-Use Reduction		-1	-1	-2	-6	-5	-11	-66
ITE 215 – Single-Family Attached Housing	69 Units	9	21	30	21	16	37	475
Mixed-Use Reduction		-1	-1	-2	-5	-4	-9	-50
ITE 221 – Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	303 Units	28	94	122	72	47	119	1,399
Mixed-Use Reduction		-1	-1	-2	-13	-12	-25	-146
ITE 710 – General Office Building	13,000 SF	25	4	29	5	26	31	197
Mixed-Use Reduction		-1	-1	-2	-2	-6	-8	-39
ITE 822 – Strip Retail Plaza (<40k)	10,000 SF	17	12	29	39	39	78	652
Mixed-Use Reduction		-1	-1	-2	-7	-6	-13	-75
ITE 930 – Fast Casual Restaurant	20,000 SF	14	15	29	189	154	343	1,943
Mixed-Use Reduction		-3	-3	-6	-19	-19	-38	-222
Alternate Mode of Reduction (4%)		-3	-6	-10	-6	-5	-10	-119
Total Site Trips (without Reductions)		**105**	**181**	**286**	**364**	**305**	**669**	**5,297**
New External Site Trips (with Reductions)		**94**	**167**	**260**	**306**	**248**	**555**	**4,580**

Trip Distribution

The trip distribution describes how traffic arrives and departs from the site. An overall trip distribution was developed for the site based on a review of GDOT ADT volumes and the locations of major roadways and highways that will serve the development. The site-generated peak hour traffic volumes, shown in Table 4, were assigned to the study area intersections based on this distribution. The outer-leg distribution and AM and PM peak hour new traffic generated by the site are shown in Figure 5.



TRIP DISTRIBUTION AND NEW SITE-GENERATED WEEKDAY PEAK HOUR VOLUMES

FIGURE 5

A&R Engineering Inc.

FUTURE 2025 TRAFFIC ANALYSIS

The future 2025 traffic operations are analyzed for the "Build" and "No-Build" conditions. This provides a basis of reference for determining both the contribution of the site to overall traffic conditions and the additional improvements needed to provide sufficient site access and capacity for passing traffic. Note that survey and construction drawings would be needed to verify the feasibility and extent of additional right-of-way required for any recommended improvements.

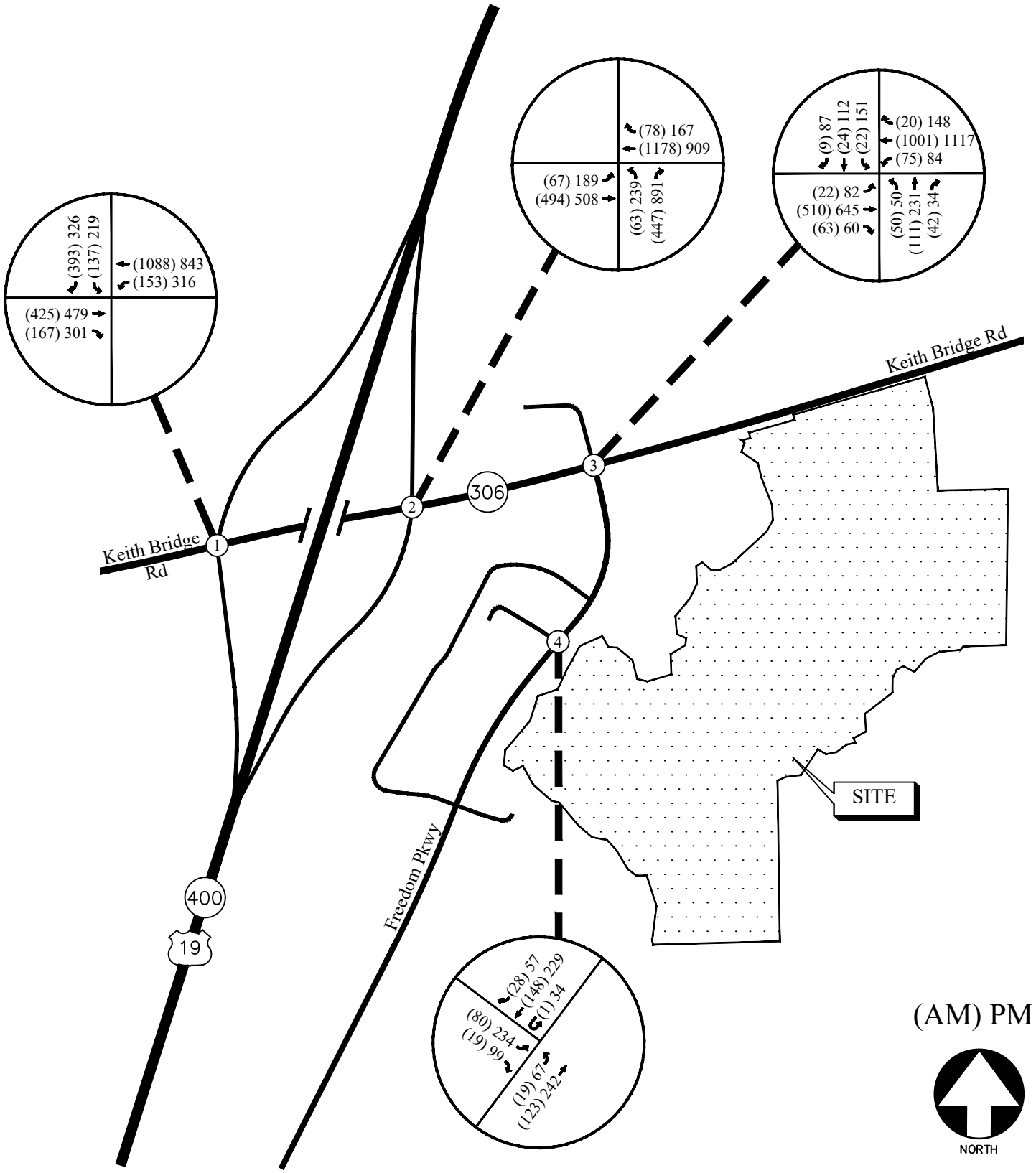
Improvements that are identified as "System Improvements" address deficiencies that are found within the existing road network prior to any impacts from the proposed development's added traffic. Improvements that are identified as "Site Mitigation Improvements" address further impacts that are a result of the proposed development's added traffic.

Future "No-Build" Conditions

The "No-Build" (or background) conditions provide an assessment of how traffic will operate in the study horizon year without the study site being developed as proposed, with projected increases in through traffic volumes due to normal annual growth and due to other planned developments in the area. The Future "No-Build" volumes consist of the existing traffic volumes (Figure 2) plus increases for annual growth of traffic and traffic from other planned developments.

Annual Traffic Growth

In order to evaluate future traffic operations in this area, a projection of normal traffic growth was applied to the existing volumes. The Georgia Department of Transportation recorded average daily traffic volumes at several locations in the vicinity of the site. Reviewing the growth over the last three (2017-2019) years revealed growth of approximately 1.7% in the area. This growth factor was applied to the existing traffic volumes to estimate the future year traffic volumes prior to the addition of site-generated traffic. The resulting Future "No-Build" volumes on the roadway are shown in Figure 6.



FUTURE (NO-BUILD) WEEKDAY PEAK HOUR VOLUMES FIGURE 6

A&R Engineering Inc.

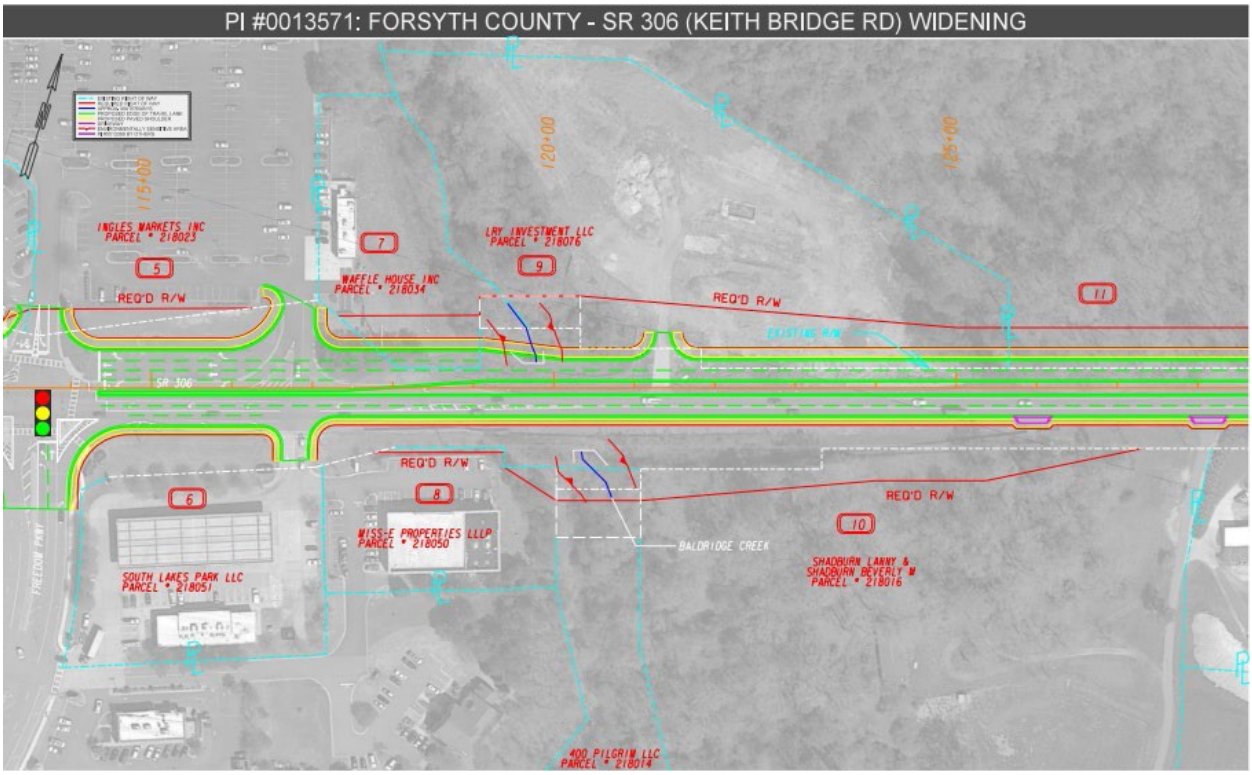
Planned and Programmed Improvements in Study Area

The following improvements have been identified in the Regional Transportation Plan (Plan 2040), GDOT GeoPi, and/or the local comprehensive transportation plan. These improvements are within the vicinity of the proposed development.

TABLE 5 – PLANNED AND PROGRAMMED IMPROVEMENTS

Item #	Project Name	From / To Points	Sponsor	GDOT PI #	ARC ID #	Design FY	ROW / UTL FY	CST FY
1	SR 306 (Keith Bridge Road): Segment 2	Widening from SR 400 to SR 369	GDOT	0013571	FT-306B	2018	2038	2038
2	Reconstruction and Rehabilitation of Ramps	SR 306 @ SR 400 Ramps	GDOT	001720	-	-	-	2021

GeoPI #0013571 Design:



Since the widening project from SR 400 to SR 369 is projected to be completed in 2038, the programmed project was not considered in the traffic analysis.

Future "No-Build" Traffic Operations

The future "No-Build" traffic operations were analyzed using the volumes in Figure 6 and the results are shown in Table 6.

TABLE 6 – FUTURE "NO-BUILD" INTERSECTION OPERATIONS

Intersection		Intersection			
		NO IMPROVEMENTS		SYSTEM IMPROVEMENTS	
		AM Peak	PM Peak	AM Peak	PM Peak
1	**SR 306 (Keith Bridge Road) @ GA 400 SB Ramps**	**D (42.6)**	**C (22.8)**	**D (42.6)**	**C (22.8)**
	-Eastbound Approach	B (15.9)	B (16.7)	B (15.9)	B (16.7)
	-Westbound Approach	D (47.5)	B (14.5)	D (47.5)	B (14.5)
	-Southbound Approach	D (52.4)	D (45.8)	D (52.4)	D (45.8)
2	**SR 306 (Keith Bridge Road) @ GA 400 NB Ramps**	**B (10.8)**	**C (26.4)**	**B (11.1)**	**C (20.9)**
	-Eastbound Approach	A (0.9)	A (6.2)	A (0.9)	A (4.9)
	-Westbound Approach	A (0.5)	C (27.1)	A (1.1)	B (11.6)
	-Northbound Approach	D (45.5)	D (38.3)	D (45.5)	D (38.3)
3	**SR 306 (Keith Bridge Road) @ Freedom Parkway**	**B (19.8)**	**E (56.5)**	**B (11.0)**	**B (19.9)**
	-Eastbound Approach	A (1.9)	C (23.7)	A (0.5)	A (2.9)
	-Westbound Approach	C (23.3)	E (65.4)	A (9.3)	C (21.1)
	-Northbound Approach	D (48.0)	E (78.4)	D (48.0)	D (44.4)
	-Southbound Approach	D (43.4)	E (77.7)	D (43.4)	C (34.0)
4	**Freedom Parkway @ Kroger Driveway**	**B (13.3)**	**B (18.2)**	**B (13.3)**	**B (18.2)**
	-Eastbound Approach	D (46.6)	D (38.7)	D (46.6)	D (38.7)
	-Northbound Approach	A (1.9)	A (5.0)	A (1.9)	A (5.0)
	-Southbound Approach	A (3.7)	A (8.6)	A (3.7)	A (8.6)

The results of future "No-Build" traffic operations show that the following intersection has LOS "E" for one or more approaches in the PM peak hour:

- Intersection 3: SR 306 @ Freedom Parkway

Recommended System Improvements

The following are system improvements that were identified from the "No-Build" condition analysis.

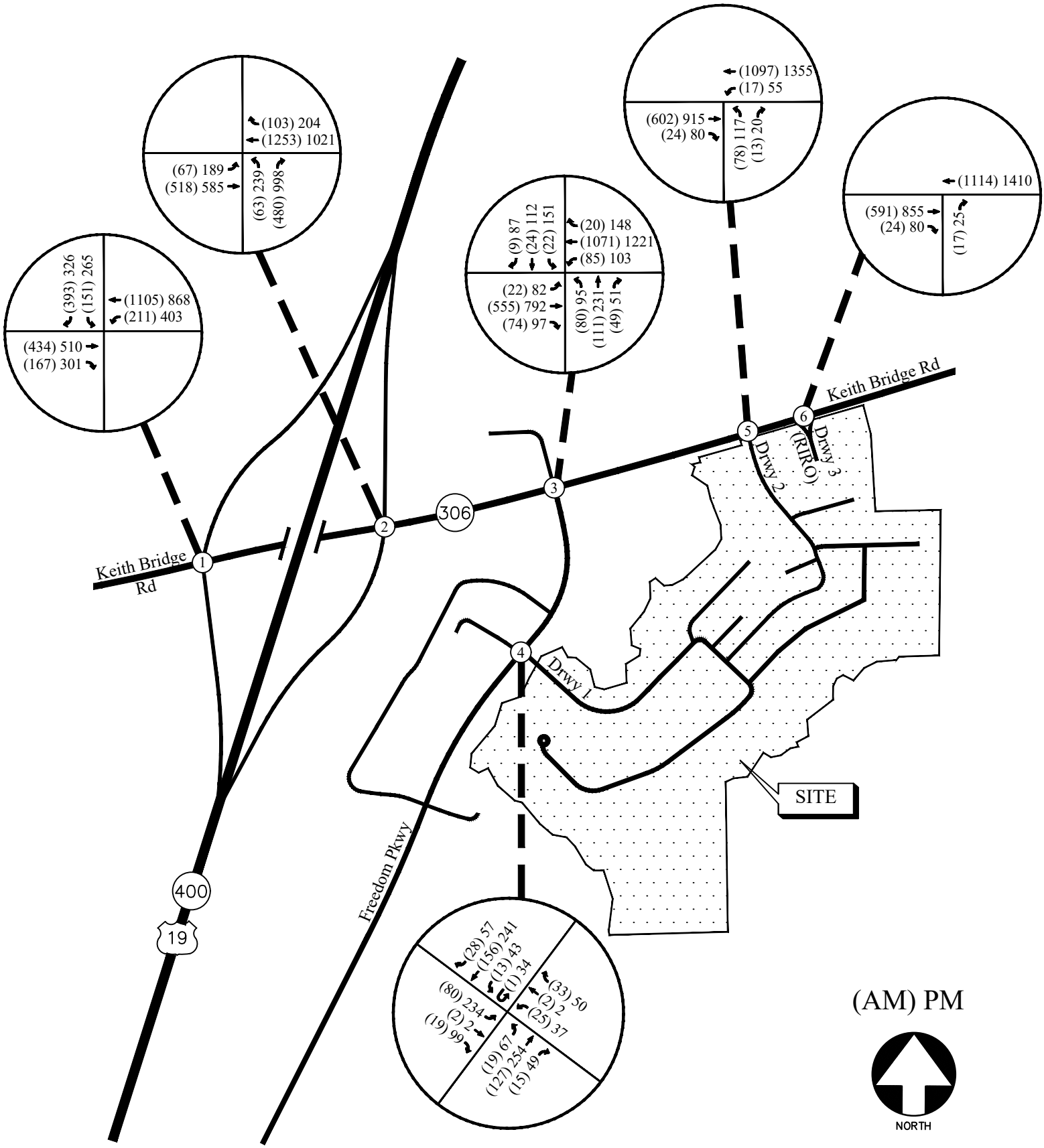
Intersection 3: SR 306 (Keith Bridge Road) @ Freedom Parkway

- Addition of an eastbound through lane on SR 306 (Keith Bridge Road)
- Addition of a westbound through lane on SR 306 (Keith Bridge Road)

After the recommended system improvements are implemented, the intersection of SR 306 at Freedom Parkway will operate at LOS "D" or better in both the AM and PM peak hours.

Future "Build" Conditions

The "Build" or development conditions include the estimated background traffic from the "No-Build" conditions plus the added traffic from the proposed development. In order to evaluate future traffic operations in this area, the additional traffic volumes from the site (Figures 5) were added to base traffic volumes (Figure 6) to calculate the future traffic volumes after the construction of the development. These total future traffic volumes are shown in Figure 7.



FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES FIGURE 7

A&R Engineering Inc.

Auxiliary Lane Analysis

Included below are analyses for left-turn lanes and deceleration lanes for all site driveways per GDOT standards. The analyses below are based off the trip distribution included in the "Trip Distribution" section. According to the trip distribution, the total 24-hour two-way volume entering and exiting the site is 5,297 vehicles. The AADT on Freedom Parkway is assumed to be less than 10,000 vehicles based on the GDOT volumes on the surrounding roadways.

Left Turn Lane Analysis

For four lane roadways with AADT's less than 10,000 vehicles and a posted speed limit of 45 mph, the daily site generated traffic left-turn movements threshold to warrant a left-turn lane is 325 left-turning vehicles a day. For two lane roadways with AADT's greater than 6,000 vehicles and a posted speed limit of 50 mph, the daily site generated traffic left-turn movements threshold to warrant a left-turn lane is 175 left-turning vehicles a day. The projected left-turn volumes per day for each driveway is included in Table 7.

TABLE 7 – GDOT REQUIREMENTS FOR LEFT TURN LANES

Intersection	Left turn traffic (% total entering)	Left-turn Volume (vehicles/day)	Roadway Speed/ # lanes / ADT	GDOT Threshold (vehicles/ day)	Warrants met?
Freedom Pkwy @ Kroger Driveway / Site Driveway 1	14% (Southbound)	**321** (total trips) ÷ 2 × 0.14 = (4,580*) ÷ 2 x 0.14 = 321	45 mph / 4-Lane / < 10,000	325	No
SR 306 (Keith Bridge Rd) @ Site Driveway 2	18% (Westbound)	**412** (total trips) ÷ 2 × 0.18 = (4,580*) ÷ 2 x 0.18 = 412	50 mph / 2-Lane / > 6,000	175	Yes

* Mixed use and alternate mode reductions not included

Per GDOT standards, a left turn lane is not warranted at Site Driveway 1 on Freedom Parkway but is warranted at Site Driveway 2 on SR 306 (Keith Bridge Road). Given the speed limit, number of lanes, and number of left turns, it is recommended that a left turn lane is also provided at Site Driveway 1.

Deceleration Turn Lane Analysis

The daily site generated traffic right-turn movements threshold to warrant a deceleration lane is 150 right turning vehicles a day for four lane roadways with AADT's less than 10,000 vehicles and a posted speed limit of 45 mph and for two lane roadways with AADT's greater than 6,000 vehicles and a posted speed limit of 50 mph. The projected right-turn volumes per day for each driveway is included in Table 8.

TABLE 8 – GDOT REQUIREMENTS FOR DECELERATION LANES

Intersection	Right-turn traffic (% total entering)	Right-turn Volume (vehicles/day)	Roadway Speed/ # lanes / ADT	GDOT Threshold (vehicles/day)	Warrants met?
Freedom Pkwy @ Kroger Driveway / Site Driveway 1	16% (Northbound)	**366** (total trips) ÷ 2 × 0.16 = (4,580*) ÷ 2 x 0.16 = 366	45 mph / 4-Lane / < 10,000	150	Yes
SR 306 (Keith Bridge Rd) @ Site Driveway 2	26% (Eastbound)	**595** (total trips) ÷ 2 × 0.26 = (4,580*) ÷ 2 x 0.26 = 595	50 mph / 2-Lane / > 6,000	150	Yes
SR 306 (Keith Bridge Rd) @ Site Driveway 3 (RIRO)	26% (Eastbound)	**595** (total trips) ÷ 2 × 0.26 = (4,580*) ÷ 2 x 0.26 = 595	50 mph / 2-Lane / > 6,000	150	Yes

* Mixed use and alternate mode reductions not included

A deceleration lane is warranted at all the three proposed site driveways per GDOT standards.

Future "Build" Traffic Operations

The future "Build" traffic operations were analyzed using the volumes in Figure 7. The results of the future "Build" traffic operations analysis are shown in Table 9.

TABLE 9 – FUTURE "BUILD" INTERSECTION OPERATIONS

	Intersection	Build Condition: LOS (Delay)					
		NO IMPROVEMENTS		SYSTEM IMPROVEMENTS ONLY		SYSTEM AND SITE IMPROVEMENTS	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1	**SR 306 (Keith Bridge Road) @ GA 400 SB Ramps**	**D (45.5)**	**C (23.4)**	**D (45.5)**	**C (23.4)**	**D (45.5)**	**C (23.4)**
	-Eastbound Approach	B (17.2)	B (18.8)	B (17.2)	B (18.8)	B (17.2)	B (18.8)
	-Westbound Approach	D (52.3)	B (15.0)	D (52.3)	B (15.0)	D (52.3)	B (15.0)
	-Southbound Approach	D (51.8)	D (45.5)	D (51.8)	D (45.5)	D (51.8)	D (45.5)
2	**SR 306 (Keith Bridge Road) @ GA 400 NB Ramps**	**B (11.2)**	**C (30.7)**	**B (11.6)**	**C (26.0)**	**B (11.6)**	**C (26.0)**
	-Eastbound Approach	A (0.9)	A (8.2)	A (0.9)	A (6.9)	A (0.9)	A (6.9)
	-Westbound Approach	A (0.5)	C (31.8)	A (1.3)	B (18.9)	A (1.3)	B (18.9)
	-Northbound Approach	D (46.8)	D (43.7)	D (46.8)	D (43.7)	D (46.8)	D (43.7)
3	**SR 306 (Keith Bridge Road) @ Freedom Parkway**	**C (25.9)**	**E (72.5)**	**B (11.5)**	**C (20.4)**	**A (6.2)**	**B (10.8)**
	-Eastbound Approach	A (2.3)	C (27.4)	A (0.6)	A (3.3)	A (0.5)	A (2.7)
	-Westbound Approach	C (33.6)	F (97.7)	B (10.1)	C (23.0)	A (1.1)	A (4.1)
	-Northbound Approach	D (45.4)	E (74.3)	D (45.4)	D (42.6)	D (45.4)	D (42.6)
	-Southbound Approach	D (44.5)	E (79.6)	D (44.5)	D (35.5)	D (44.5)	D (35.5)
4	**Freedom Parkway @ Kroger Driveway / Site Driveway 1**	**B (14.8)**	**B (17.8)**	**B (14.8)**	**B (17.9)**	**B (14.8)**	**B (17.9)**
	-Eastbound Approach	D (40.3)	C (32.7)	D (40.3)	C (32.7)	D (40.3)	C (32.7)
	-Westbound Approach	D (37.0)	C (27.0)	D (37.0)	C (27.0)	D (37.0)	C (27.0)
	-Northbound Approach	A (2.8)	A (7.8)	A (2.8)	A (7.8)	A (2.8)	A (7.8)
	-Southbound Approach	A (5.0)	B (12.3)	A (5.0)	B (12.3)	A (5.0)	B (12.3)
5	**SR 306 (Keith Bridge Road) @ Site Driveway 2**					**A (4.4)**	**A (5.2)**
	-Eastbound Approach	-	-	-	-	A (0.2)	A (0.3)
	-Westbound Left / *Approach*	A (9.0)	B (11.2)	A (9.0)	B (11.2)	A (2.7)	A (4.2)
	-Northbound Approach	F (203.1)	F (*)	E (48.1)	F (*)	D (53.5)	D (51.0)
6	**SR 306 (Keith Bridge Road) @ Site Driveway 3 (RIRO)**						
	-Northbound Approach	B (12.9)	C (17.1)	B (10.5)	B (12.0)	B (10.5)	B (12.0)

* Delay exceeds 300 seconds

The results of future "Build" traffic operations show that after the addition of site traffic the following intersection will continue to have LOS "E" or "F" for one or more approaches:

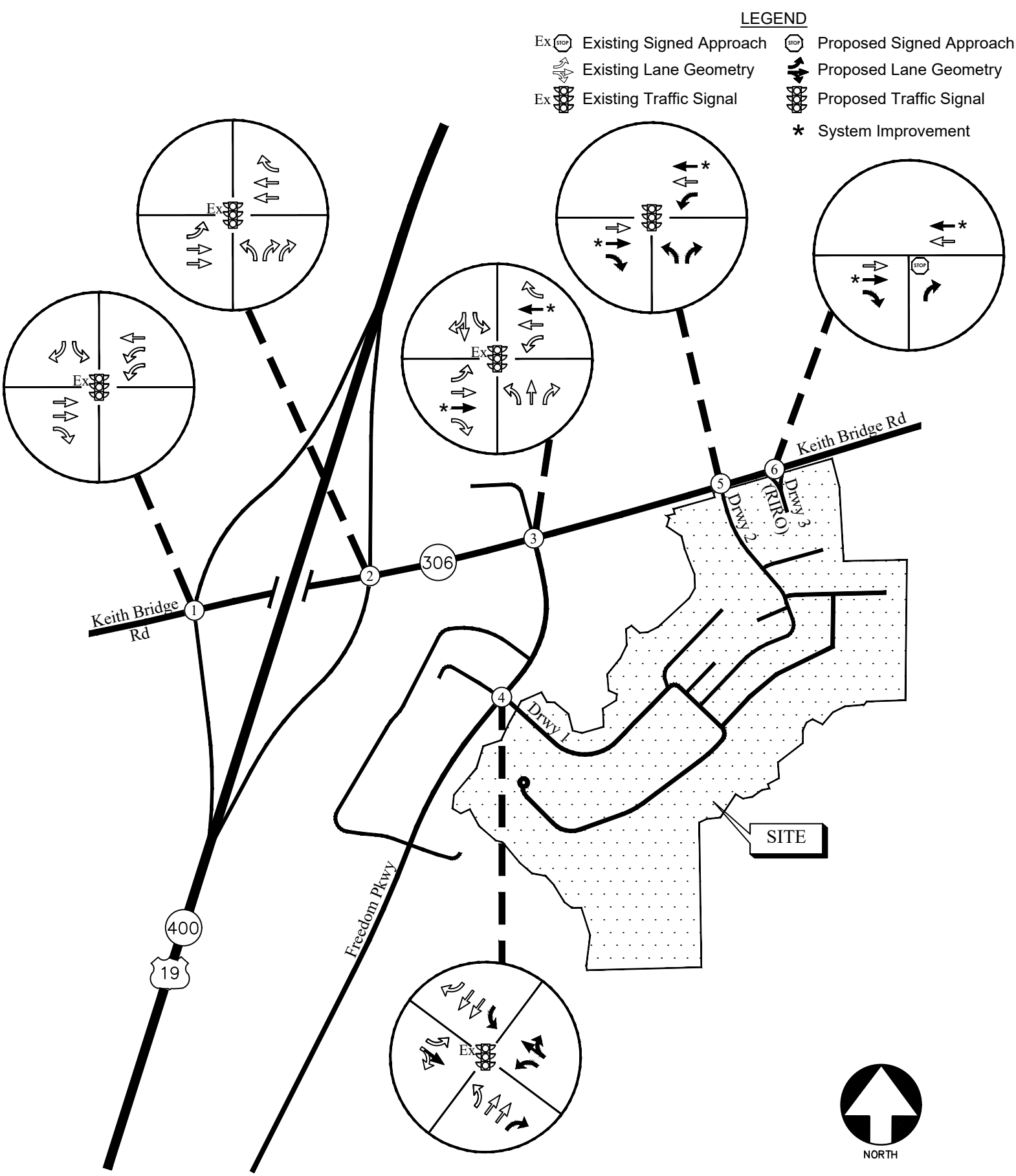
- SR 306 @ Freedom Parkway

After the recommended system improvements are implemented, the intersection of SR 306 at Freedom Parkway will operate at LOS "D" or better in both the AM and PM peak hours.

SR 306 (Keith Bridge Road) @ Site Driveway 2

The stop-controlled northbound (site driveway 2) approach to the unsignalized intersection of SR 306 @ Site Driveway 2 will operate at LOS "F" in both the AM and PM peak hours. After the addition of eastbound and westbound through lanes on SR 306 as a system improvement, it will operate at LOS "E" in the AM peak hour and at LOS "F" in the PM peak hour. A traffic signal is recommended at this intersection as a site mitigation improvement. With a traffic signal, the intersection will operate at LOS "D" or better in both the AM and PM peak hours.

Recommendations for future traffic control and lane geometry are shown in Figure 8.



FUTURE TRAFFIC CONTROL AND LANE GEOMETRY FIGURE 8

A&R Engineering Inc.

CONCLUSIONS AND RECOMMENDATIONS

Traffic impacts were evaluated for the proposed EMPIRE mixed-use development located to the southeast of the intersection of SR 306 (Keith Bridge Road) and Freedom Parkway in Forsyth County, Georgia.

The development proposes one full access and one right-in/right-out driveways on SR 306 (Keith Bridge Road) as well as one full access driveway on Freedom Parkway. The driveway on Freedom Parkway will align with the existing Kroger's signalized driveway.

The AM and PM peak hours have been analyzed in this study. In addition to the site access points, this study includes the evaluation of traffic operations at the intersections of:

1. SR 306 (Keith Bridge Road) @ GA 400 Southbound Ramps
2. SR 306 (Keith Bridge Road) @ GA 400 Northbound Ramps
3. SR 306 (Keith Bridge Road) @ Freedom Parkway
4. Freedom Parkway @ Kroger Development's (signalized) driveway

The analysis included the evaluation of Future operations for "No-Build" and "Build" conditions, both of which account for increases in annual growth of through traffic. The results of future traffic operations showed that the intersection of SR 306 and Freedom Parkway will operate at LOS "E" or "F" for one or more approaches in the PM peak hour. After the recommended system improvements are implemented, the intersection will operate at LOS "D" or better in both the AM and PM peak hours.

SR 306 (Keith Bridge Road) @ Site Driveway 2

The stop-controlled northbound (site driveway 2) approach to the unsignalized intersection of SR 306 @ Site Driveway 2 will operate at LOS "F" in both the AM and PM peak hours. After the addition of eastbound and westbound through lanes on SR 306 as a system improvement, it will operate at LOS "E" in the AM peak hour and at LOS "F" in the PM peak hour. A traffic signal is recommended at this intersection as a site mitigation improvement. With a traffic signal, the intersection will operate at LOS "D" or better in both the AM and PM peak hours.

Recommended System Improvements

The following are system improvements that were identified from the "No-Build" condition analysis.

Intersection 3: SR 306 (Keith Bridge Road) @ Freedom Parkway

- Addition of an eastbound through lane on SR 306
- Addition of a westbound through lane on SR 306

Recommended Site Mitigation Improvements

Intersection 4: Freedom Parkway and Kroger Driveway / Proposed Driveway (Full Access)

- Addition of westbound leg to existing signalized intersection
- Provide sidewalk along site frontage on Freedom Parkway
- Provide crosswalks across Site Driveway 1

Intersection 5: SR 306 (Keith Bridge Road) and Site Driveway 2 (Full Access)

- One entering and two (separate left turn and right turn) exiting lanes
- Addition of a left-turn lane on SR 306 (Keith Bridge Road)
- Addition of a deceleration lane on SR 306 (Keith Bridge Road)
- Installation of a traffic signal if warranted

Intersection 6: SR 306 (Keith Bridge Road) and Site Driveway 3 (RIRO), east of Driveway 2

- Driveway approach to consist of one entering and one right-turn-only exiting lanes and to be stop-sign controlled
- Addition of deceleration lane on SR 306 (Keith Bridge Road)
- Provide crosswalk across driveway

Appendix

Existing Intersection Traffic Counts

A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
SR 306 @ GA 400 SB Ramps
7-9 am | 4-6 pm

File Name : 20220169
Site Code : 20220169
Start Date : 4/20/2022
Page No : 1

Groups Printed- Cars, Buses & Trucks

	GA 400 SB Ramps Northbound				GA 400 SB Ramps Southbound				SR 306 Eastbound				SR 306 Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	22	0	61	83	0	68	30	98	25	281	0	306	487
07:15 AM	0	0	0	0	27	0	84	111	0	80	50	130	35	231	0	266	507
07:30 AM	0	0	0	0	30	0	86	116	0	105	49	154	44	241	0	285	555
07:45 AM	0	0	0	0	35	0	111	146	0	119	42	161	37	270	0	307	614
Total	0	0	0	0	114	0	342	456	0	372	171	543	141	1023	0	1164	2163
08:00 AM	0	0	0	0	37	0	93	130	0	87	37	124	38	245	0	283	537
08:15 AM	0	0	0	0	28	0	84	112	0	93	31	124	27	279	0	306	542
08:30 AM	0	0	0	0	38	0	98	136	0	77	32	109	38	242	0	280	525
08:45 AM	0	0	0	0	47	0	92	139	0	61	33	94	34	231	0	265	498
Total	0	0	0	0	150	0	367	517	0	318	133	451	137	997	0	1134	2102
*** BREAK ***																	
04:00 PM	0	0	0	0	52	0	61	113	0	71	58	129	65	161	0	226	468
04:15 PM	0	0	0	0	48	0	38	86	0	76	44	120	64	174	0	238	444
04:30 PM	0	0	0	0	43	0	81	124	0	101	63	164	63	186	0	249	537
04:45 PM	0	0	0	0	49	0	88	137	0	113	68	181	65	198	0	263	581
Total	0	0	0	0	192	0	268	460	0	361	233	594	257	719	0	976	2030
05:00 PM	0	0	0	0	56	0	62	118	0	122	79	201	69	217	0	286	605
05:15 PM	0	0	0	0	53	0	83	136	0	126	71	197	84	210	0	294	627
05:30 PM	0	0	0	0	50	0	77	127	0	95	68	163	83	177	0	260	550
05:45 PM	0	0	0	0	49	0	63	112	0	89	53	142	84	157	0	241	495
Total	0	0	0	0	208	0	285	493	0	432	271	703	320	761	0	1081	2277
Grand Total	0	0	0	0	664	0	1262	1926	0	1483	808	2291	855	3500	0	4355	8572
Apprch %	0	0	0		34.5	0	65.5		0	64.7	35.3		19.6	80.4	0		
Total %	0	0	0	0	7.7	0	14.7	22.5	0	17.3	9.4	26.7	10	40.8	0	50.8	

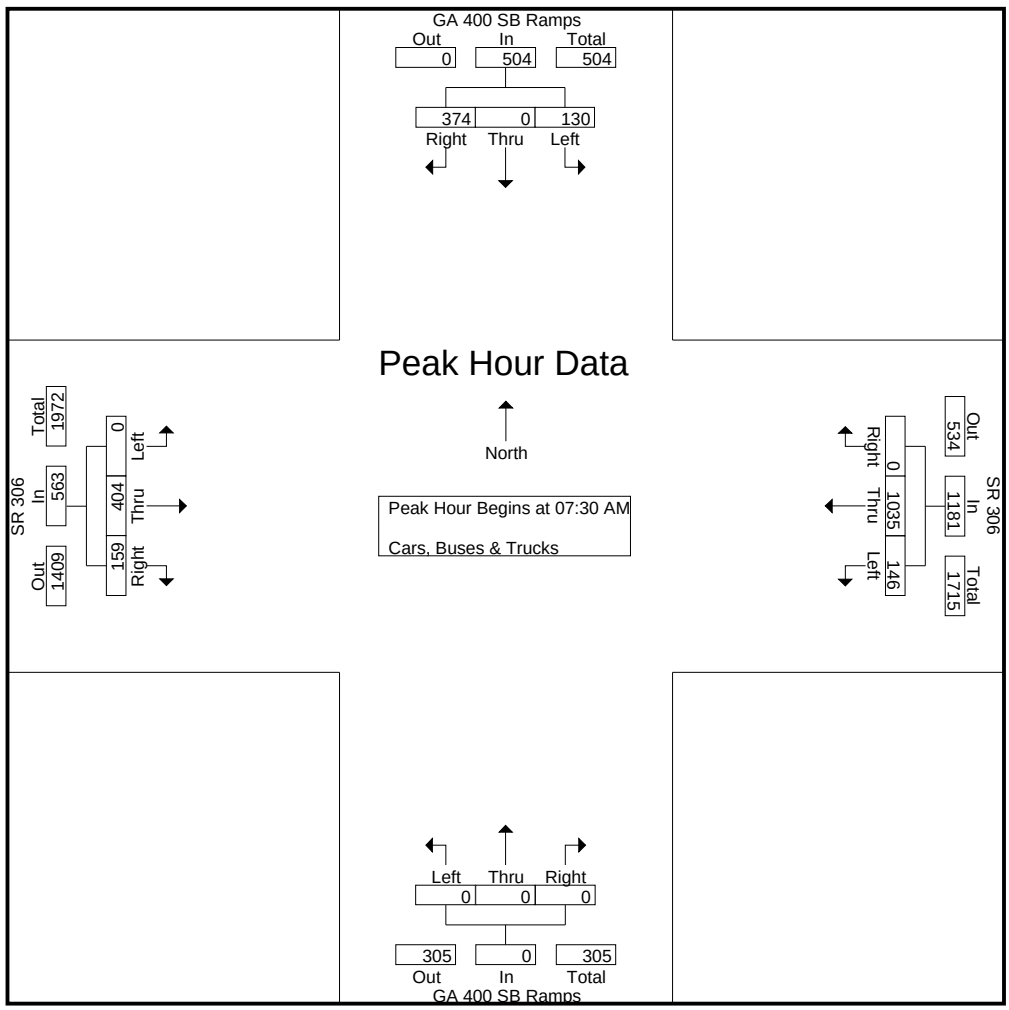
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
SR 306 @ GA 400 SB Ramps
7-9 am | 4-6 pm

File Name : 20220169
Site Code : 20220169
Start Date : 4/20/2022
Page No : 2

	GA 400 SB Ramps Northbound				GA 400 SB Ramps Southbound				SR 306 Eastbound				SR 306 Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	30	0	86	116	0	105	**49**	154	**44**	241	0	285	555
07:45 AM	0	0	0	0	35	0	**111**	**146**	0	**119**	42	**161**	37	270	0	**307**	**614**
08:00 AM	0	0	0	0	**37**	0	93	130	0	87	37	124	38	245	0	283	537
08:15 AM	0	0	0	0	28	0	84	112	0	93	31	124	27	**279**	0	306	542
Total Volume	0	0	0	0	130	0	374	504	0	404	159	563	146	1035	0	1181	2248
% App. Total	0	0	0		25.8	0	74.2		0	71.8	28.2		12.4	87.6	0		
PHF	.000	.000	.000	.000	.878	.000	.842	.863	.000	.849	.811	.874	.830	.927	.000	.962	.915



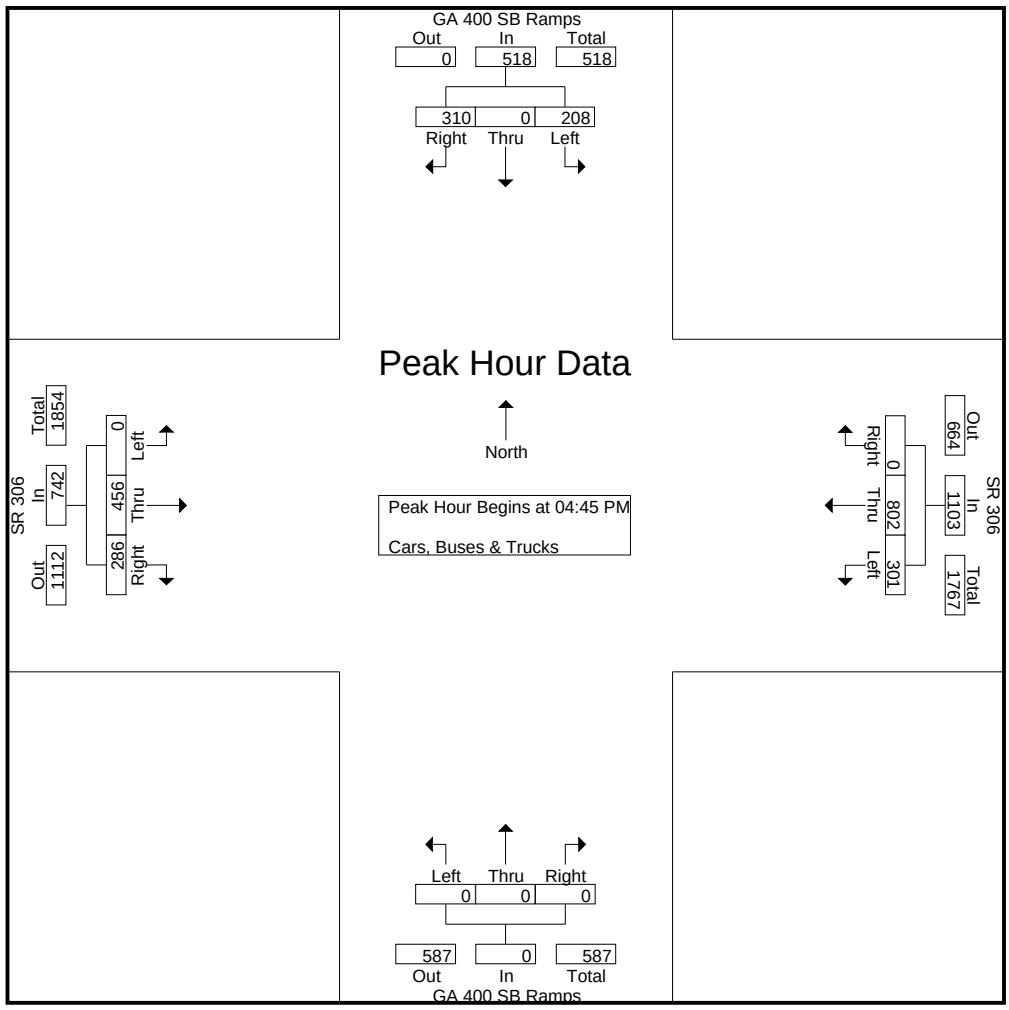
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
SR 306 @ GA 400 SB Ramps
7-9 am | 4-6 pm

File Name : 20220169
Site Code : 20220169
Start Date : 4/20/2022
Page No : 3

	GA 400 SB Ramps Northbound				GA 400 SB Ramps Southbound				SR 306 Eastbound				SR 306 Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	49	0	**88**	**137**	0	113	68	181	65	198	0	263	581
05:00 PM	0	0	0	0	**56**	0	62	118	0	122	**79**	**201**	69	**217**	0	286	605
05:15 PM	0	0	0	0	53	0	83	136	0	**126**	71	197	**84**	210	0	**294**	**627**
05:30 PM	0	0	0	0	50	0	77	127	0	95	68	163	83	177	0	260	550
Total Volume	0	0	0	0	208	0	310	518	0	456	286	742	301	802	0	1103	2363
% App. Total	0	0	0		40.2	0	59.8		0	61.5	38.5		27.3	72.7	0		
PHF	.000	.000	.000	.000	.929	.000	.881	.945	.000	.905	.905	.923	.896	.924	.000	.938	.942



A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC DATA
SR 306 @ GA 400 NB Ramps
7-9 am | 4-6 pm

File Name : 20220168
Site Code : 20220168
Start Date : 4/20/2022
Page No : 1

Groups Printed- Cars,Buses & Trucks

	GA 400 NB Ramps Northbound				GA 400 NB Ramps Southbound				SR 306 Eastbound				SR 306 Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	7	0	109	116	0	0	0	0	4	86	0	90	0	299	5	304	510
07:15 AM	7	0	105	112	0	0	0	0	12	95	0	107	0	259	11	270	489
07:30 AM	11	0	122	133	0	0	0	0	20	115	0	135	0	274	15	289	557
07:45 AM	18	0	100	118	0	0	0	0	17	137	0	154	0	289	16	305	577
Total	43	0	436	479	0	0	0	0	53	433	0	486	0	1121	47	1168	2133
08:00 AM	12	0	92	104	0	0	0	0	19	105	0	124	0	271	25	296	524
08:15 AM	19	0	111	130	0	0	0	0	8	113	0	121	0	287	18	305	556
08:30 AM	16	0	98	114	0	0	0	0	11	104	0	115	0	264	15	279	508
08:45 AM	13	0	95	108	0	0	0	0	9	99	0	108	0	252	13	265	481
Total	60	0	396	456	0	0	0	0	47	421	0	468	0	1074	71	1145	2069
*** BREAK ***																	
04:00 PM	41	0	191	232	0	0	0	0	33	90	0	123	0	185	24	209	564
04:15 PM	47	0	203	250	0	0	0	0	38	86	0	124	0	191	29	220	594
04:30 PM	52	0	211	263	0	0	0	0	46	98	0	144	0	197	36	233	640
04:45 PM	58	0	216	274	0	0	0	0	43	119	0	162	0	205	34	239	675
Total	198	0	821	1019	0	0	0	0	160	393	0	553	0	778	123	901	2473
05:00 PM	64	0	225	289	0	0	0	0	51	127	0	178	0	222	48	270	737
05:15 PM	53	0	196	249	0	0	0	0	40	139	0	179	0	241	41	282	710
05:30 PM	40	0	182	222	0	0	0	0	35	110	0	145	0	220	30	250	617
05:45 PM	38	0	173	211	0	0	0	0	32	106	0	138	0	203	21	224	573
Total	195	0	776	971	0	0	0	0	158	482	0	640	0	886	140	1026	2637
Grand Total	496	0	2429	2925	0	0	0	0	418	1729	0	2147	0	3859	381	4240	9312
Apprch %	17	0	83		0	0	0		19.5	80.5	0		0	91	9		
Total %	5.3	0	26.1	31.4	0	0	0	0	4.5	18.6	0	23.1	0	41.4	4.1	45.5	

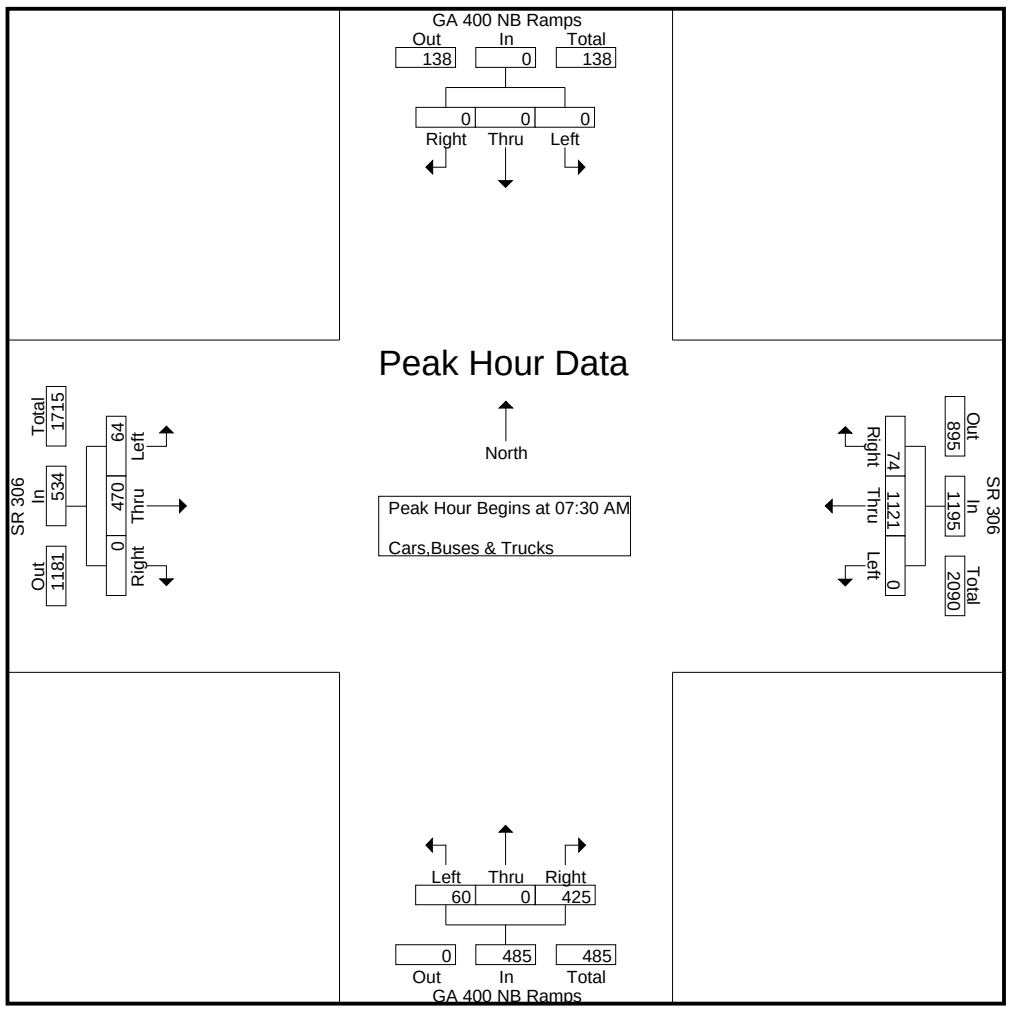
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC DATA
SR 306 @ GA 400 NB Ramps
7-9 am | 4-6 pm

File Name : 20220168
Site Code : 20220168
Start Date : 4/20/2022
Page No : 2

	GA 400 NB Ramps Northbound				GA 400 NB Ramps Southbound				SR 306 Eastbound				SR 306 Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	11	0	**122**	**133**	0	0	0	0	**20**	115	0	135	0	274	15	289	557
07:45 AM	18	0	100	118	0	0	0	0	17	**137**	0	**154**	0	**289**	16	**305**	**577**
08:00 AM	12	0	92	104	0	0	0	0	19	105	0	124	0	271	**25**	296	524
08:15 AM	**19**	0	111	130	0	0	0	0	8	113	0	121	0	287	18	305	556
Total Volume	60	0	425	485	0	0	0	0	64	470	0	534	0	1121	74	1195	2214
% App. Total	12.4	0	87.6		0	0	0		12	88	0		0	93.8	6.2		
PHF	.789	.000	.871	.912	.000	.000	.000	.000	.800	.858	.000	.867	.000	.970	.740	.980	.959



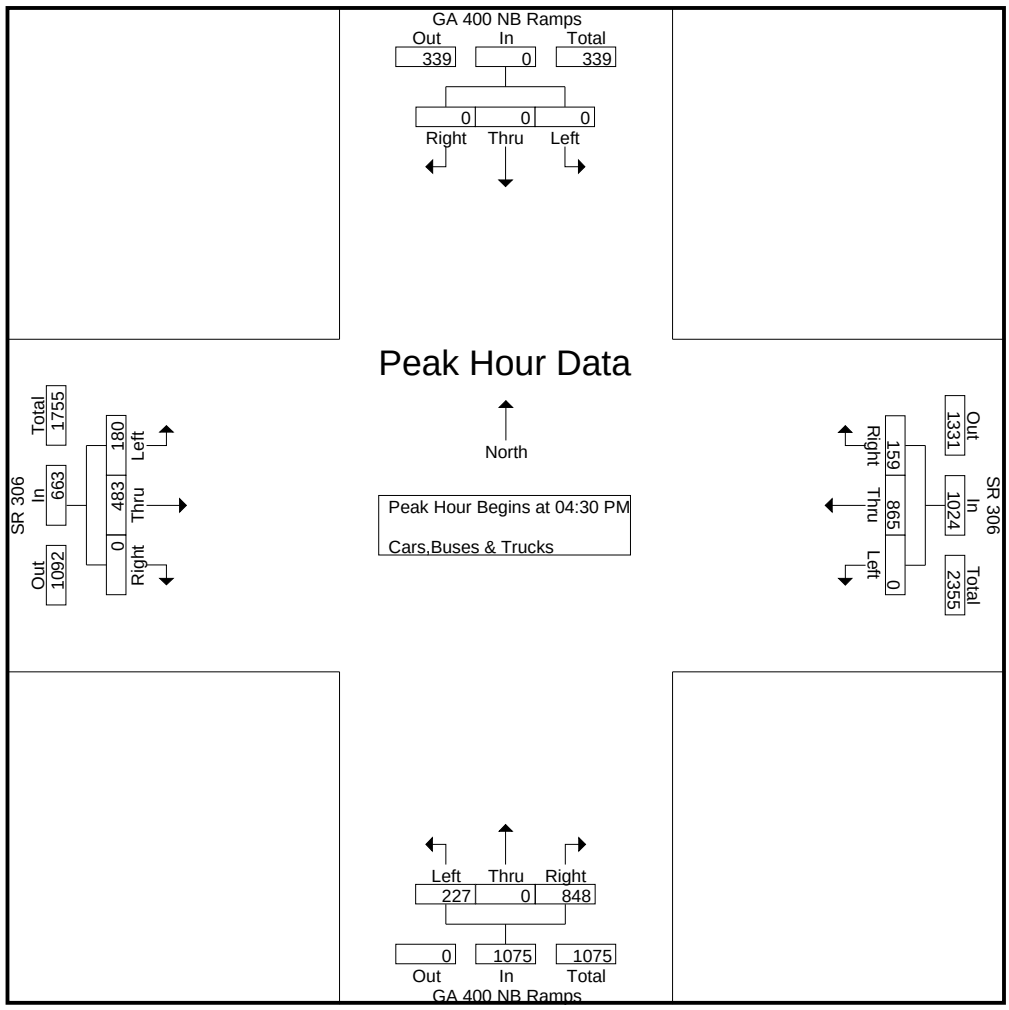
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC DATA
SR 306 @ GA 400 NB Ramps
7-9 am | 4-6 pm

File Name : 20220168
Site Code : 20220168
Start Date : 4/20/2022
Page No : 3

	GA 400 NB Ramps Northbound				GA 400 NB Ramps Southbound				SR 306 Eastbound				SR 306 Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	52	0	211	263	0	0	0	0	46	98	0	144	0	197	36	233	640
04:45 PM	58	0	216	274	0	0	0	0	43	119	0	162	0	205	34	239	675
05:00 PM	**64**	0	**225**	**289**	0	0	0	0	**51**	127	0	178	0	222	**48**	270	**737**
05:15 PM	53	0	196	249	0	0	0	0	40	**139**	0	**179**	0	**241**	41	**282**	710
Total Volume	227	0	848	1075	0	0	0	0	180	483	0	663	0	865	159	1024	2762
% App. Total	21.1	0	78.9		0	0	0		27.1	72.9	0		0	84.5	15.5		
PHF	.887	.000	.942	.930	.000	.000	.000	.000	.882	.869	.000	.926	.000	.897	.828	.908	.937



A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
SR 306 (Keith Bridge Rd) @ Freedom Pkwy
7-9 am | 4-6 pm

File Name : 20220167
Site Code : 20220167
Start Date : 4/20/2022
Page No : 1

Groups Printed- Cars,Buses & Trucks

	Freedom Pkwy Northbound				Ingles Markets Drwy Southbound				SR 306 (Keith Bridge Rd) Eastbound				SR 306 (Keith Bridge Rd) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	7	29	6	42	1	1	1	3	1	90	8	99	17	206	9	232	376
07:15 AM	5	31	9	45	3	3	0	6	3	96	12	111	19	210	13	242	404
07:30 AM	9	25	8	42	5	3	2	10	5	118	16	139	16	229	4	249	440
07:45 AM	11	27	12	50	5	5	3	13	5	145	18	168	15	235	6	256	487
Total	32	112	35	179	14	12	6	32	14	449	54	517	67	880	32	979	1707
08:00 AM	12	33	11	56	5	8	2	15	5	106	11	122	19	237	4	260	453
08:15 AM	16	21	9	46	6	7	2	15	6	116	15	137	21	251	5	277	475
08:30 AM	8	21	10	39	4	11	1	16	4	111	11	126	19	230	4	253	434
08:45 AM	5	26	9	40	4	9	2	15	4	103	9	116	21	221	6	248	419
Total	41	101	39	181	19	35	7	61	19	436	46	501	80	939	19	1038	1781
*** BREAK ***																	
04:00 PM	5	39	5	49	21	15	9	45	9	106	10	125	21	247	16	284	503
04:15 PM	13	47	9	69	26	17	11	54	11	122	10	143	26	253	19	298	564
04:30 PM	14	51	7	72	29	19	13	61	16	130	16	162	28	259	25	312	607
04:45 PM	11	55	5	71	33	23	18	74	21	146	15	182	21	264	29	314	641
Total	43	192	26	261	109	74	51	234	57	504	51	612	96	1023	89	1208	2315
05:00 PM	8	61	8	77	38	25	17	80	25	161	11	197	19	267	32	318	672
05:15 PM	14	56	8	78	41	27	23	91	19	167	14	200	23	279	38	340	709
05:30 PM	15	48	11	74	32	32	25	89	13	140	17	170	17	253	42	312	645
05:45 PM	12	41	13	66	28	32	20	80	12	132	26	170	15	240	29	284	600
Total	49	206	40	295	139	116	85	340	69	600	68	737	74	1039	141	1254	2626
Grand Total	165	611	140	916	281	237	149	667	159	1989	219	2367	317	3881	281	4479	8429
Apprch %	18	66.7	15.3		42.1	35.5	22.3		6.7	84	9.3		7.1	86.6	6.3		
Total %	2	7.2	1.7	10.9	3.3	2.8	1.8	7.9	1.9	23.6	2.6	28.1	3.8	46	3.3	53.1	

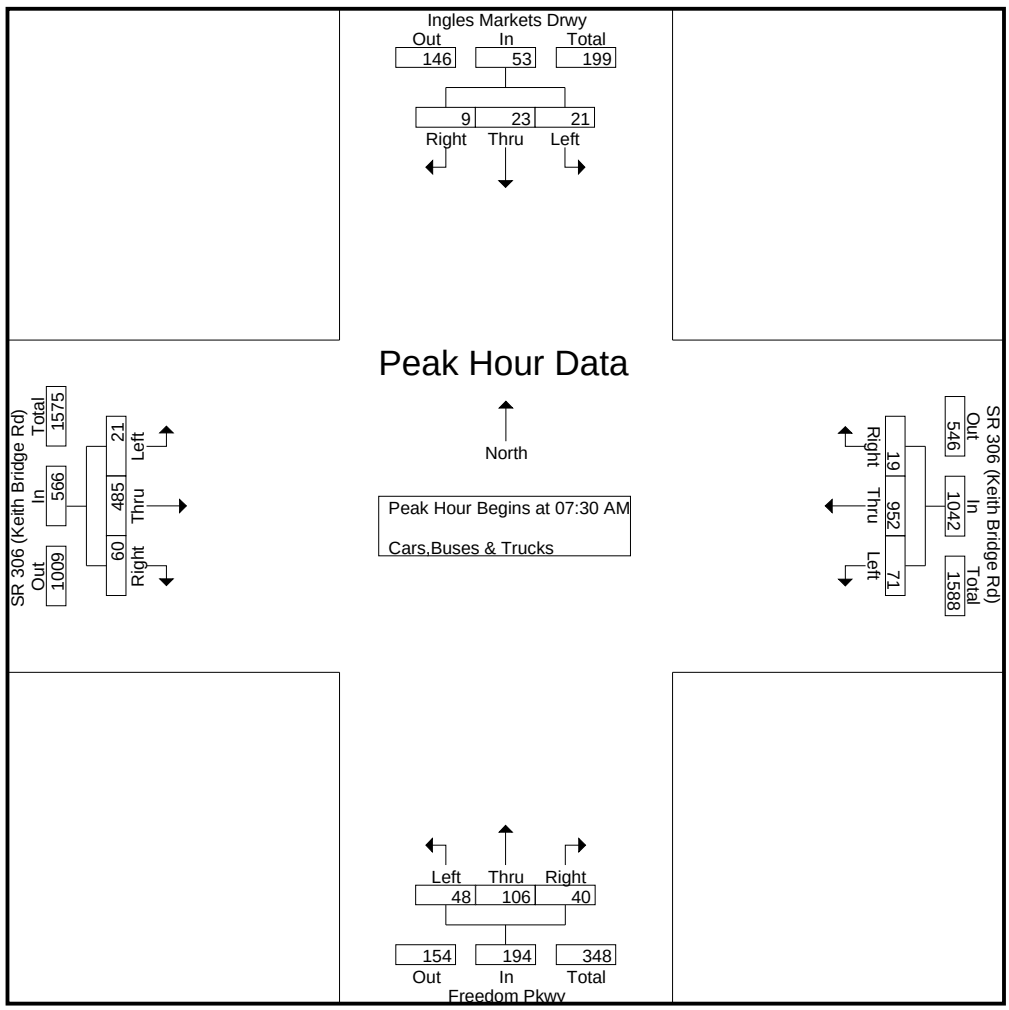
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
SR 306 (Keith Bridge Rd) @ Freedom Pkwy
7-9 am | 4-6 pm

File Name : 20220167
Site Code : 20220167
Start Date : 4/20/2022
Page No : 2

	Freedom Pkwy Northbound				Ingles Markets Drwy Southbound				SR 306 (Keith Bridge Rd) Eastbound				SR 306 (Keith Bridge Rd) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	9	25	8	42	5	3	2	10	5	118	16	139	16	229	4	249	440
07:45 AM	11	27	**12**	50	5	5	**3**	13	5	**145**	**18**	**168**	15	235	**6**	256	**487**
08:00 AM	12	**33**	11	**56**	5	**8**	2	**15**	5	106	11	122	19	237	4	260	453
08:15 AM	**16**	21	9	46	**6**	7	2	15	**6**	116	15	137	**21**	**251**	5	**277**	475
Total Volume	48	106	40	194	21	23	9	53	21	485	60	566	71	952	19	1042	1855
% App. Total	24.7	54.6	20.6		39.6	43.4	17		3.7	85.7	10.6		6.8	91.4	1.8		
PHF	.750	.803	.833	.866	.875	.719	.750	.883	.875	.836	.833	.842	.845	.948	.792	.940	.952



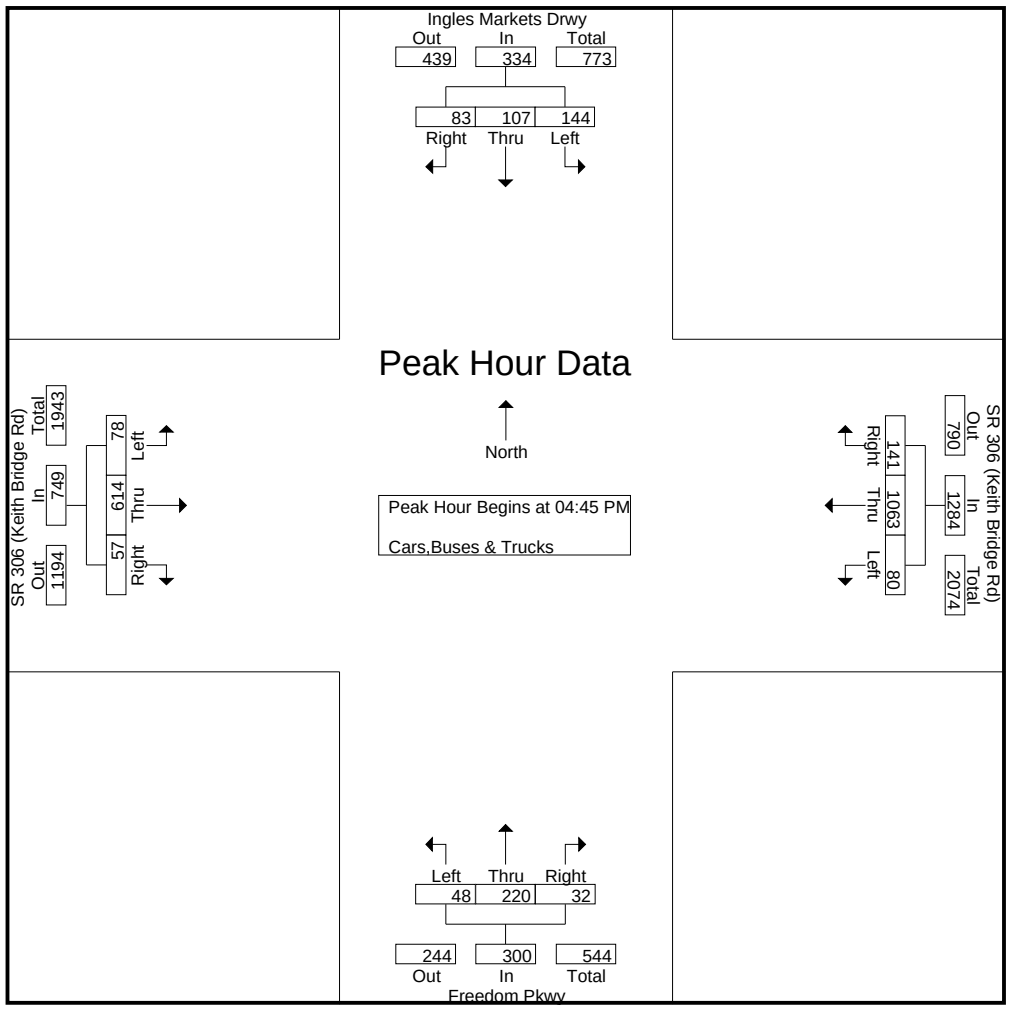
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
SR 306 (Keith Bridge Rd) @ Freedom Pkwy
7-9 am | 4-6 pm

File Name : 20220167
Site Code : 20220167
Start Date : 4/20/2022
Page No : 3

	Freedom Pkwy Northbound				Ingles Markets Drwy Southbound				SR 306 (Keith Bridge Rd) Eastbound				SR 306 (Keith Bridge Rd) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	11	55	5	71	33	23	18	74	21	146	15	182	21	264	29	314	641
05:00 PM	8	**61**	8	77	38	25	17	80	**25**	161	11	197	19	267	32	318	672
05:15 PM	14	56	8	**78**	**41**	27	23	**91**	19	**167**	14	**200**	**23**	**279**	38	**340**	**709**
05:30 PM	**15**	48	**11**	74	32	**32**	**25**	89	13	140	**17**	170	17	253	**42**	312	645
Total Volume	48	220	32	300	144	107	83	334	78	614	57	749	80	1063	141	1284	2667
% App. Total	16	73.3	10.7		43.1	32	24.9		10.4	82	7.6		6.2	82.8	11		
PHF	.800	.902	.727	.962	.878	.836	.830	.918	.780	.919	.838	.936	.870	.953	.839	.944	.940



A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Freedom Pkwy @ Kroger Signalized Drwy
7-9 am I 4-6 pm

File Name : 20220166
Site Code : 20220166
Start Date : 4/20/2022
Page No : 1

Groups Printed- Cars,Buses & Trucks

	Freedom Pkwy Northbound				Freedom Pkwy Southbound					Kroger Signalized Drwy Eastbound				Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	33	0	35	0	30	3	1	34	9	0	2	11	0	0	0	0	80
07:15 AM	4	28	0	32	0	26	7	1	34	17	0	5	22	0	0	0	0	88
07:30 AM	7	27	0	34	0	28	8	0	36	15	0	2	17	0	0	0	0	87
07:45 AM	3	32	0	35	0	44	7	0	51	18	0	2	20	0	0	0	0	106
Total	16	120	0	136	0	128	25	2	155	59	0	11	70	0	0	0	0	361
08:00 AM	4	30	0	34	0	43	5	0	48	26	0	9	35	0	0	0	0	117
08:15 AM	2	32	0	34	0	31	7	0	38	14	0	2	16	0	0	0	0	88
08:30 AM	6	29	0	35	0	25	5	0	30	10	0	5	15	0	0	0	0	80
08:45 AM	8	24	0	32	0	37	6	1	44	16	0	6	22	0	0	0	0	98
Total	20	115	0	135	0	136	23	1	160	66	0	22	88	0	0	0	0	383
*** BREAK ***																		
04:00 PM	11	25	0	36	0	34	10	5	49	46	0	19	65	0	0	0	0	150
04:15 PM	9	45	0	54	0	40	6	5	51	51	0	13	64	0	0	0	0	169
04:30 PM	17	37	0	54	0	44	17	4	65	52	0	13	65	0	0	0	0	184
04:45 PM	16	47	0	63	0	37	16	8	61	49	0	24	73	0	0	0	0	197
Total	53	154	0	207	0	155	49	22	226	198	0	69	267	0	0	0	0	700
05:00 PM	12	43	0	55	0	44	13	7	64	47	0	26	73	0	0	0	0	192
05:15 PM	17	65	0	82	0	43	19	5	67	57	0	20	77	0	0	0	0	226
05:30 PM	17	47	0	64	0	54	11	9	74	58	0	28	86	0	0	0	0	224
05:45 PM	18	75	0	93	0	77	11	11	99	61	0	20	81	0	0	0	0	273
Total	64	230	0	294	0	218	54	32	304	223	0	94	317	0	0	0	0	915
Grand Total	153	619	0	772	0	637	151	57	845	546	0	196	742	0	0	0	0	2359
Apprch %	19.8	80.2	0		0	75.4	17.9	6.7		73.6	0	26.4		0	0	0		
Total %	6.5	26.2	0	32.7	0	27	6.4	2.4	35.8	23.1	0	8.3	31.5	0	0	0	0	

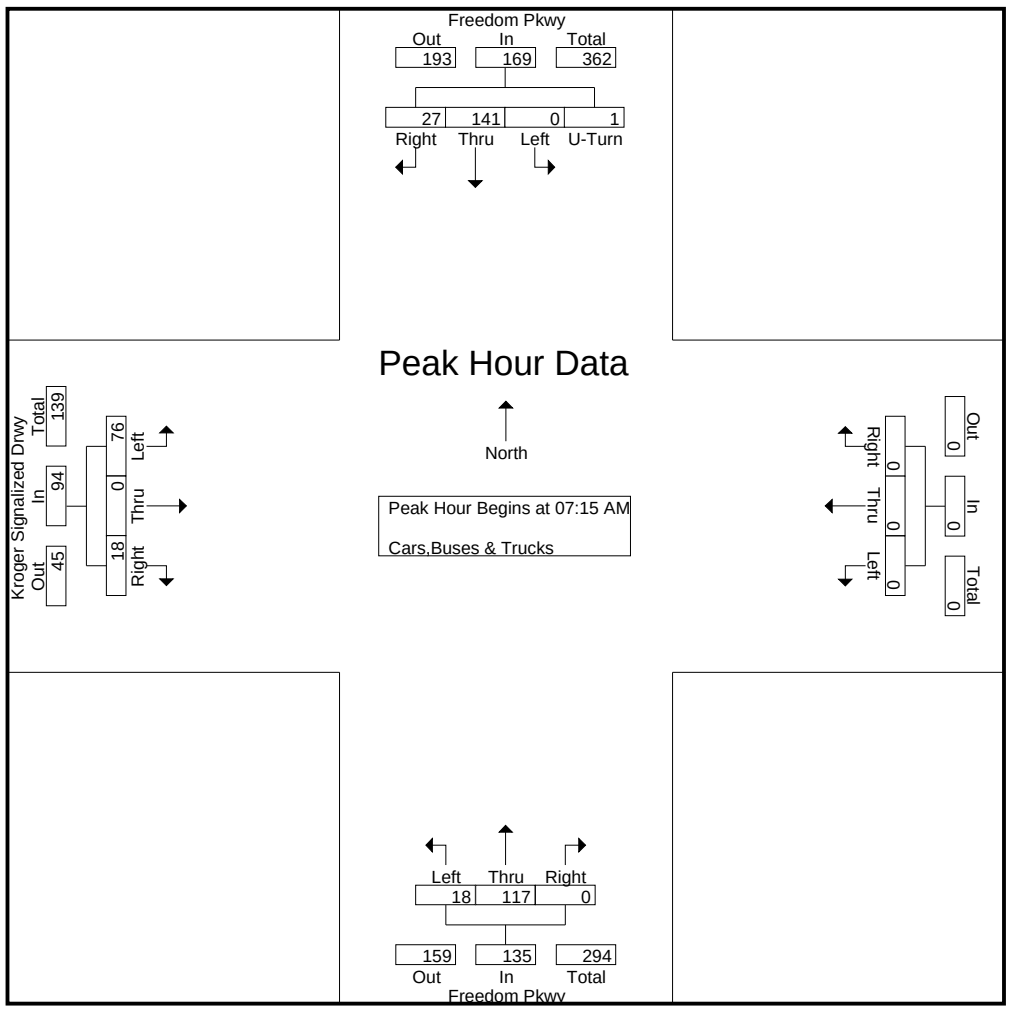
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Freedom Pkwy @ Kroger Signalized Drwy
7-9 am I 4-6 pm

File Name : 20220166
Site Code : 20220166
Start Date : 4/20/2022
Page No : 2

	Freedom Pkwy Northbound				Freedom Pkwy Southbound					Kroger Signalized Drwy Eastbound				Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:15 AM																		
07:15 AM	4	28	0	32	0	26	7	**1**	34	17	0	5	22	0	0	0	0	88
07:30 AM	**7**	27	0	34	0	28	**8**	0	36	15	0	2	17	0	0	0	0	87
07:45 AM	3	**32**	0	**35**	0	**44**	7	0	**51**	18	0	2	20	0	0	0	0	106
08:00 AM	4	30	0	34	0	43	5	0	48	**26**	0	**9**	**35**	0	0	0	0	**117**
Total Volume	18	117	0	135	0	141	27	1	169	76	0	18	94	0	0	0	0	398
% App. Total	13.3	86.7	0		0	83.4	16	0.6		80.9	0	19.1		0	0	0		
PHF	.643	.914	.000	.964	.000	.801	.844	.250	.828	.731	.000	.500	.671	.000	.000	.000	.000	.850



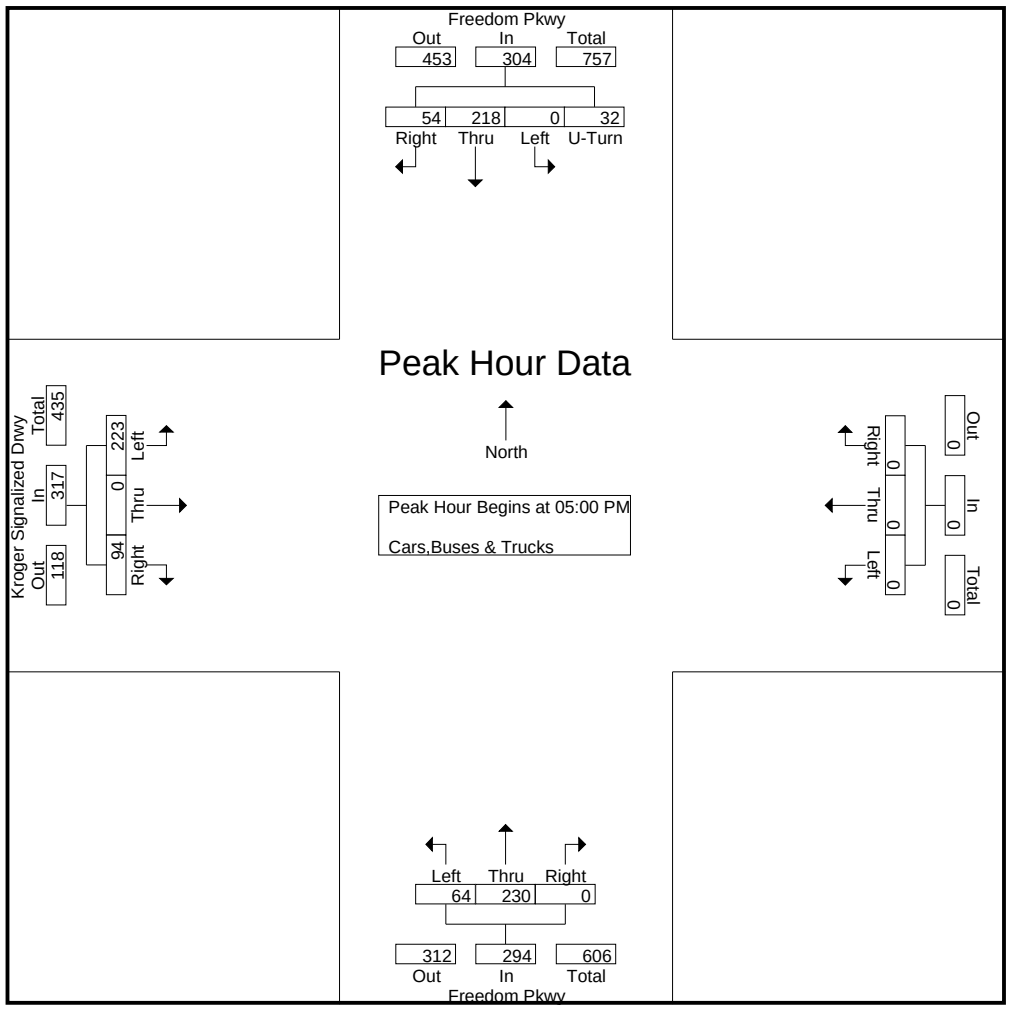
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Freedom Pkwy @ Kroger Signalized Drwy
7-9 am I 4-6 pm

File Name : 20220166
Site Code : 20220166
Start Date : 4/20/2022
Page No : 3

	Freedom Pkwy Northbound				Freedom Pkwy Southbound					Kroger Signalized Drwy Eastbound				Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 05:00 PM																		
05:00 PM	12	43	0	55	0	44	13	7	64	47	0	26	73	0	0	0	0	192
05:15 PM	17	65	0	82	0	43	**19**	5	67	57	0	20	77	0	0	0	0	226
05:30 PM	17	47	0	64	0	54	11	9	74	58	0	**28**	**86**	0	0	0	0	224
05:45 PM	**18**	**75**	0	**93**	0	**77**	11	**11**	**99**	**61**	0	20	81	0	0	0	0	**273**
Total Volume	64	230	0	294	0	218	54	32	304	223	0	94	317	0	0	0	0	915
% App. Total	21.8	78.2	0		0	71.7	17.8	10.5		70.3	0	29.7		0	0	0		
PHF	.889	.767	.000	.790	.000	.708	.711	.727	.768	.914	.000	.839	.922	.000	.000	.000	.000	.838

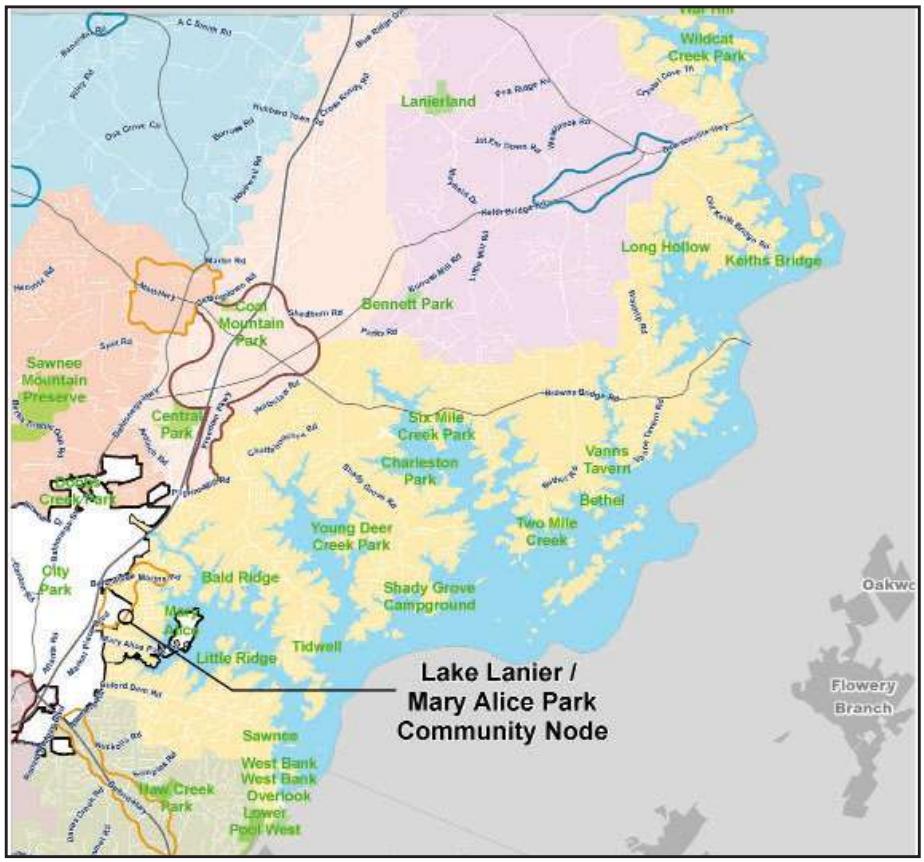


#

Character Areas

#

05 LANIER



LOCATION:

The Lanier character area consists of property in proximity to Lake Lanier.

CHARACTER TODAY:

The Lanier character area is comprised almost exclusively of detached, single-family housing and conservation land protected by the U.S. Army Corps of Engineers (USACE). Housing here is predominantly in older, established communities along Lake Lanier.

CHARACTER AREA GOALS:

- Infill areas and leverage redevelopment opportunities along and near the lake with lower- to medium-intensity residential.
- Create a town center/hospitality destination within the Lanier/Mary Alice Park Community Node to take better advantage of the lake's assets.
- Require context-sensitive design that minimizes negative impacts on the lake.
- Increase public access to the lake in the design of new nonresidential and institutional uses.

FUTURE CHARACTER:

The Lanier character area's existing residential uses vary greatly in age, size, and character. The southern areas along Lake Lanier provide an opportunity for residential infill on medium- to large-sized lots. Although areas in northern Forsyth County near the lake may be redeveloped over the coming decade, there is a need to create a strategy to maintain affordability in areas north of the City of Cumming. Commercial development should be limited except for locally serving retail and restaurants on major corridors near GA 400 and a potential hospitality attraction in the Lake Lanier/Mary Alice Park Community Node.

APPROPRIATE ZONING CLASSIFICATIONS:

		Lanier	
		Ch. Area	Co. Node
Residential	RES1	✓	
	RES2	✓	
	RES3		
	RES4		✓
	RES6		✓
	MHP		
Commercial	NS	✓	✓
	UV		✓
	CBD	✓	✓
	HB	✓	
	HC	✓	✓
Office	BP		✓
	O&I		✓
	OR	✓	✓
	OCMS		✓
Industrial	M1	✓	✓
	M2		
	MINE		
Agricultural	A1	✓	
	AgRES	✓	✓
Mixed-use	MPD		✓
	MU-C		✓
	MU-R		

NON-RESIDENTIAL DESIGN GUIDELINES AND STRATEGIES:

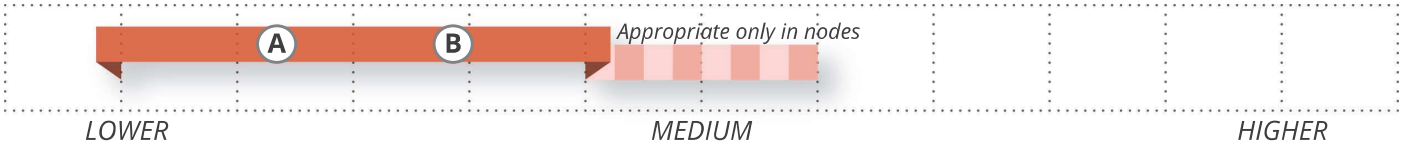
- Non-Residential development outside of the Lake Lanier/Mary Alice Park Community Node should be lower in scale and intensity and reflect the architectural quality of the lake community.

Lake Lanier/Mary Alice Park Community Node

- Permit up to 4 Stories for Non-Residential and Mixed-use structures.
- Encourage retrofitting existing commercial and retail strip development in areas that are likely to undergo renovation or potential demolition in the long-range planning period.
- Support lodging services and meeting facilities to provide further opportunities for visitors to enjoy local amenities.
- Support economic development activities, particularly office development, in an effort to increase and diversify the county's tax base.
- Encourage civic and cultural uses as well as entertainment establishments that will promote community interaction and public open space
- Deck parking is to be encouraged over large, surface parking lots.
- Limited parking between buildings and public roadways.

NON-RESIDENTIAL INTENSITY SCALES AND VISUAL CHARACTER

Commercial and Town Center



Office and Industry

RESIDENTIAL DESIGN GUIDELINES AND STRATEGIES:

- New residential development should use a variety of techniques to avoid the monotonous appearance of identical homes. In addition, building materials shall be of high quality such as brick, stone, wood or cementious siding.
- Retain low intensity residential community character.
- Promote larger lots along the lake.

Lake Lanier/Mary Alice Park Community Node

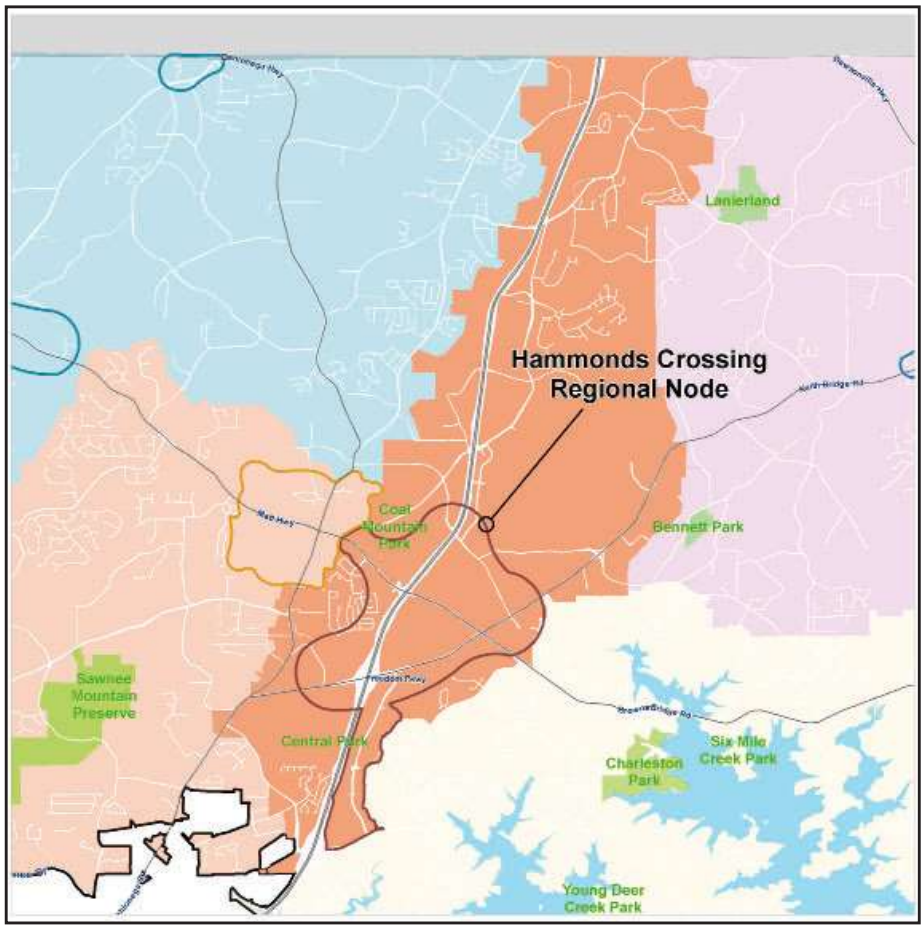
- Architectural character should be traditional southern with traditional and contemporary materials. Style and aesthetic should be compatible with higher-end developments currently found in the Lanier character area.
- Permit up to 3 stories for residential development.
- Residential units (attached and detached) must address all streets by providing a building frontage towards the street, with shallower setbacks and streetscape amenities for the promotion of a high quality, live-play-work experience that has a defined sense of place.
- All ground floor residential units and detached or attached single-family residential units must have a stoop or porch with direct sidewalk access and visible frontage to the primary street.
- New residential development should use a variety of techniques to avoid the monotonous appearance of identical homes. In addition, building materials shall be of high quality such as brick, stone, wood or cementious siding.
- Multi-family residential units should primarily be provided in mixed-used developments with an active differing use on the ground floor.
- Single-family developments (attached and detached) should work to preserve primary street frontages and corners for a commercial or office component.
- New residential development should provide pedestrian access via sidewalks, trails and walkways to nearby commercial uses.

RESIDENTIAL INTENSITY SCALES AND VISUAL CHARACTER

Residential

08

NORTH GA 400



LOCATION:

The North GA 400 character area runs along both sides of GA 400, from the northern edge of the City of Cumming to the northern border of Forsyth County.

CHARACTER TODAY:

The North GA 400 character area is mostly comprised of undeveloped and agricultural land, with some large-lot, detached, single-family properties off the main corridors.

CHARACTER AREA GOALS:

- Create a mixed-use node with a focus on employment at the crossroads of GA 400 and Highways 369 and 309.
- Leverage GA 400 for business and industry growth.

FUTURE CHARACTER:

The North GA 400 character area was identified as an area for medium-scale, medium-intensity business and office uses. This character area also is appropriate for expanded and new town center development with a larger activity center. New business and industry should be clustered at the crossroads of GA 400 and Highways 369 and 306. Higher intensity residential development should be connected to and integrated with the envisioned commercial and employment node. Residential intensities should then decrease as the distance from the commercial and employment node increases.

APPROPRIATE ZONING CLASSIFICATIONS:

		North Georgia 400	
		Ch. Area	Reg. Node
Residential	RES1	✓	
	RES2	✓	
	RES3	✓	✓
	RES4		✓
	RES6		✓
	MHP		
Commercial	NS	✓	✓
	UV	✓	✓
	CBD	✓	✓
	HB		
	HC	✓	✓
Office	BP	✓	✓
	O&I	✓	✓
	OR	✓	✓
	OCMS		✓
Industrial	M1	✓	✓
	M2	✓	✓
	MINE		
Agricultural	A1	✓	
	AgRES	✓	✓
Mixed-use	MPD		✓
	MU-C		
	MU-R		✓

NON-RESIDENTIAL DESIGN GUIDELINES AND STRATEGIES:

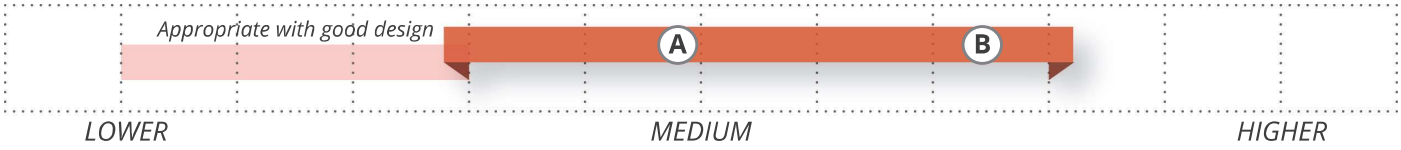
- Shared driveways and inter-parcel connections are required.
- Transitions in development intensity should be designed as development moves from high intensity non-residential and mixed-use developments to residential areas. Where a gradual transition is unlikely to be achieved, buffering between development types through code requirements will be essential.
- Where feasible, new streets and internal streets should follow a gridded pattern of small blocks for a more condensed form of development.
- Amenities such as (but not limited to) seating, public art, fountains and other outdoor landscape elements should be included within each development.
- Buildings should share similar design characteristics to provide repeating patterns, materials and colors to emphasize design integrity.
- Clustering of office and retail uses is encouraged. Also, first floor retail and restaurant uses are desirable for both office and residential developments to promote a mix of uses.
- Buildings should be oriented close to the roadway with streetscape amenities for promotion of a high quality, live-play-work experience that has a defined sense of place.
- Deck parking is to be encouraged over large, surface parking lots.
- Until the Subarea Study and Plan is complete, commercial development should be guided by standards in the Castleberry-Bethelview Crossroads Overlay.

Hammond's Crossing Regional Node

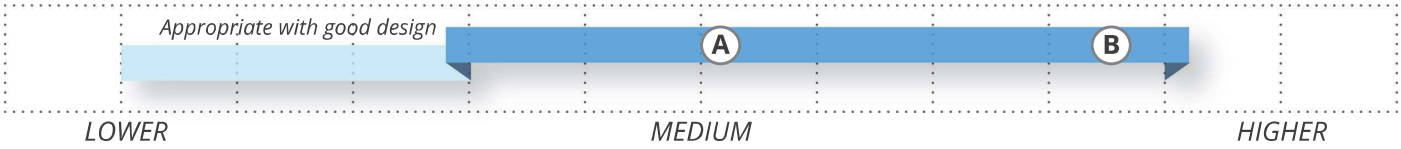
- Permit up to 6 Stories for Non-Residential and Mixed-use structures.
- Encourage retrofitting existing commercial and retail strip development in areas that are likely to undergo renovation or potential demolition in the long-range planning period.
- Support lodging services and meeting facilities to provide further opportunities for visitors to enjoy local amenities.
- Support economic development activities, particularly office development, in an effort to increase and diversify the county's tax base.
- Encourage civic and cultural uses as well as entertainment establishments that will promote community interaction and public open space.
- Limited parking between buildings and public roadways.

NON-RESIDENTIAL INTENSITY SCALES AND VISUAL CHARACTER

Commercial and Town Center



Office and Industry



RESIDENTIAL DESIGN GUIDELINES AND STRATEGIES:

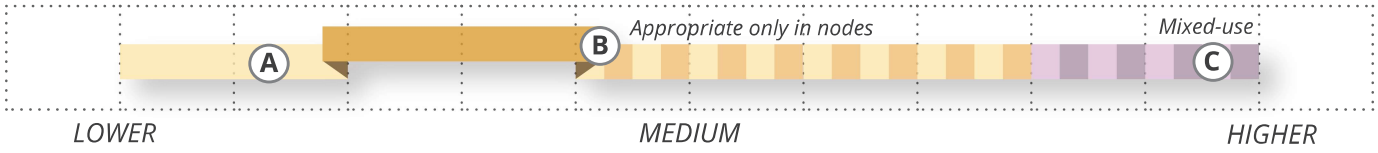
- Residential developments must front all adjacent street frontages and all residential units must front either a street or qualifying open space.
- Access to residential garages and parking pads are encouraged to be from a rear loaded alley.
- Higher intensity detached residential developments are encouraged to utilize shared parking arrangements, where feasible, to reduce impervious surfaces.
- Accommodate a mix of housing types to allow a variety of options for residents.
- Design guidelines should be similar to the Shiloh Road Overlay.

Hammond's Crossing Regional Node

- Architectural character should use traditional building materials in a contemporary style and aesthetic that is compatible with developments currently in the character area.
- Permit up to 4 stories for residential development.
- Residential units (attached and detached) must address all streets by providing a building frontage towards the street, with shallower setbacks and streetscape amenities for the promotion of a high quality, live-play-work experience that has a defined sense of place.
- Ground floor residential units must have a stoop or porch with direct sidewalk access to the primary street.
- New residential development should use a variety of techniques to avoid the monotonous appearance of identical homes. In addition, building materials shall be of high quality such as brick, stone, wood or cementious siding.
- Multi-family residential units should primarily be provided in mixed-used developments with an active differing use on the ground floor.
- Single-family developments (attached and detached) should work to preserve primary street frontages and corners for a commercial or office component.
- New residential development should provide pedestrian access via sidewalks, trails and walkways to nearby commercial uses.

RESIDENTIAL INTENSITY SCALES AND VISUAL CHARACTER

Residential

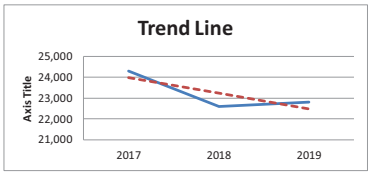


GRTA Letter of Understanding

Linear Regression of Daily Traffic

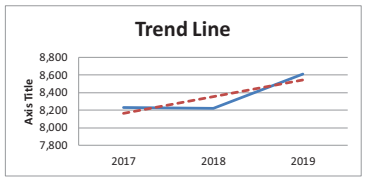
Location	Growth Rate	R Squared	Station ID	Route	2017	2018	2019	2020
SR 306 Keith Bridge Rd (SW of SF	-3.2%	0.65	117-0053	00030600	24,300	22,600	22,800	20,300
SR 306 Keith Bridge Rd (E of SR 9	2.3%	0.73	117-0051	00030600	8,230	8,220	8,610	7,930
SR 369 Browns Bridge Rd (NW of	7.9%	0.75	117-0069	00036900	16,300	16,300	18,900	17,400
SR 9 Dahlonega Hwy (N of SR 30	1.3%	0.72	117-0015	00000900	9,250	9,240	9,490	8,750
Chattahooche Rd (north of Adam	4.8%	0.81	117-0190	00012400	4,030	4,400	4,430	4,080
Weighted Average	**1.7%**	0.37	Sum of Count Stations =		62,110	60,760	64,230	

Location	Traffic Counter	RCLINK	2017	2018	2019	2020
SR 306 Keith Bridge Rd (SW of SR 309 Browns Bridge Rd)	117-0053	00030600	24,300	22,600	22,800	20,300



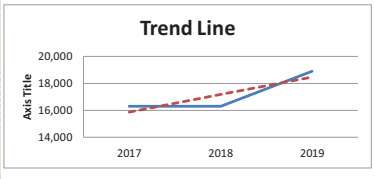
Growth Rate	-3.2%	Intercept	1,536,733	Slope	-750.00
Trend Line			23,983	23,233	22,483

Location	Traffic Counter	RCLINK	2017	2018	2019	2020
SR 306 Keith Bridge Rd (E of SR 9 Dahlonega Hwy)	117-0051	00030600	8,230	8,220	8,610	7,930



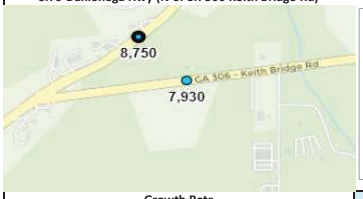
Growth Rate	2.3%	Intercept	-375,067	Slope	190.00
Trend Line			8,163	8,353	8,543

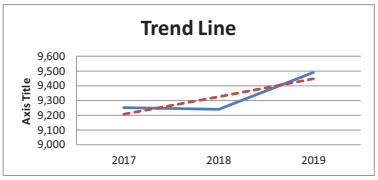
Location	Traffic Counter	RCLINK	2017	2018	2019	2020
SR 369 Browns Bridge Rd (NW of Bridgetowne Dr)	117-0069	00036900	16,300	16,300	18,900	17,400



Growth Rate	7.9%	Intercept	-2,606,233	Slope	1,300.00
Trend Line			15,867	17,167	18,467

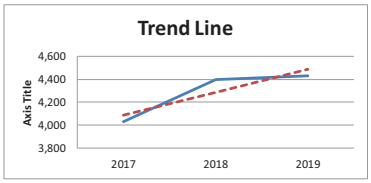
Location	Traffic Counter	RCLINK	2017	2018	2019	2020
SR 9 Dahlonega Hwy (N of SR 306 Keith Bridge Rd)	117-0015	00000900	9,250	9,240	9,490	8,750





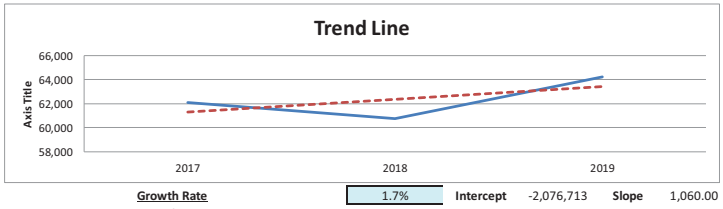
Growth Rate	1.3%	Intercept	-232,833	Slope	120.00
Trend Line			9,207	9,327	9,447

Location	Traffic Counter	RCLINK	2017	2018	2019	2020
Chattahooche Rd (north of Adams Rd)	117-0190	00012400	4,030	4,400	4,430	4,080



Growth Rate	4.8%	Intercept	-399,313	Slope	200.00
Trend Line			4,087	4,287	4,487

Weighted Average			2017	2018	2019	2020
Sum of Count Stations			62,110	60,760	64,230	0



Growth Rate	1.7%	Intercept	-2,076,713	Slope	1,060.00
Trend Line			61,307	62,367	63,427

Fact Sheets for Planned and Programmed Improvements

FT-306B

Atlanta Region's Plan RTP (2020) PROJECT FACT SHEET

Short Title	SR 306 (KEITH BRIDGE ROAD): SEGMENT 2 - WIDENING FROM SR 400 TO SR 369
GDOT Project No.	0013571
Federal ID No.	N/A
Status	Long Range
Service Type	Roadway / General Purpose Capacity
Sponsor	GDOT
Jurisdiction	Forsyth County
Analysis Level	In the Region's Air Quality Conformity Analysis

Existing Thru Lane	2	**LCI**		**Network Year**	2040
Planned Thru Lane	4	**Flex**		**Corridor Length**	1 miles

Detailed Description and Justification

The proposed project is located along SR 306 (Keith Bridge Road) from SR 400 to Parks Road, in the northern section of Forsyth County, GA. SR 306 is classified as a rural minor arterial, but serves as a major arterial route from SR 400 to the rapidly growing northeast corner of the County. The widening of SR 306 from a 2-lane section to a 4-lane section was orignally approved in 1997 as part of the reconstruciton of the SR 400/SR 306 interchange. Since approval of the original concept, the SR 400/SR 306 has been reconstructed, which included the widening of SR 306 from CR 148 to just east of SR 400.

Phase Status & Funding Information		Status	FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
					FEDERAL	STATE	BONDS	LOCAL/PRIVATE
PE	Local Jurisdiction/Municipality Funds	AUTH	2018	**$475,000**	~~$0,000~~	~~$0,000~~	~~$0,000~~	~~$475,000~~
PE	Transportation Funding Act (HB 170)	AUTH	2018	**$30,000**	~~$0,000~~	~~$30,000~~	~~$0,000~~	~~$0,000~~
ALL	Transportation Funding Act (HB 170)		LR 2031-2040	**$37,297,000**	$0,000	$37,297,000	$0,000	$0,000
				$37,802,000	**$0,000**	**$37,327,000**	**$0,000**	**$475,000**

SCP: Scoping PE: Preliminary engineering / engineering / design / planning PE-OV: GDOT oversight services for engineering ROW: Right-of-way Acquistion
UTL: Utility relocation CST: Construction / Implementation ALL: Total estimated cost, inclusive of all phases

? For additional information about this project, please call (404) 463-3100 or email transportation@atlantaregional.com.

Report Generated: 3/21/2022

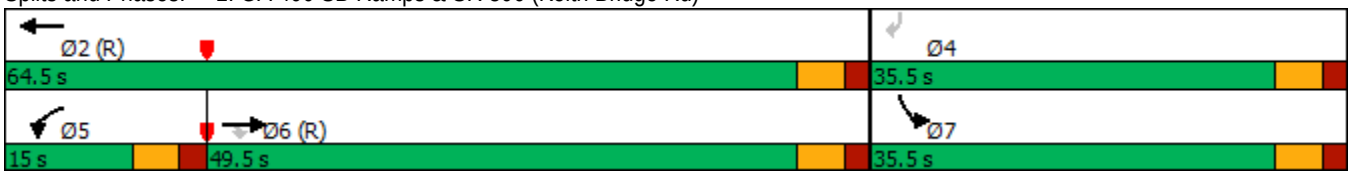
Existing Intersection Analysis

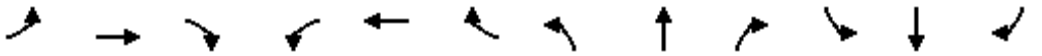
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	404	159	146	1035	130	374
Future Volume (vph)	404	159	146	1035	130	374
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	6		5	2	7	
Permitted Phases		6				4
Detector Phase	6	6	5	2	7	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	5.0	15.0	5.0	6.0
Minimum Split (s)	28.5	28.5	15.0	28.5	15.0	35.5
Total Split (s)	49.5	49.5	15.0	64.5	35.5	35.5
Total Split (%)	49.5%	49.5%	15.0%	64.5%	35.5%	35.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Splits and Phases: 1: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	404	159	146	1035	0	0	0	0	130	0	374
Future Volume (veh/h)	0	404	159	146	1035	0	0	0	0	130	0	374
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1826	1870	1870	1826	0				1870	0	1870
Adj Flow Rate, veh/h	0	439	0	159	1125	0				141	0	407
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	5	2	2	5	0				2	0	2
Cap, veh/h	0	1714		223	1120	0				492	0	438
Arrive On Green	0.00	0.49	0.00	0.13	1.00	0.00				0.28	0.00	0.28
Sat Flow, veh/h	0	3561	1585	3456	1826	0				1781	0	1585
Grp Volume(v), veh/h	0	439	0	159	1125	0				141	0	407
Grp Sat Flow(s),veh/h/ln	0	1735	1585	1728	1826	0				1781	0	1585
Q Serve(g_s), s	0.0	7.3	0.0	4.4	0.0	0.0				6.2	0.0	25.0
Cycle Q Clear(g_c), s	0.0	7.3	0.0	4.4	0.0	0.0				6.2	0.0	25.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1714		223	1120	0				492	0	438
V/C Ratio(X)	0.00	0.26		0.71	1.00	0.00				0.29	0.00	0.93
Avail Cap(c_a), veh/h	0	1714		328	1120	0				534	0	476
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.87	0.87	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.7	0.0	42.7	0.0	0.0				28.4	0.0	35.2
Incr Delay (d2), s/veh	0.0	0.4	0.0	3.7	26.1	0.0				0.3	0.0	23.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	4.8	0.0	3.3	12.5	0.0				4.7	0.0	30.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.0	0.0	46.3	26.1	0.0				28.8	0.0	59.1
LnGrp LOS	A	B		D	F	A				C	A	E
Approach Vol, veh/h		439	A		1284						548	
Approach Delay, s/veh		15.0			28.6						51.3	
Approach LOS		B			C						D	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		66.9		33.1	12.0	54.9						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		59.0		30.0	9.5	44.0						
Max Q Clear Time (g_c+I1), s		2.0		27.0	6.4	9.3						
Green Ext Time (p_c), s		28.4		0.6	0.1	5.4						

Intersection Summary		
HCM 6th Ctrl Delay		31.4
HCM 6th LOS		C

Notes

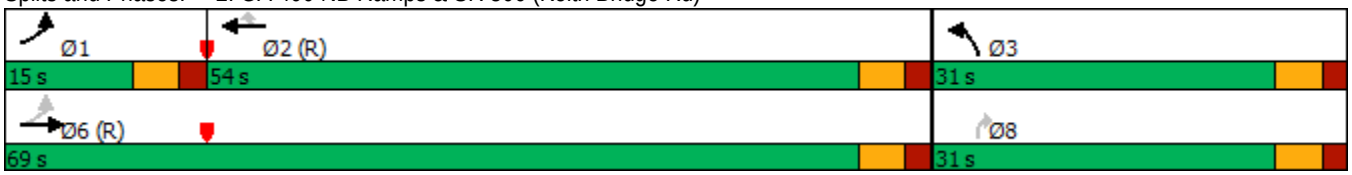
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

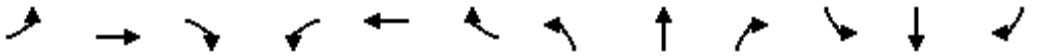
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	64	470	1121	74	60	425
Future Volume (vph)	64	470	1121	74	60	425
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		3	
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	3	8
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	5.0	6.0
Minimum Split (s)	15.0	34.5	23.5	23.5	15.0	30.5
Total Split (s)	15.0	69.0	54.0	54.0	31.0	31.0
Total Split (%)	15.0%	69.0%	54.0%	54.0%	31.0%	31.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	470	0	0	1121	74	60	0	425	0	0	0
Future Volume (veh/h)	64	470	0	0	1121	74	60	0	425	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1826	0	0	1826	1870	1870	0	1870			
Adj Flow Rate, veh/h	67	490	0	0	1168	0	62	0	443			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	5	0	0	5	2	2	0	2			
Cap, veh/h	439	2440	0	0	2103		332	0	520			
Arrive On Green	0.08	1.00	0.00	0.00	1.00	0.00	0.19	0.00	0.19			
Sat Flow, veh/h	1781	3561	0	0	3561	1585	1781	0	2790			
Grp Volume(v), veh/h	67	490	0	0	1168	0	62	0	443			
Grp Sat Flow(s),veh/h/ln	1781	1735	0	0	1735	1585	1781	0	1395			
Q Serve(g_s), s	1.3	0.0	0.0	0.0	0.0	0.0	2.9	0.0	15.4			
Cycle Q Clear(g_c), s	1.3	0.0	0.0	0.0	0.0	0.0	2.9	0.0	15.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	439	2440	0	0	2103		332	0	520			
V/C Ratio(X)	0.15	0.20	0.00	0.00	0.56		0.19	0.00	0.85			
Avail Cap(c_a), veh/h	533	2440	0	0	2103		454	0	711			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.97	0.97	0.00	0.00	0.48	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	5.5	0.0	0.0	0.0	0.0	0.0	34.3	0.0	39.3			
Incr Delay (d2), s/veh	0.2	0.2	0.0	0.0	0.5	0.0	0.3	0.0	7.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.7	0.1	0.0	0.0	0.3	0.0	2.3	0.0	9.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.6	0.2	0.0	0.0	0.5	0.0	34.5	0.0	46.6			
LnGrp LOS	A	A	A	A	A		C	A	D			
Approach Vol, veh/h		557			1168	A		505				
Approach Delay, s/veh		0.8			0.5			45.1				
Approach LOS		A			A			D				

Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	9.7	66.1				75.8		24.2				
Change Period (Y+Rc), s	5.5	5.5				5.5		5.5				
Max Green Setting (Gmax), s	9.5	48.5				63.5		25.5				
Max Q Clear Time (g_c+I1), s	3.3	2.0				2.0		17.4				
Green Ext Time (p_c), s	0.1	20.4				6.7		1.3				

Intersection Summary												
HCM 6th Ctrl Delay			10.7									
HCM 6th LOS			B									

Notes

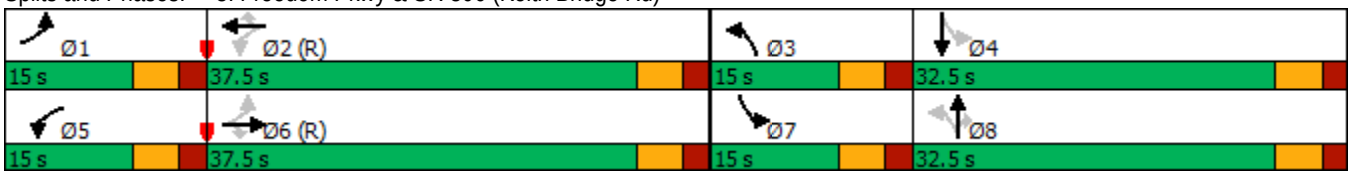
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

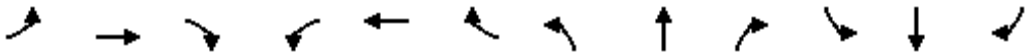
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	21	485	60	71	952	19	48	106	40	21	23
Future Volume (vph)	21	485	60	71	952	19	48	106	40	21	23
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	1	6		5	2		3	8		7	4
Permitted Phases	6		6	2		2	8		8	4	
Detector Phase	1	6	6	5	2	2	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	33.5	33.5	15.0	33.5	33.5	15.0	27.5	27.5	15.0	32.5
Total Split (s)	15.0	37.5	37.5	15.0	37.5	37.5	15.0	32.5	32.5	15.0	32.5
Total Split (%)	15.0%	37.5%	37.5%	15.0%	37.5%	37.5%	15.0%	32.5%	32.5%	15.0%	32.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 3: Freedom Pkwy & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	485	60	71	952	19	48	106	40	21	23	9
Future Volume (veh/h)	21	485	60	71	952	19	48	106	40	21	23	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1826	1870	1870	1826	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	511	0	75	1002	20	51	112	0	22	24	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	5	2	2	5	2	2	2	2	2	2	2
Cap, veh/h	239	1152		711	1191	1034	216	154		143	126	
Arrive On Green	0.05	1.00	0.00	0.04	0.65	0.65	0.04	0.08	0.00	0.02	0.07	0.00
Sat Flow, veh/h	1781	1826	1585	1781	1826	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	22	511	0	75	1002	20	51	112	0	22	24	0
Grp Sat Flow(s),veh/h/ln	1781	1826	1585	1781	1826	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.4	0.0	0.0	1.4	42.3	0.4	2.6	5.8	0.0	1.1	1.2	0.0
Cycle Q Clear(g_c), s	0.4	0.0	0.0	1.4	42.3	0.4	2.6	5.8	0.0	1.1	1.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	239	1152		711	1191	1034	216	154		143	126	
V/C Ratio(X)	0.09	0.44		0.11	0.84	0.02	0.24	0.73		0.15	0.19	
Avail Cap(c_a), veh/h	368	1152		802	1191	1034	318	505		272	505	
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.00	1.00	1.00	1.00	0.99	0.99	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	14.1	0.0	0.0	5.5	13.4	6.1	41.2	44.8	0.0	42.0	44.1	0.0
Incr Delay (d2), s/veh	0.2	1.1	0.0	0.1	7.3	0.0	0.6	6.4	0.0	0.5	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.6	0.0	0.8	21.9	0.2	2.1	5.2	0.0	0.9	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.3	1.1	0.0	5.6	20.7	6.2	41.8	51.2	0.0	42.5	44.8	0.0
LnGrp LOS	B	A		A	C	A	D	D		D	D	
Approach Vol, veh/h		533	A		1097			163	A		46	A
Approach Delay, s/veh		1.7			19.4			48.2			43.7	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.8	70.7	9.3	12.2	9.9	68.6	7.8	13.7
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	32.0	9.5	27.0	9.5	32.0	9.5	27.0
Max Q Clear Time (g_c+I1), s	2.4	44.3	4.6	3.2	3.4	2.0	3.1	7.8
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.1	6.2	0.0	0.4

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

Notes

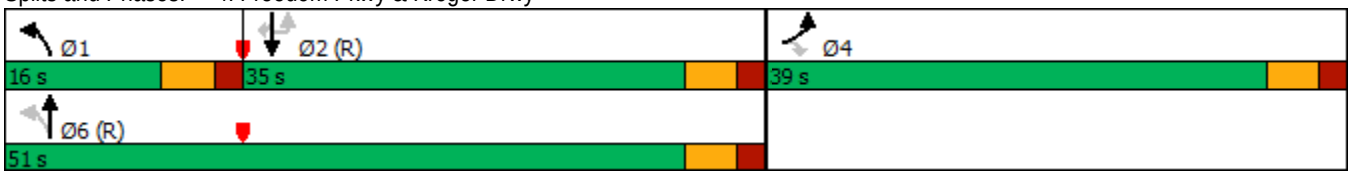
Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	76	18	18	117	1	141	27
Future Volume (vph)	76	18	18	117	1	141	27
Turn Type	Prot	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	4		1	6		2	
Permitted Phases		4	6		2		2
Detector Phase	4	4	1	6	2	2	2
Switch Phase							
Minimum Initial (s)	6.0	6.0	5.0	15.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	15.0	21.5	30.5	30.5	30.5
Total Split (s)	39.0	39.0	16.0	51.0	35.0	35.0	35.0
Total Split (%)	43.3%	43.3%	17.8%	56.7%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5		5.5	5.5
Lead/Lag			Lead		Lag	Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min	C-Min

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:SBTU and 6:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 4: Freedom Pkwy & Kroger Drwy



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	76	18	18	117	1	141	27
Future Volume (veh/h)	76	18	18	117	1	141	27
Initial Q (Qb), veh	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	89	21	21	138		166	32
Peak Hour Factor	0.85	0.85	0.85	0.85		0.85	0.85
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	124	110	962	2872		2574	1148
Arrive On Green	0.07	0.07	0.02	0.81		0.72	0.72
Sat Flow, veh/h	1781	1585	1781	3647		3647	1585
Grp Volume(v), veh/h	89	21	21	138		166	32
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777		1777	1585
Q Serve(g_s), s	4.4	1.1	0.2	0.7		1.2	0.5
Cycle Q Clear(g_c), s	4.4	1.1	0.2	0.7		1.2	0.5
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	124	110	962	2872		2574	1148
V/C Ratio(X)	0.72	0.19	0.02	0.05		0.06	0.03
Avail Cap(c_a), veh/h	663	590	1130	2872		2574	1148
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	41.0	39.5	2.5	1.7		3.6	3.5
Incr Delay (d2), s/veh	7.5	0.8	0.0	0.0		0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(95%),veh/ln	3.9	0.8	0.1	0.2		0.5	0.2
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	48.5	40.3	2.5	1.8		3.6	3.5
LnGrp LOS	D	D	A	A		A	A
Approach Vol, veh/h	110			159		198	
Approach Delay, s/veh	47.0			1.9		3.6	
Approach LOS	D			A		A	

Timer - Assigned Phs	1	2		4		6	
Phs Duration (G+Y+Rc), s	7.5	70.7		11.8		78.2	
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5	
Max Green Setting (Gmax), s	10.5	29.5		33.5		45.5	
Max Q Clear Time (g_c+I1), s	2.2	3.2		6.4		2.7	
Green Ext Time (p_c), s	0.0	1.9		0.3		1.6	

Intersection Summary			
HCM 6th Ctrl Delay		13.2	
HCM 6th LOS		B	

Notes

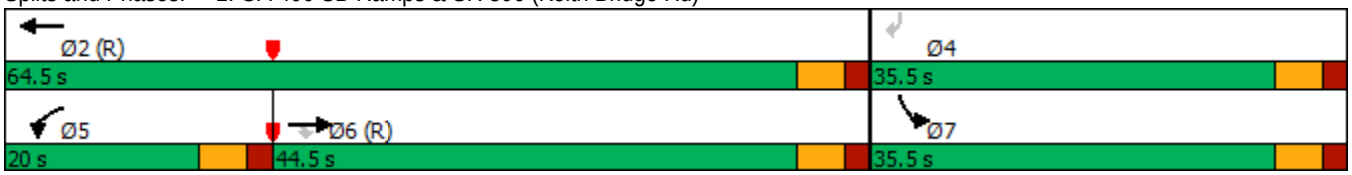
User approved ignoring U-Turning movement.

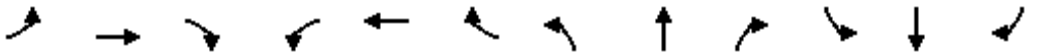
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	456	286	301	802	208	310
Future Volume (vph)	456	286	301	802	208	310
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	6		5	2	7	
Permitted Phases		6				4
Detector Phase	6	6	5	2	7	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	5.0	15.0	5.0	6.0
Minimum Split (s)	28.5	28.5	15.0	28.5	15.0	35.5
Total Split (s)	44.5	44.5	20.0	64.5	35.5	35.5
Total Split (%)	44.5%	44.5%	20.0%	64.5%	35.5%	35.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 1: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	456	286	301	802	0	0	0	0	208	0	310
Future Volume (veh/h)	0	456	286	301	802	0	0	0	0	208	0	310
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1826	1870	1870	1826	0				1870	0	1870
Adj Flow Rate, veh/h	0	485	0	320	853	0				221	0	330
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	5	2	2	5	0				2	0	2
Cap, veh/h	0	1698		387	1199	0				416	0	370
Arrive On Green	0.00	0.49	0.00	0.22	1.00	0.00				0.23	0.00	0.23
Sat Flow, veh/h	0	3561	1585	3456	1826	0				1781	0	1585
Grp Volume(v), veh/h	0	485	0	320	853	0				221	0	330
Grp Sat Flow(s),veh/h/ln	0	1735	1585	1728	1826	0				1781	0	1585
Q Serve(g_s), s	0.0	8.3	0.0	8.8	0.0	0.0				10.9	0.0	20.2
Cycle Q Clear(g_c), s	0.0	8.3	0.0	8.8	0.0	0.0				10.9	0.0	20.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1698		387	1199	0				416	0	370
V/C Ratio(X)	0.00	0.29		0.83	0.71	0.00				0.53	0.00	0.89
Avail Cap(c_a), veh/h	0	1698		501	1199	0				534	0	476
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.81	0.81	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.2	0.0	37.9	0.0	0.0				33.5	0.0	37.1
Incr Delay (d2), s/veh	0.0	0.4	0.0	7.1	2.9	0.0				1.1	0.0	15.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	5.5	0.0	6.3	1.8	0.0				8.2	0.0	24.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.6	0.0	45.0	2.9	0.0				34.6	0.0	52.8
LnGrp LOS	A	B		D	A	A				C	A	D
Approach Vol, veh/h		485	A		1173						551	
Approach Delay, s/veh		15.6			14.4						45.5	
Approach LOS		B			B						D	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		71.1		28.9	16.7	54.4						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		59.0		30.0	14.5	39.0						
Max Q Clear Time (g_c+I1), s		2.0		22.2	10.8	10.3						
Green Ext Time (p_c), s		16.1		1.2	0.4	5.8						

Intersection Summary		
HCM 6th Ctrl Delay		22.4
HCM 6th LOS		C

Notes

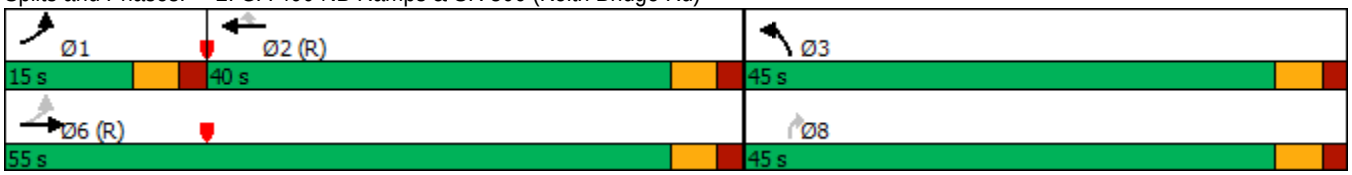
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

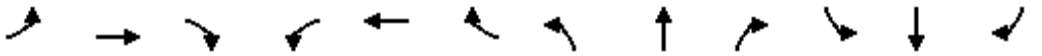
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	180	483	865	159	227	848
Future Volume (vph)	180	483	865	159	227	848
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		3	
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	3	8
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	5.0	6.0
Minimum Split (s)	15.0	34.5	23.5	23.5	15.0	30.5
Total Split (s)	15.0	55.0	40.0	40.0	45.0	45.0
Total Split (%)	15.0%	55.0%	40.0%	40.0%	45.0%	45.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	483	0	0	865	159	227	0	848	0	0	0
Future Volume (veh/h)	180	483	0	0	865	159	227	0	848	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1826	0	0	1826	1870	1870	0	1870			
Adj Flow Rate, veh/h	191	514	0	0	920	0	241	0	902			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	2	5	0	0	5	2	2	0	2			
Cap, veh/h	328	1854	0	0	1377		633	0	992			
Arrive On Green	0.16	1.00	0.00	0.00	0.40	0.00	0.36	0.00	0.36			
Sat Flow, veh/h	1781	3561	0	0	3561	1585	1781	0	2790			
Grp Volume(v), veh/h	191	514	0	0	920	0	241	0	902			
Grp Sat Flow(s),veh/h/ln	1781	1735	0	0	1735	1585	1781	0	1395			
Q Serve(g_s), s	6.2	0.0	0.0	0.0	21.8	0.0	10.1	0.0	30.8			
Cycle Q Clear(g_c), s	6.2	0.0	0.0	0.0	21.8	0.0	10.1	0.0	30.8			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	328	1854	0	0	1377		633	0	992			
V/C Ratio(X)	0.58	0.28	0.00	0.00	0.67		0.38	0.00	0.91			
Avail Cap(c_a), veh/h	350	1854	0	0	1377		704	0	1102			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.92	0.92	0.00	0.00	0.09	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	16.4	0.0	0.0	0.0	24.7	0.0	24.0	0.0	30.7			
Incr Delay (d2), s/veh	2.0	0.3	0.0	0.0	0.2	0.0	0.4	0.0	10.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	3.8	0.2	0.0	0.0	9.6	0.0	7.4	0.0	16.6			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.4	0.3	0.0	0.0	25.0	0.0	24.4	0.0	41.1			
LnGrp LOS	B	A	A	A	C		C	A	D			
Approach Vol, veh/h		705			920	A		1143				
Approach Delay, s/veh		5.2			25.0			37.5				
Approach LOS		A			C			D				

Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	13.7	45.2				58.9		41.1				
Change Period (Y+Rc), s	5.5	5.5				5.5		5.5				
Max Green Setting (Gmax), s	9.5	34.5				49.5		39.5				
Max Q Clear Time (g_c+I1), s	8.2	23.8				2.0		32.8				
Green Ext Time (p_c), s	0.1	6.5				6.9		2.8				

Intersection Summary												
HCM 6th Ctrl Delay			25.1									
HCM 6th LOS			C									

Notes

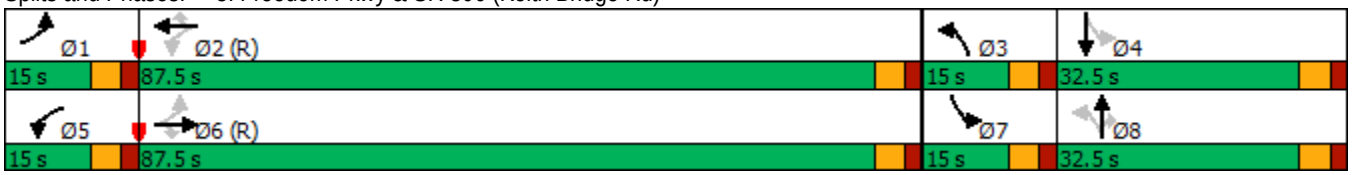
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

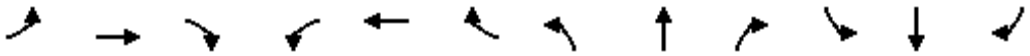
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	78	614	57	80	1063	141	48	220	32	144	107
Future Volume (vph)	78	614	57	80	1063	141	48	220	32	144	107
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	1	6		5	2		3	8		7	4
Permitted Phases	6		6	2		2	8		8	4	
Detector Phase	1	6	6	5	2	2	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	33.5	33.5	15.0	33.5	33.5	15.0	27.5	27.5	15.0	32.5
Total Split (s)	15.0	87.5	87.5	15.0	87.5	87.5	15.0	32.5	32.5	15.0	32.5
Total Split (%)	10.0%	58.3%	58.3%	10.0%	58.3%	58.3%	10.0%	21.7%	21.7%	10.0%	21.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 3: Freedom Pkwy & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	614	57	80	1063	141	48	220	32	144	107	83
Future Volume (veh/h)	78	614	57	80	1063	141	48	220	32	144	107	83
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1826	1870	1870	1826	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	83	653	0	85	1131	150	51	234	0	153	114	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	5	2	2	5	2	2	2	2	2	2	2
Cap, veh/h	106	1127		421	1128	979	256	262		181	318	
Arrive On Green	0.03	0.62	0.00	0.03	0.62	0.62	0.03	0.14	0.00	0.06	0.17	0.00
Sat Flow, veh/h	1781	1826	1585	1781	1826	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	83	653	0	85	1131	150	51	234	0	153	114	0
Grp Sat Flow(s),veh/h/ln	1781	1826	1585	1781	1826	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	2.9	31.9	0.0	2.6	92.6	6.0	3.7	18.4	0.0	9.5	8.1	0.0
Cycle Q Clear(g_c), s	2.9	31.9	0.0	2.6	92.6	6.0	3.7	18.4	0.0	9.5	8.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	106	1127		421	1128	979	256	262		181	318	
V/C Ratio(X)	0.79	0.58		0.20	1.00	0.15	0.20	0.89		0.85	0.36	
Avail Cap(c_a), veh/h	161	1127		476	1128	979	310	337		181	337	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.73	0.73	0.00	1.00	1.00	1.00	0.92	0.92	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.4	17.1	0.0	13.5	28.7	12.1	52.8	63.4	0.0	55.1	55.0	0.0
Incr Delay (d2), s/veh	10.0	1.6	0.0	0.2	27.5	0.3	0.3	19.5	0.0	29.5	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.8	17.9	0.0	1.8	55.5	3.8	3.0	15.0	0.0	4.9	7.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.4	18.7	0.0	13.7	56.2	12.4	53.1	82.9	0.0	84.6	55.7	0.0
LnGrp LOS	D	B		B	F	B	D	F		F	E	
Approach Vol, veh/h		736	A		1366			285	A		267	A
Approach Delay, s/veh		22.3			48.8			77.6			72.2	
Approach LOS		C			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	98.1	10.5	31.0	10.4	98.1	15.0	26.5
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	82.0	9.5	27.0	9.5	82.0	9.5	27.0
Max Q Clear Time (g_c+I1), s	4.9	94.6	5.7	10.1	4.6	33.9	11.5	20.4
Green Ext Time (p_c), s	0.1	0.0	0.0	0.5	0.1	9.9	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	46.9
HCM 6th LOS	D

Notes

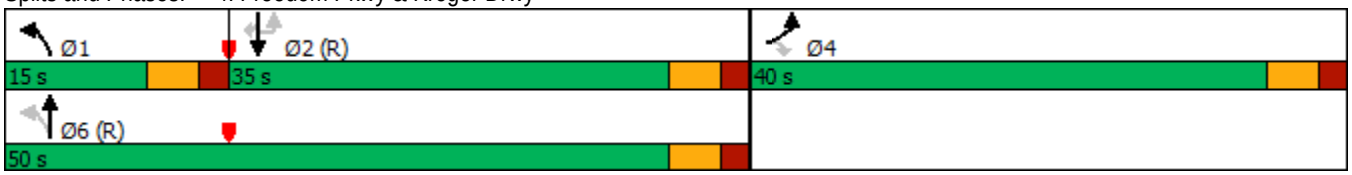
Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	223	94	64	230	32	218	54
Future Volume (vph)	223	94	64	230	32	218	54
Turn Type	Prot	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	4		1	6		2	
Permitted Phases		4	6		2		2
Detector Phase	4	4	1	6	2	2	2
Switch Phase							
Minimum Initial (s)	6.0	6.0	5.0	15.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	15.0	21.5	30.5	30.5	30.5
Total Split (s)	40.0	40.0	15.0	50.0	35.0	35.0	35.0
Total Split (%)	44.4%	44.4%	16.7%	55.6%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5		5.5	5.5
Lead/Lag			Lead		Lag	Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min	C-Min

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:SBTU and 6:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 4: Freedom Pkwy & Kroger Drwy



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	223	94	64	230	32	218	54
Future Volume (veh/h)	223	94	64	230	32	218	54
Initial Q (Qb), veh	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	265	112	76	274		260	64
Peak Hour Factor	0.84	0.84	0.84	0.84		0.84	0.84
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	318	283	754	2485		2100	937
Arrive On Green	0.18	0.18	0.05	0.70		0.59	0.59
Sat Flow, veh/h	1781	1585	1781	3647		3647	1585
Grp Volume(v), veh/h	265	112	76	274		260	64
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777		1777	1585
Q Serve(g_s), s	12.9	5.6	1.4	2.3		2.9	1.5
Cycle Q Clear(g_c), s	12.9	5.6	1.4	2.3		2.9	1.5
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	318	283	754	2485		2100	937
V/C Ratio(X)	0.83	0.40	0.10	0.11		0.12	0.07
Avail Cap(c_a), veh/h	683	608	858	2485		2100	937
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		0.91	0.91
Uniform Delay (d), s/veh	35.7	32.7	5.6	4.4		8.1	7.8
Incr Delay (d2), s/veh	5.7	0.9	0.1	0.1		0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(95%),veh/ln	10.1	4.0	0.7	1.1		1.7	0.9
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	41.4	33.6	5.6	4.5		8.2	8.0
LnGrp LOS	D	C	A	A		A	A
Approach Vol, veh/h	377			350		324	
Approach Delay, s/veh	39.1			4.7		8.2	
Approach LOS	D			A		A	

Timer - Assigned Phs	1	2		4		6	
Phs Duration (G+Y+Rc), s	9.8	58.7		21.6		68.4	
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5	
Max Green Setting (Gmax), s	9.5	29.5		34.5		44.5	
Max Q Clear Time (g_c+I1), s	3.4	4.9		14.9		4.3	
Green Ext Time (p_c), s	0.1	3.3		1.1		3.4	

Intersection Summary			
HCM 6th Ctrl Delay		18.1	
HCM 6th LOS		B	

Notes

User approved ignoring U-Turning movement.

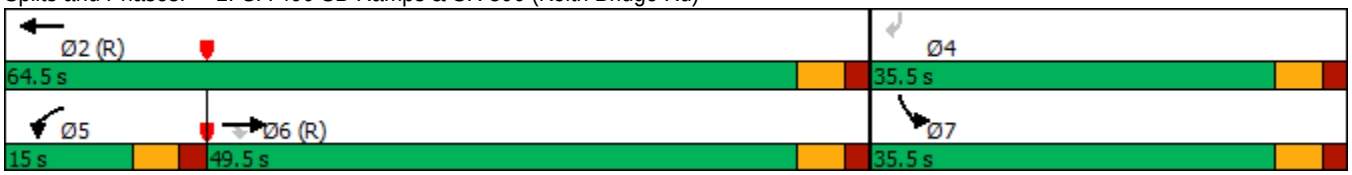
Future “No-Build” Intersection Analysis

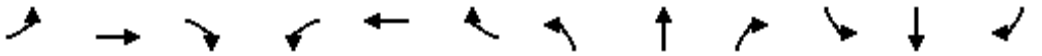
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	425	167	153	1088	137	393
Future Volume (vph)	425	167	153	1088	137	393
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	6		5	2	7	
Permitted Phases		6				4
Detector Phase	6	6	5	2	7	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	5.0	15.0	5.0	6.0
Minimum Split (s)	28.5	28.5	15.0	28.5	15.0	35.5
Total Split (s)	49.5	49.5	15.0	64.5	35.5	35.5
Total Split (%)	49.5%	49.5%	15.0%	64.5%	35.5%	35.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 1: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	425	167	153	1088	0	0	0	0	137	0	393
Future Volume (veh/h)	0	425	167	153	1088	0	0	0	0	137	0	393
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1826	1870	1870	1826	0				1870	0	1870
Adj Flow Rate, veh/h	0	462	0	166	1183	0				149	0	427
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	5	2	2	5	0				2	0	2
Cap, veh/h	0	1670		230	1101	0				511	0	455
Arrive On Green	0.00	0.48	0.00	0.13	1.00	0.00				0.29	0.00	0.29
Sat Flow, veh/h	0	3561	1585	3456	1826	0				1781	0	1585
Grp Volume(v), veh/h	0	462	0	166	1183	0				149	0	427
Grp Sat Flow(s),veh/h/ln	0	1735	1585	1728	1826	0				1781	0	1585
Q Serve(g_s), s	0.0	8.0	0.0	4.6	60.3	0.0				6.5	0.0	26.3
Cycle Q Clear(g_c), s	0.0	8.0	0.0	4.6	60.3	0.0				6.5	0.0	26.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1670		230	1101	0				511	0	455
V/C Ratio(X)	0.00	0.28		0.72	1.07	0.00				0.29	0.00	0.94
Avail Cap(c_a), veh/h	0	1670		328	1101	0				534	0	476
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.85	0.85	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.5	0.0	42.4	0.0	0.0				27.7	0.0	34.8
Incr Delay (d2), s/veh	0.0	0.4	0.0	3.7	47.6	0.0				0.3	0.0	26.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	5.3	0.0	3.4	21.5	0.0				4.9	0.0	31.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.9	0.0	46.2	47.6	0.0				28.0	0.0	60.9
LnGrp LOS	A	B		D	F	A				C	A	E
Approach Vol, veh/h		462	A		1349						576	
Approach Delay, s/veh		15.9			47.5						52.4	
Approach LOS		B			D						D	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		65.8		34.2	12.2	53.6						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		59.0		30.0	9.5	44.0						
Max Q Clear Time (g_c+I1), s		62.3		28.3	6.6	10.0						
Green Ext Time (p_c), s		0.0		0.4	0.1	5.7						

Intersection Summary		
HCM 6th Ctrl Delay		42.6
HCM 6th LOS		D

Notes

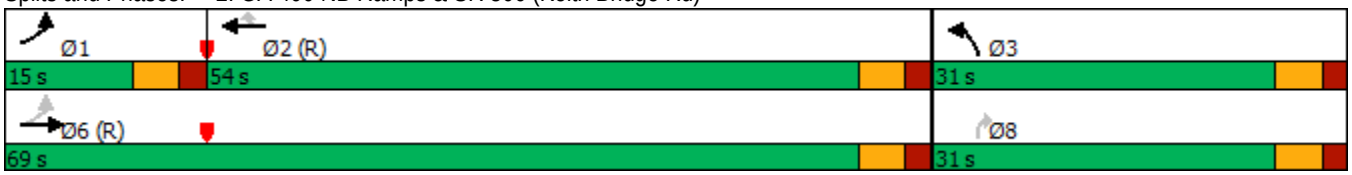
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

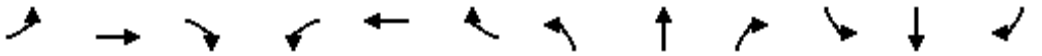
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	67	494	1178	78	63	447
Future Volume (vph)	67	494	1178	78	63	447
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		3	
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	3	8
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	5.0	6.0
Minimum Split (s)	15.0	34.5	23.5	23.5	15.0	30.5
Total Split (s)	15.0	69.0	54.0	54.0	31.0	31.0
Total Split (%)	15.0%	69.0%	54.0%	54.0%	31.0%	31.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	494	0	0	1178	78	63	0	447	0	0	0
Future Volume (veh/h)	67	494	0	0	1178	78	63	0	447	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1826	0	0	1826	1870	1870	0	1870			
Adj Flow Rate, veh/h	70	515	0	0	1227	0	66	0	466			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	5	0	0	5	2	2	0	2			
Cap, veh/h	420	2413	0	0	2073		346	0	543			
Arrive On Green	0.09	1.00	0.00	0.00	1.00	0.00	0.19	0.00	0.19			
Sat Flow, veh/h	1781	3561	0	0	3561	1585	1781	0	2790			
Grp Volume(v), veh/h	70	515	0	0	1227	0	66	0	466			
Grp Sat Flow(s),veh/h/ln	1781	1735	0	0	1735	1585	1781	0	1395			
Q Serve(g_s), s	1.4	0.0	0.0	0.0	0.0	0.0	3.1	0.0	16.2			
Cycle Q Clear(g_c), s	1.4	0.0	0.0	0.0	0.0	0.0	3.1	0.0	16.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	420	2413	0	0	2073		346	0	543			
V/C Ratio(X)	0.17	0.21	0.00	0.00	0.59		0.19	0.00	0.86			
Avail Cap(c_a), veh/h	513	2413	0	0	2073		454	0	711			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.97	0.97	0.00	0.00	0.40	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	5.8	0.0	0.0	0.0	0.0	0.0	33.7	0.0	38.9			
Incr Delay (d2), s/veh	0.2	0.2	0.0	0.0	0.5	0.0	0.3	0.0	8.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.7	0.1	0.0	0.0	0.3	0.0	2.4	0.0	9.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.9	0.2	0.0	0.0	0.5	0.0	34.0	0.0	47.2			
LnGrp LOS	A	A	A	A	A		C	A	D			
Approach Vol, veh/h		585			1227	A		532				
Approach Delay, s/veh		0.9			0.5			45.5				
Approach LOS		A			A			D				

Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	9.8	65.3				75.0		25.0				
Change Period (Y+Rc), s	5.5	5.5				5.5		5.5				
Max Green Setting (Gmax), s	9.5	48.5				63.5		25.5				
Max Q Clear Time (g_c+I1), s	3.4	2.0				2.0		18.2				
Green Ext Time (p_c), s	0.1	21.9				7.1		1.3				

Intersection Summary												
HCM 6th Ctrl Delay			10.8									
HCM 6th LOS			B									

Notes

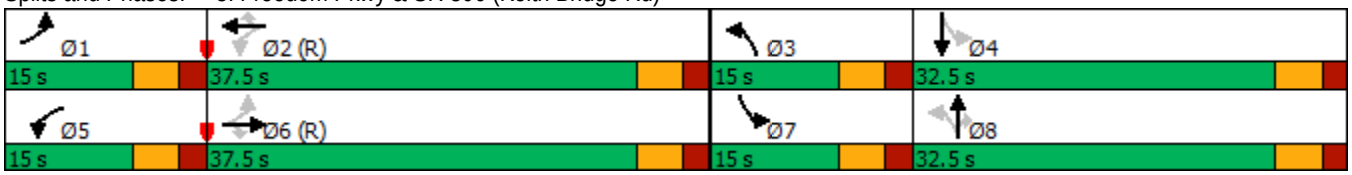
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

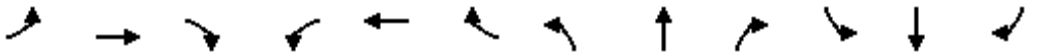
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	22	510	63	75	1001	20	50	111	42	22	24
Future Volume (vph)	22	510	63	75	1001	20	50	111	42	22	24
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	1	6		5	2		3	8		7	4
Permitted Phases	6		6	2		2	8		8	4	
Detector Phase	1	6	6	5	2	2	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	33.5	33.5	15.0	33.5	33.5	15.0	27.5	27.5	15.0	32.5
Total Split (s)	15.0	37.5	37.5	15.0	37.5	37.5	15.0	32.5	32.5	15.0	32.5
Total Split (%)	15.0%	37.5%	37.5%	15.0%	37.5%	37.5%	15.0%	32.5%	32.5%	15.0%	32.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 3: Freedom Pkwy & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	510	63	75	1001	20	50	111	42	22	24	9
Future Volume (veh/h)	22	510	63	75	1001	20	50	111	42	22	24	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1826	1870	1870	1826	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	537	0	79	1054	21	53	117	0	23	25	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	5	2	2	5	2	2	2	2	2	2	2
Cap, veh/h	201	1145		695	1183	1027	220	159		145	131	
Arrive On Green	0.05	1.00	0.00	0.04	0.65	0.65	0.04	0.09	0.00	0.02	0.07	0.00
Sat Flow, veh/h	1781	1826	1585	1781	1826	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	23	537	0	79	1054	21	53	117	0	23	25	0
Grp Sat Flow(s),veh/h/ln	1781	1826	1585	1781	1826	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.5	0.0	0.0	1.5	48.1	0.5	2.7	6.1	0.0	1.2	1.3	0.0
Cycle Q Clear(g_c), s	0.5	0.0	0.0	1.5	48.1	0.5	2.7	6.1	0.0	1.2	1.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	201	1145		695	1183	1027	220	159		145	131	
V/C Ratio(X)	0.11	0.47		0.11	0.89	0.02	0.24	0.74		0.16	0.19	
Avail Cap(c_a), veh/h	329	1145		785	1183	1027	321	505		272	505	
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.00	1.00	1.00	1.00	0.98	0.98	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.8	0.0	0.0	5.7	14.7	6.3	40.9	44.6	0.0	41.7	43.8	0.0
Incr Delay (d2), s/veh	0.2	1.3	0.0	0.1	10.3	0.0	0.5	6.3	0.0	0.5	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	0.7	0.0	0.8	25.4	0.3	2.1	5.4	0.0	1.0	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.1	1.3	0.0	5.7	25.0	6.3	41.5	51.0	0.0	42.2	44.5	0.0
LnGrp LOS	B	A		A	C	A	D	D		D	D	
Approach Vol, veh/h		560	A		1154			170	A		48	A
Approach Delay, s/veh		1.9			23.3			48.0			43.4	
Approach LOS		A			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	70.3	9.4	12.5	9.9	68.2	7.9	14.0
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	32.0	9.5	27.0	9.5	32.0	9.5	27.0
Max Q Clear Time (g_c+I1), s	2.5	50.1	4.7	3.3	3.5	2.0	3.2	8.1
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.1	6.7	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	19.8
HCM 6th LOS	B

Notes

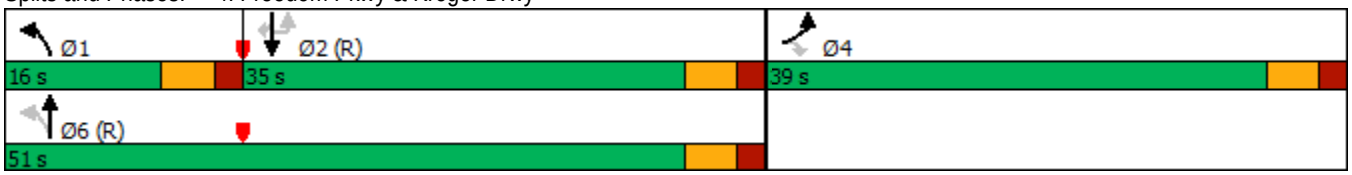
Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	80	19	19	123	1	148	28
Future Volume (vph)	80	19	19	123	1	148	28
Turn Type	Prot	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	4		1	6		2	
Permitted Phases		4	6		2		2
Detector Phase	4	4	1	6	2	2	2
Switch Phase							
Minimum Initial (s)	6.0	6.0	5.0	15.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	15.0	21.5	30.5	30.5	30.5
Total Split (s)	39.0	39.0	16.0	51.0	35.0	35.0	35.0
Total Split (%)	43.3%	43.3%	17.8%	56.7%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5		5.5	5.5
Lead/Lag			Lead		Lag	Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min	C-Min

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:SBTU and 6:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 4: Freedom Pkwy & Kroger Drwy



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	80	19	19	123	1	148	28
Future Volume (veh/h)	80	19	19	123	1	148	28
Initial Q (Qb), veh	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	94	22	22	145		174	33
Peak Hour Factor	0.85	0.85	0.85	0.85		0.85	0.85
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	130	116	951	2860		2559	1141
Arrive On Green	0.07	0.07	0.02	0.80		0.72	0.72
Sat Flow, veh/h	1781	1585	1781	3647		3647	1585
Grp Volume(v), veh/h	94	22	22	145		174	33
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777		1777	1585
Q Serve(g_s), s	4.6	1.2	0.3	0.7		1.3	0.5
Cycle Q Clear(g_c), s	4.6	1.2	0.3	0.7		1.3	0.5
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	130	116	951	2860		2559	1141
V/C Ratio(X)	0.72	0.19	0.02	0.05		0.07	0.03
Avail Cap(c_a), veh/h	663	590	1117	2860		2559	1141
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	40.8	39.2	2.6	1.8		3.7	3.6
Incr Delay (d2), s/veh	7.3	0.8	0.0	0.0		0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(95%),veh/ln	4.1	0.9	0.1	0.2		0.6	0.2
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	48.2	40.0	2.6	1.8		3.8	3.6
LnGrp LOS	D	D	A	A		A	A
Approach Vol, veh/h	116			167		207	
Approach Delay, s/veh	46.6			1.9		3.7	
Approach LOS	D			A		A	

Timer - Assigned Phs	1	2		4		6	
Phs Duration (G+Y+Rc), s	7.6	70.3		12.1		77.9	
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5	
Max Green Setting (Gmax), s	10.5	29.5		33.5		45.5	
Max Q Clear Time (g_c+I1), s	2.3	3.3		6.6		2.7	
Green Ext Time (p_c), s	0.0	2.0		0.3		1.7	

Intersection Summary			
HCM 6th Ctrl Delay		13.3	
HCM 6th LOS		B	

Notes

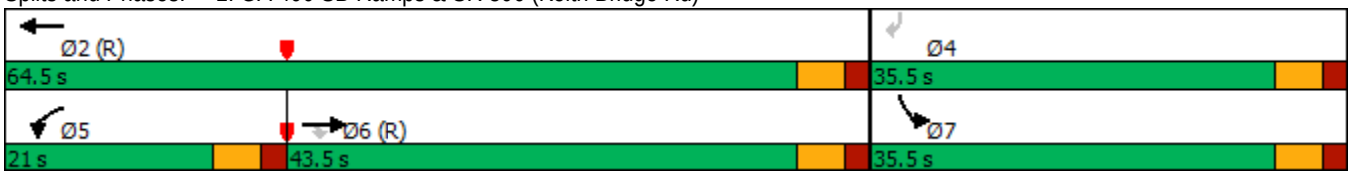
User approved ignoring U-Turning movement.

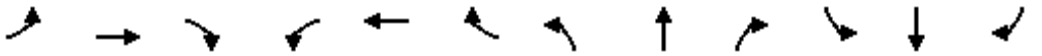
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	479	301	316	843	219	326
Future Volume (vph)	479	301	316	843	219	326
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	6		5	2	7	
Permitted Phases		6				4
Detector Phase	6	6	5	2	7	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	5.0	15.0	5.0	6.0
Minimum Split (s)	28.5	28.5	15.0	28.5	15.0	35.5
Total Split (s)	43.5	43.5	21.0	64.5	35.5	35.5
Total Split (%)	43.5%	43.5%	21.0%	64.5%	35.5%	35.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 1: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	479	301	316	843	0	0	0	0	219	0	326
Future Volume (veh/h)	0	479	301	316	843	0	0	0	0	219	0	326
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1826	1870	1870	1826	0				1870	0	1870
Adj Flow Rate, veh/h	0	510	0	336	897	0				233	0	347
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	5	2	2	5	0				2	0	2
Cap, veh/h	0	1645		404	1180	0				434	0	386
Arrive On Green	0.00	0.47	0.00	0.23	1.00	0.00				0.24	0.00	0.24
Sat Flow, veh/h	0	3561	1585	3456	1826	0				1781	0	1585
Grp Volume(v), veh/h	0	510	0	336	897	0				233	0	347
Grp Sat Flow(s),veh/h/ln	0	1735	1585	1728	1826	0				1781	0	1585
Q Serve(g_s), s	0.0	9.1	0.0	9.2	0.0	0.0				11.4	0.0	21.2
Cycle Q Clear(g_c), s	0.0	9.1	0.0	9.2	0.0	0.0				11.4	0.0	21.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1645		404	1180	0				434	0	386
V/C Ratio(X)	0.00	0.31		0.83	0.76	0.00				0.54	0.00	0.90
Avail Cap(c_a), veh/h	0	1645		536	1180	0				534	0	476
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.76	0.76	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.2	0.0	37.4	0.0	0.0				32.9	0.0	36.6
Incr Delay (d2), s/veh	0.0	0.5	0.0	6.4	3.6	0.0				1.0	0.0	17.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	6.0	0.0	6.4	2.1	0.0				8.5	0.0	25.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	16.7	0.0	43.7	3.6	0.0				33.9	0.0	53.8
LnGrp LOS	A	B		D	A	A				C	A	D
Approach Vol, veh/h		510	A		1233						580	
Approach Delay, s/veh		16.7			14.5						45.8	
Approach LOS		B			B						D	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		70.1		29.9	17.2	52.9						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		59.0		30.0	15.5	38.0						
Max Q Clear Time (g_c+I1), s		2.0		23.2	11.2	11.1						
Green Ext Time (p_c), s		17.8		1.2	0.5	6.0						

Intersection Summary		
HCM 6th Ctrl Delay		22.8
HCM 6th LOS		C

Notes

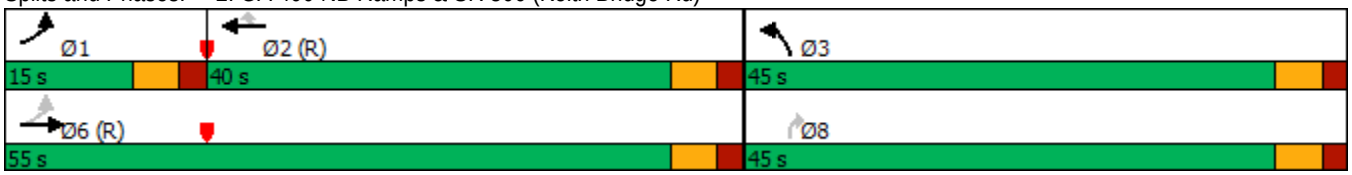
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

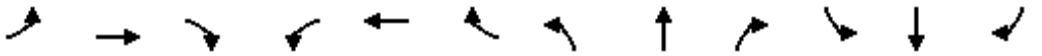
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	189	508	909	167	239	891
Future Volume (vph)	189	508	909	167	239	891
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		3	
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	3	8
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	5.0	6.0
Minimum Split (s)	15.0	34.5	23.5	23.5	15.0	30.5
Total Split (s)	15.0	55.0	40.0	40.0	45.0	45.0
Total Split (%)	15.0%	55.0%	40.0%	40.0%	45.0%	45.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	508	0	0	909	167	239	0	891	0	0	0
Future Volume (veh/h)	189	508	0	0	909	167	239	0	891	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1826	0	0	1826	1870	1870	0	1870			
Adj Flow Rate, veh/h	201	540	0	0	967	0	254	0	948			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	2	5	0	0	5	2	2	0	2			
Cap, veh/h	309	1809	0	0	1314		657	0	1028			
Arrive On Green	0.18	1.00	0.00	0.00	0.38	0.00	0.37	0.00	0.37			
Sat Flow, veh/h	1781	3561	0	0	3561	1585	1781	0	2790			
Grp Volume(v), veh/h	201	540	0	0	967	0	254	0	948			
Grp Sat Flow(s),veh/h/ln	1781	1735	0	0	1735	1585	1781	0	1395			
Q Serve(g_s), s	6.8	0.0	0.0	0.0	24.0	0.0	10.5	0.0	32.5			
Cycle Q Clear(g_c), s	6.8	0.0	0.0	0.0	24.0	0.0	10.5	0.0	32.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	309	1809	0	0	1314		657	0	1028			
V/C Ratio(X)	0.65	0.30	0.00	0.00	0.74		0.39	0.00	0.92			
Avail Cap(c_a), veh/h	322	1809	0	0	1314		704	0	1102			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.91	0.91	0.00	0.00	0.09	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	17.9	0.0	0.0	0.0	26.8	0.0	23.2	0.0	30.2			
Incr Delay (d2), s/veh	4.0	0.4	0.0	0.0	0.3	0.0	0.4	0.0	12.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	4.4	0.2	0.0	0.0	10.6	0.0	7.7	0.0	17.6			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	0.4	0.0	0.0	27.1	0.0	23.6	0.0	42.2			
LnGrp LOS	C	A	A	A	C		C	A	D			
Approach Vol, veh/h		741			967	A		1202				
Approach Delay, s/veh		6.2			27.1			38.3				
Approach LOS		A			C			D				

Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	14.3	43.4				57.6		42.4				
Change Period (Y+Rc), s	5.5	5.5				5.5		5.5				
Max Green Setting (Gmax), s	9.5	34.5				49.5		39.5				
Max Q Clear Time (g_c+I1), s	8.8	26.0				2.0		34.5				
Green Ext Time (p_c), s	0.0	5.6				7.3		2.4				

Intersection Summary												
HCM 6th Ctrl Delay			26.4									
HCM 6th LOS			C									

Notes

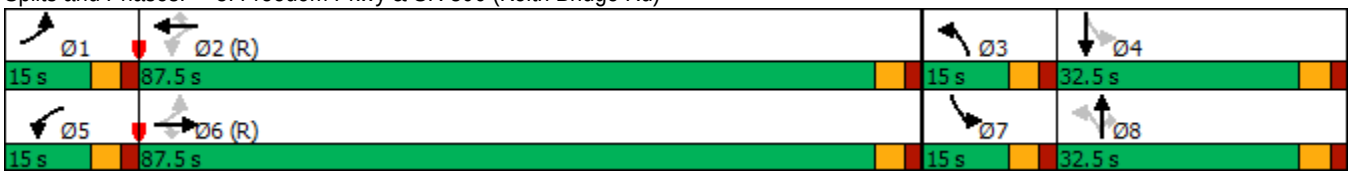
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

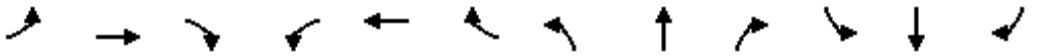
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	82	645	60	84	1117	148	50	231	34	151	112
Future Volume (vph)	82	645	60	84	1117	148	50	231	34	151	112
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	1	6		5	2		3	8		7	4
Permitted Phases	6		6	2		2	8		8	4	
Detector Phase	1	6	6	5	2	2	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	33.5	33.5	15.0	33.5	33.5	15.0	27.5	27.5	15.0	32.5
Total Split (s)	15.0	87.5	87.5	15.0	87.5	87.5	15.0	32.5	32.5	15.0	32.5
Total Split (%)	10.0%	58.3%	58.3%	10.0%	58.3%	58.3%	10.0%	21.7%	21.7%	10.0%	21.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 3: Freedom Pkwy & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	645	60	84	1117	148	50	231	34	151	112	87
Future Volume (veh/h)	82	645	60	84	1117	148	50	231	34	151	112	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1826	1870	1870	1826	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	87	686	0	89	1188	157	53	246	0	161	119	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	5	2	2	5	2	2	2	2	2	2	2
Cap, veh/h	109	1116		391	1113	966	261	274		180	328	
Arrive On Green	0.03	0.61	0.00	0.03	0.61	0.61	0.03	0.15	0.00	0.06	0.18	0.00
Sat Flow, veh/h	1781	1826	1585	1781	1826	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	87	686	0	89	1188	157	53	246	0	161	119	0
Grp Sat Flow(s),veh/h/ln	1781	1826	1585	1781	1826	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	3.2	35.1	0.0	2.8	91.5	6.4	3.8	19.4	0.0	9.5	8.4	0.0
Cycle Q Clear(g_c), s	3.2	35.1	0.0	2.8	91.5	6.4	3.8	19.4	0.0	9.5	8.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	109	1116		391	1113	966	261	274		180	328	
V/C Ratio(X)	0.80	0.61		0.23	1.07	0.16	0.20	0.90		0.89	0.36	
Avail Cap(c_a), veh/h	161	1116		446	1113	966	313	337		180	337	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	0.00	1.00	1.00	1.00	0.91	0.91	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.2	18.2	0.0	14.7	29.3	12.7	52.0	62.9	0.0	55.6	54.5	0.0
Incr Delay (d2), s/veh	11.9	1.8	0.0	0.3	46.8	0.4	0.3	21.1	0.0	38.8	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.0	19.5	0.0	1.9	65.3	4.2	3.0	15.8	0.0	6.3	7.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.0	20.0	0.0	15.0	76.1	13.0	52.3	84.0	0.0	94.3	55.2	0.0
LnGrp LOS	D	B		B	F	B	D	F		F	E	
Approach Vol, veh/h		773	A		1434			299	A		280	A
Approach Delay, s/veh		23.7			65.4			78.4			77.7	
Approach LOS		C			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	97.0	10.7	31.8	10.4	97.2	15.0	27.4
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	82.0	9.5	27.0	9.5	82.0	9.5	27.0
Max Q Clear Time (g_c+I1), s	5.2	93.5	5.8	10.4	4.8	37.1	11.5	21.4
Green Ext Time (p_c), s	0.1	0.0	0.0	0.5	0.1	10.5	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	56.5
HCM 6th LOS	E

Notes

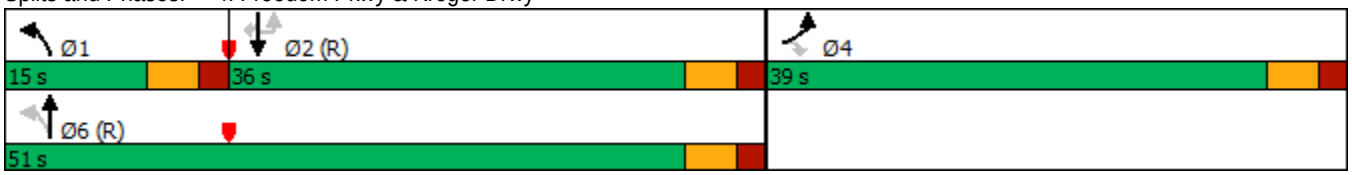
Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	234	99	67	242	34	229	57
Future Volume (vph)	234	99	67	242	34	229	57
Turn Type	Prot	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	4		1	6		2	
Permitted Phases		4	6		2		2
Detector Phase	4	4	1	6	2	2	2
Switch Phase							
Minimum Initial (s)	6.0	6.0	5.0	15.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	15.0	21.5	30.5	30.5	30.5
Total Split (s)	39.0	39.0	15.0	51.0	36.0	36.0	36.0
Total Split (%)	43.3%	43.3%	16.7%	56.7%	40.0%	40.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5		5.5	5.5
Lead/Lag			Lead		Lag	Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min	C-Min

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:SBTU and 6:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 4: Freedom Pkwy & Kroger Drwy



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	234	99	67	242	34	229	57
Future Volume (veh/h)	234	99	67	242	34	229	57
Initial Q (Qb), veh	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	279	118	80	288		273	68
Peak Hour Factor	0.84	0.84	0.84	0.84		0.84	0.84
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	332	296	735	2457		2069	923
Arrive On Green	0.19	0.19	0.05	0.69		0.58	0.58
Sat Flow, veh/h	1781	1585	1781	3647		3647	1585
Grp Volume(v), veh/h	279	118	80	288		273	68
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777		1777	1585
Q Serve(g_s), s	13.6	5.9	1.5	2.4		3.1	1.7
Cycle Q Clear(g_c), s	13.6	5.9	1.5	2.4		3.1	1.7
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	332	296	735	2457		2069	923
V/C Ratio(X)	0.84	0.40	0.11	0.12		0.13	0.07
Avail Cap(c_a), veh/h	663	590	837	2457		2069	923
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		0.90	0.90
Uniform Delay (d), s/veh	35.3	32.2	5.8	4.7		8.5	8.2
Incr Delay (d2), s/veh	5.7	0.9	0.1	0.1		0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(95%),veh/ln	10.5	4.2	0.8	1.2		1.9	0.9
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	41.0	33.1	5.9	4.8		8.6	8.3
LnGrp LOS	D	C	A	A		A	A
Approach Vol, veh/h	397			368		341	
Approach Delay, s/veh	38.7			5.0		8.6	
Approach LOS	D			A		A	

Timer - Assigned Phs	1	2		4		6	
Phs Duration (G+Y+Rc), s	9.8	57.9		22.3		67.7	
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5	
Max Green Setting (Gmax), s	9.5	30.5		33.5		45.5	
Max Q Clear Time (g_c+I1), s	3.5	5.1		15.6		4.4	
Green Ext Time (p_c), s	0.1	3.5		1.2		3.6	

Intersection Summary			
HCM 6th Ctrl Delay		18.2	
HCM 6th LOS		B	

Notes

User approved ignoring U-Turning movement.

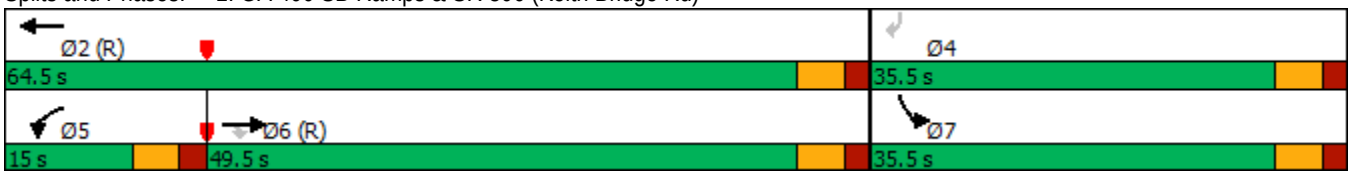
Future “No-Build” Intersection Analysis with Improvements

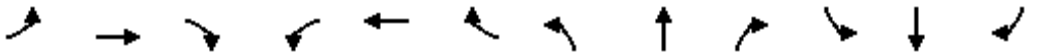
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	425	167	153	1088	137	393
Future Volume (vph)	425	167	153	1088	137	393
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	6		5	2	7	
Permitted Phases		6				4
Detector Phase	6	6	5	2	7	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	5.0	15.0	5.0	6.0
Minimum Split (s)	28.5	28.5	15.0	28.5	15.0	35.5
Total Split (s)	49.5	49.5	15.0	64.5	35.5	35.5
Total Split (%)	49.5%	49.5%	15.0%	64.5%	35.5%	35.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 1: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	425	167	153	1088	0	0	0	0	137	0	393
Future Volume (veh/h)	0	425	167	153	1088	0	0	0	0	137	0	393
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1826	1870	1870	1826	0				1870	0	1870
Adj Flow Rate, veh/h	0	462	0	166	1183	0				149	0	427
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	5	2	2	5	0				2	0	2
Cap, veh/h	0	1670		230	1101	0				511	0	455
Arrive On Green	0.00	0.48	0.00	0.13	1.00	0.00				0.29	0.00	0.29
Sat Flow, veh/h	0	3561	1585	3456	1826	0				1781	0	1585
Grp Volume(v), veh/h	0	462	0	166	1183	0				149	0	427
Grp Sat Flow(s),veh/h/ln	0	1735	1585	1728	1826	0				1781	0	1585
Q Serve(g_s), s	0.0	8.0	0.0	4.6	60.3	0.0				6.5	0.0	26.3
Cycle Q Clear(g_c), s	0.0	8.0	0.0	4.6	60.3	0.0				6.5	0.0	26.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1670		230	1101	0				511	0	455
V/C Ratio(X)	0.00	0.28		0.72	1.07	0.00				0.29	0.00	0.94
Avail Cap(c_a), veh/h	0	1670		328	1101	0				534	0	476
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.85	0.85	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.5	0.0	42.4	0.0	0.0				27.7	0.0	34.8
Incr Delay (d2), s/veh	0.0	0.4	0.0	3.7	47.6	0.0				0.3	0.0	26.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	5.3	0.0	3.4	21.5	0.0				4.9	0.0	31.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.9	0.0	46.2	47.6	0.0				28.0	0.0	60.9
LnGrp LOS	A	B		D	F	A				C	A	E
Approach Vol, veh/h		462	A		1349						576	
Approach Delay, s/veh		15.9			47.5						52.4	
Approach LOS		B			D						D	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		65.8		34.2	12.2	53.6						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		59.0		30.0	9.5	44.0						
Max Q Clear Time (g_c+I1), s		62.3		28.3	6.6	10.0						
Green Ext Time (p_c), s		0.0		0.4	0.1	5.7						

Intersection Summary												
HCM 6th Ctrl Delay			42.6									
HCM 6th LOS			D									

Notes

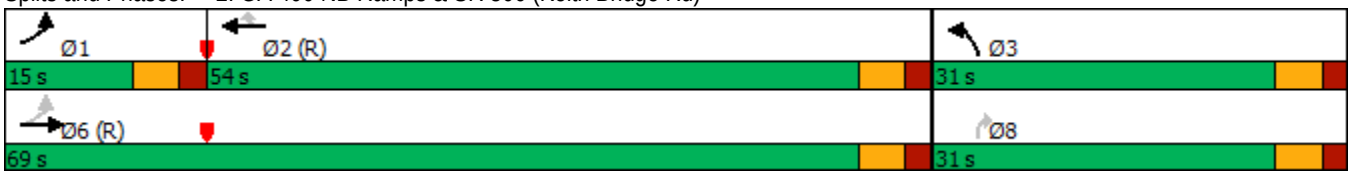
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

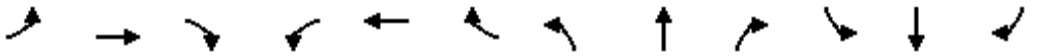
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	67	494	1178	78	63	447
Future Volume (vph)	67	494	1178	78	63	447
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		3	
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	3	8
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	5.0	6.0
Minimum Split (s)	15.0	34.5	23.5	23.5	15.0	30.5
Total Split (s)	15.0	69.0	54.0	54.0	31.0	31.0
Total Split (%)	15.0%	69.0%	54.0%	54.0%	31.0%	31.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	494	0	0	1178	78	63	0	447	0	0	0
Future Volume (veh/h)	67	494	0	0	1178	78	63	0	447	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1826	0	0	1826	1870	1870	0	1870			
Adj Flow Rate, veh/h	70	515	0	0	1227	0	66	0	466			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	5	0	0	5	2	2	0	2			
Cap, veh/h	420	2413	0	0	2073		346	0	543			
Arrive On Green	0.09	1.00	0.00	0.00	1.00	0.00	0.19	0.00	0.19			
Sat Flow, veh/h	1781	3561	0	0	3561	1585	1781	0	2790			
Grp Volume(v), veh/h	70	515	0	0	1227	0	66	0	466			
Grp Sat Flow(s),veh/h/ln	1781	1735	0	0	1735	1585	1781	0	1395			
Q Serve(g_s), s	1.4	0.0	0.0	0.0	0.0	0.0	3.1	0.0	16.2			
Cycle Q Clear(g_c), s	1.4	0.0	0.0	0.0	0.0	0.0	3.1	0.0	16.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	420	2413	0	0	2073		346	0	543			
V/C Ratio(X)	0.17	0.21	0.00	0.00	0.59		0.19	0.00	0.86			
Avail Cap(c_a), veh/h	513	2413	0	0	2073		454	0	711			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.97	0.97	0.00	0.00	0.89	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	5.8	0.0	0.0	0.0	0.0	0.0	33.7	0.0	38.9			
Incr Delay (d2), s/veh	0.2	0.2	0.0	0.0	1.1	0.0	0.3	0.0	8.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.7	0.1	0.0	0.0	0.6	0.0	2.4	0.0	9.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.9	0.2	0.0	0.0	1.1	0.0	34.0	0.0	47.2			
LnGrp LOS	A	A	A	A	A		C	A	D			
Approach Vol, veh/h		585			1227	A		532				
Approach Delay, s/veh		0.9			1.1			45.5				
Approach LOS		A			A			D				

Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	9.8	65.3				75.0		25.0				
Change Period (Y+Rc), s	5.5	5.5				5.5		5.5				
Max Green Setting (Gmax), s	9.5	48.5				63.5		25.5				
Max Q Clear Time (g_c+I1), s	3.4	2.0				2.0		18.2				
Green Ext Time (p_c), s	0.1	21.9				7.1		1.3				

Intersection Summary												
HCM 6th Ctrl Delay			11.1									
HCM 6th LOS			B									

Notes

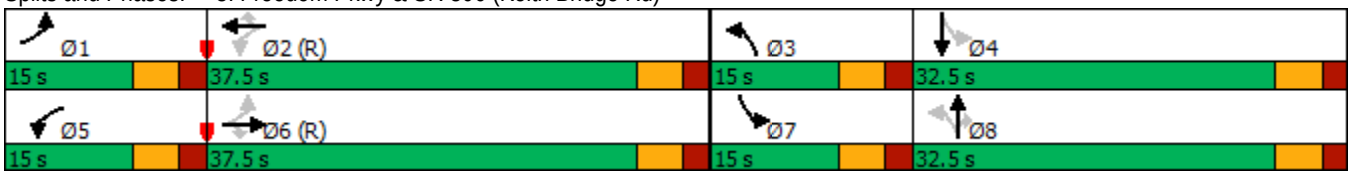
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

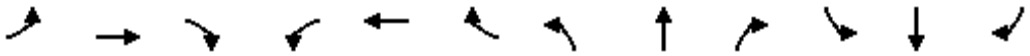
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	22	510	63	75	1001	20	50	111	42	22	24
Future Volume (vph)	22	510	63	75	1001	20	50	111	42	22	24
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	1	6		5	2		3	8		7	4
Permitted Phases	6		6	2		2	8		8	4	
Detector Phase	1	6	6	5	2	2	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	33.5	33.5	15.0	33.5	33.5	15.0	27.5	27.5	15.0	32.5
Total Split (s)	15.0	37.5	37.5	15.0	37.5	37.5	15.0	32.5	32.5	15.0	32.5
Total Split (%)	15.0%	37.5%	37.5%	15.0%	37.5%	37.5%	15.0%	32.5%	32.5%	15.0%	32.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 3: Freedom Pkwy & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	510	63	75	1001	20	50	111	42	22	24	9
Future Volume (veh/h)	22	510	63	75	1001	20	50	111	42	22	24	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1826	1870	1870	1826	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	537	0	79	1054	21	53	117	0	23	25	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	5	2	2	5	2	2	2	2	2	2	2
Cap, veh/h	373	2175		695	2247	1027	220	159		145	131	
Arrive On Green	0.05	1.00	0.00	0.04	0.65	0.65	0.04	0.09	0.00	0.02	0.07	0.00
Sat Flow, veh/h	1781	3469	1585	1781	3469	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	23	537	0	79	1054	21	53	117	0	23	25	0
Grp Sat Flow(s),veh/h/ln	1781	1735	1585	1781	1735	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.5	0.0	0.0	1.5	15.4	0.5	2.7	6.1	0.0	1.2	1.3	0.0
Cycle Q Clear(g_c), s	0.5	0.0	0.0	1.5	15.4	0.5	2.7	6.1	0.0	1.2	1.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	373	2175		695	2247	1027	220	159		145	131	
V/C Ratio(X)	0.06	0.25		0.11	0.47	0.02	0.24	0.74		0.16	0.19	
Avail Cap(c_a), veh/h	500	2175		785	2247	1027	321	505		272	505	
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.00	1.00	1.00	1.00	0.98	0.98	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.9	0.0	0.0	5.7	8.9	6.3	40.9	44.6	0.0	41.7	43.8	0.0
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.1	0.7	0.0	0.5	6.3	0.0	0.5	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.1	0.0	0.8	8.4	0.3	2.1	5.4	0.0	1.0	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.0	0.2	0.0	5.7	9.6	6.3	41.5	51.0	0.0	42.2	44.5	0.0
LnGrp LOS	A	A		A	A	A	D	D		D	D	
Approach Vol, veh/h		560	A		1154			170	A		48	A
Approach Delay, s/veh		0.5			9.3			48.0			43.4	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	70.3	9.4	12.5	9.9	68.2	7.9	14.0
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	32.0	9.5	27.0	9.5	32.0	9.5	27.0
Max Q Clear Time (g_c+I1), s	2.5	17.4	4.7	3.3	3.5	2.0	3.2	8.1
Green Ext Time (p_c), s	0.0	9.2	0.0	0.1	0.1	6.6	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	11.0
HCM 6th LOS	B

Notes

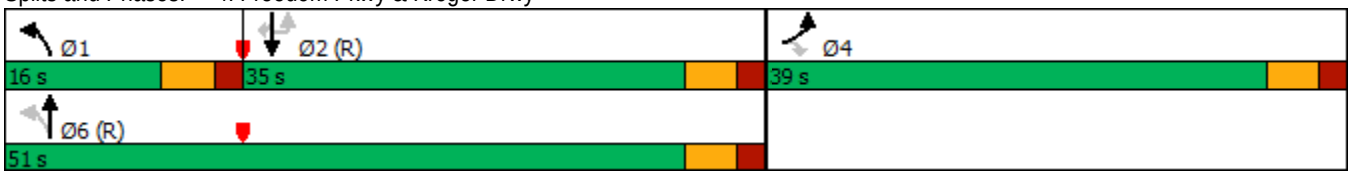
Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	80	19	19	123	1	148	28
Future Volume (vph)	80	19	19	123	1	148	28
Turn Type	Prot	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	4		1	6		2	
Permitted Phases		4	6		2		2
Detector Phase	4	4	1	6	2	2	2
Switch Phase							
Minimum Initial (s)	6.0	6.0	5.0	15.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	15.0	21.5	30.5	30.5	30.5
Total Split (s)	39.0	39.0	16.0	51.0	35.0	35.0	35.0
Total Split (%)	43.3%	43.3%	17.8%	56.7%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5		5.5	5.5
Lead/Lag			Lead		Lag	Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min	C-Min

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:SBTU and 6:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 4: Freedom Pkwy & Kroger Drwy



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	80	19	19	123	1	148	28
Future Volume (veh/h)	80	19	19	123	1	148	28
Initial Q (Qb), veh	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	94	22	22	145		174	33
Peak Hour Factor	0.85	0.85	0.85	0.85		0.85	0.85
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	130	116	951	2860		2559	1141
Arrive On Green	0.07	0.07	0.02	0.80		0.72	0.72
Sat Flow, veh/h	1781	1585	1781	3647		3647	1585
Grp Volume(v), veh/h	94	22	22	145		174	33
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777		1777	1585
Q Serve(g_s), s	4.6	1.2	0.3	0.7		1.3	0.5
Cycle Q Clear(g_c), s	4.6	1.2	0.3	0.7		1.3	0.5
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	130	116	951	2860		2559	1141
V/C Ratio(X)	0.72	0.19	0.02	0.05		0.07	0.03
Avail Cap(c_a), veh/h	663	590	1117	2860		2559	1141
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	40.8	39.2	2.6	1.8		3.7	3.6
Incr Delay (d2), s/veh	7.3	0.8	0.0	0.0		0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(95%),veh/ln	4.1	0.9	0.1	0.2		0.6	0.2
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	48.2	40.0	2.6	1.8		3.8	3.6
LnGrp LOS	D	D	A	A		A	A
Approach Vol, veh/h	116			167		207	
Approach Delay, s/veh	46.6			1.9		3.7	
Approach LOS	D			A		A	

Timer - Assigned Phs	1	2		4		6	
Phs Duration (G+Y+Rc), s	7.6	70.3		12.1		77.9	
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5	
Max Green Setting (Gmax), s	10.5	29.5		33.5		45.5	
Max Q Clear Time (g_c+I1), s	2.3	3.3		6.6		2.7	
Green Ext Time (p_c), s	0.0	2.0		0.3		1.7	

Intersection Summary			
HCM 6th Ctrl Delay		13.3	
HCM 6th LOS		B	

Notes

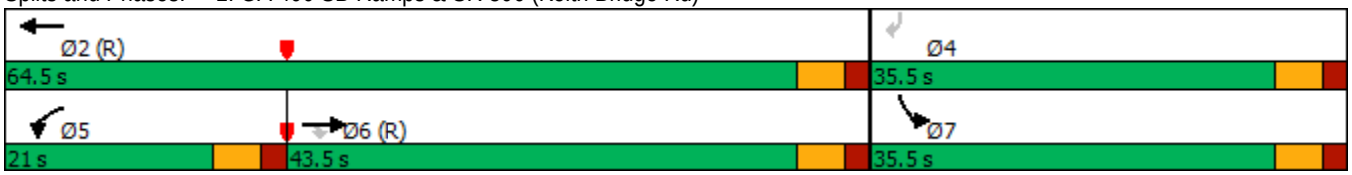
User approved ignoring U-Turning movement.

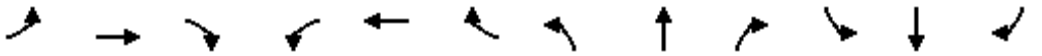
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	479	301	316	843	219	326
Future Volume (vph)	479	301	316	843	219	326
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	6		5	2	7	
Permitted Phases		6				4
Detector Phase	6	6	5	2	7	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	5.0	15.0	5.0	6.0
Minimum Split (s)	28.5	28.5	15.0	28.5	15.0	35.5
Total Split (s)	43.5	43.5	21.0	64.5	35.5	35.5
Total Split (%)	43.5%	43.5%	21.0%	64.5%	35.5%	35.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 1: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	479	301	316	843	0	0	0	0	219	0	326
Future Volume (veh/h)	0	479	301	316	843	0	0	0	0	219	0	326
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1826	1870	1870	1826	0				1870	0	1870
Adj Flow Rate, veh/h	0	510	0	336	897	0				233	0	347
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	5	2	2	5	0				2	0	2
Cap, veh/h	0	1645		404	1180	0				434	0	386
Arrive On Green	0.00	0.47	0.00	0.23	1.00	0.00				0.24	0.00	0.24
Sat Flow, veh/h	0	3561	1585	3456	1826	0				1781	0	1585
Grp Volume(v), veh/h	0	510	0	336	897	0				233	0	347
Grp Sat Flow(s),veh/h/ln	0	1735	1585	1728	1826	0				1781	0	1585
Q Serve(g_s), s	0.0	9.1	0.0	9.2	0.0	0.0				11.4	0.0	21.2
Cycle Q Clear(g_c), s	0.0	9.1	0.0	9.2	0.0	0.0				11.4	0.0	21.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1645		404	1180	0				434	0	386
V/C Ratio(X)	0.00	0.31		0.83	0.76	0.00				0.54	0.00	0.90
Avail Cap(c_a), veh/h	0	1645		536	1180	0				534	0	476
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.76	0.76	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.2	0.0	37.4	0.0	0.0				32.9	0.0	36.6
Incr Delay (d2), s/veh	0.0	0.5	0.0	6.4	3.6	0.0				1.0	0.0	17.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	6.0	0.0	6.4	2.1	0.0				8.5	0.0	25.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	16.7	0.0	43.7	3.6	0.0				33.9	0.0	53.8
LnGrp LOS	A	B		D	A	A				C	A	D
Approach Vol, veh/h		510	A		1233						580	
Approach Delay, s/veh		16.7			14.5						45.8	
Approach LOS		B			B						D	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		70.1		29.9	17.2	52.9						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		59.0		30.0	15.5	38.0						
Max Q Clear Time (g_c+I1), s		2.0		23.2	11.2	11.1						
Green Ext Time (p_c), s		17.8		1.2	0.5	6.0						

Intersection Summary		
HCM 6th Ctrl Delay		22.8
HCM 6th LOS		C

Notes

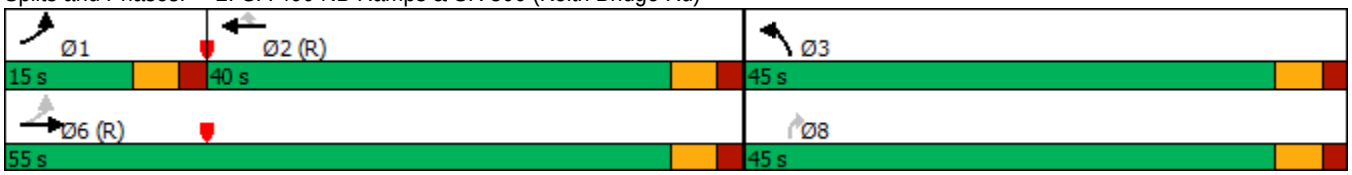
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

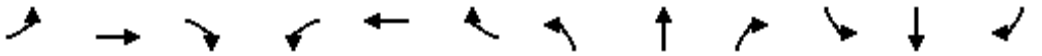
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	189	508	909	167	239	891
Future Volume (vph)	189	508	909	167	239	891
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		3	
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	3	8
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	5.0	6.0
Minimum Split (s)	15.0	34.5	23.5	23.5	15.0	30.5
Total Split (s)	15.0	55.0	40.0	40.0	45.0	45.0
Total Split (%)	15.0%	55.0%	40.0%	40.0%	45.0%	45.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	508	0	0	909	167	239	0	891	0	0	0
Future Volume (veh/h)	189	508	0	0	909	167	239	0	891	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1826	0	0	1826	1870	1870	0	1870			
Adj Flow Rate, veh/h	201	540	0	0	967	0	254	0	948			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	2	5	0	0	5	2	2	0	2			
Cap, veh/h	359	1809	0	0	1314		657	0	1028			
Arrive On Green	0.18	1.00	0.00	0.00	0.76	0.00	0.37	0.00	0.37			
Sat Flow, veh/h	1781	3561	0	0	3561	1585	1781	0	2790			
Grp Volume(v), veh/h	201	540	0	0	967	0	254	0	948			
Grp Sat Flow(s),veh/h/ln	1781	1735	0	0	1735	1585	1781	0	1395			
Q Serve(g_s), s	6.8	0.0	0.0	0.0	15.3	0.0	10.5	0.0	32.5			
Cycle Q Clear(g_c), s	6.8	0.0	0.0	0.0	15.3	0.0	10.5	0.0	32.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	359	1809	0	0	1314		657	0	1028			
V/C Ratio(X)	0.56	0.30	0.00	0.00	0.74		0.39	0.00	0.92			
Avail Cap(c_a), veh/h	372	1809	0	0	1314		704	0	1102			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.91	0.91	0.00	0.00	0.58	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	15.5	0.0	0.0	0.0	9.4	0.0	23.2	0.0	30.2			
Incr Delay (d2), s/veh	1.6	0.4	0.0	0.0	2.2	0.0	0.4	0.0	12.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	4.1	0.2	0.0	0.0	5.5	0.0	7.7	0.0	17.6			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.1	0.4	0.0	0.0	11.6	0.0	23.6	0.0	42.2			
LnGrp LOS	B	A	A	A	B		C	A	D			
Approach Vol, veh/h		741			967	A		1202				
Approach Delay, s/veh		4.9			11.6			38.3				
Approach LOS		A			B			D				

Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	14.3	43.4				57.6		42.4				
Change Period (Y+Rc), s	5.5	5.5				5.5		5.5				
Max Green Setting (Gmax), s	9.5	34.5				49.5		39.5				
Max Q Clear Time (g_c+I1), s	8.8	17.3				2.0		34.5				
Green Ext Time (p_c), s	0.0	9.5				7.3		2.4				

Intersection Summary												
HCM 6th Ctrl Delay			20.9									
HCM 6th LOS			C									

Notes

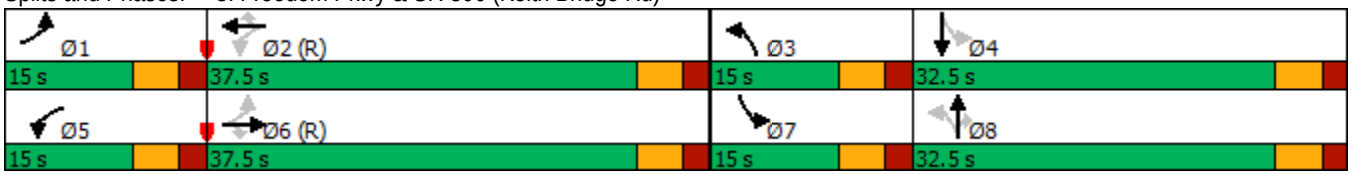
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

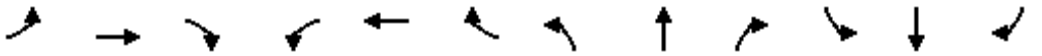
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	82	645	60	84	1117	148	50	231	34	151	112
Future Volume (vph)	82	645	60	84	1117	148	50	231	34	151	112
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	1	6		5	2		3	8		7	4
Permitted Phases	6		6	2		2	8		8	4	
Detector Phase	1	6	6	5	2	2	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	33.5	33.5	15.0	33.5	33.5	15.0	27.5	27.5	15.0	32.5
Total Split (s)	15.0	37.5	37.5	15.0	37.5	37.5	15.0	32.5	32.5	15.0	32.5
Total Split (%)	15.0%	37.5%	37.5%	15.0%	37.5%	37.5%	15.0%	32.5%	32.5%	15.0%	32.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 3: Freedom Pkwy & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	645	60	84	1117	148	50	231	34	151	112	87
Future Volume (veh/h)	82	645	60	84	1117	148	50	231	34	151	112	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1826	1870	1870	1826	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	87	686	0	89	1188	157	53	246	0	161	119	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	5	2	2	5	2	2	2	2	2	2	2
Cap, veh/h	242	1684		513	1685	770	340	293		269	393	
Arrive On Green	0.09	0.97	0.00	0.05	0.49	0.49	0.04	0.16	0.00	0.09	0.21	0.00
Sat Flow, veh/h	1781	3469	1585	1781	3469	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	87	686	0	89	1188	157	53	246	0	161	119	0
Grp Sat Flow(s),veh/h/ln	1781	1735	1585	1781	1735	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	2.4	1.0	0.0	2.5	26.8	5.7	2.5	12.8	0.0	7.3	5.4	0.0
Cycle Q Clear(g_c), s	2.4	1.0	0.0	2.5	26.8	5.7	2.5	12.8	0.0	7.3	5.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	242	1684		513	1685	770	340	293		269	393	
V/C Ratio(X)	0.36	0.41		0.17	0.71	0.20	0.16	0.84		0.60	0.30	
Avail Cap(c_a), veh/h	330	1684		601	1685	770	441	505		274	505	
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	0.00	1.00	1.00	1.00	0.91	0.91	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	15.3	0.8	0.0	11.6	20.1	14.7	33.4	40.9	0.0	30.8	33.3	0.0
Incr Delay (d2), s/veh	0.7	0.5	0.0	0.2	2.5	0.6	0.2	5.8	0.0	3.5	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	0.6	0.0	1.6	15.3	3.6	1.9	10.0	0.0	6.1	4.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.9	1.3	0.0	11.7	22.6	15.3	33.6	46.7	0.0	34.2	33.7	0.0
LnGrp LOS	B	A		B	C	B	C	D		C	C	
Approach Vol, veh/h		773	A		1434			299	A		280	A
Approach Delay, s/veh		2.9			21.1			44.4			34.0	
Approach LOS		A			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.1	54.1	9.4	26.5	10.1	54.0	14.7	21.2
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	32.0	9.5	27.0	9.5	32.0	9.5	27.0
Max Q Clear Time (g_c+I1), s	4.4	28.8	4.5	7.4	4.5	3.0	9.3	14.8
Green Ext Time (p_c), s	0.1	2.7	0.0	0.6	0.1	8.6	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	19.9
HCM 6th LOS	B

Notes

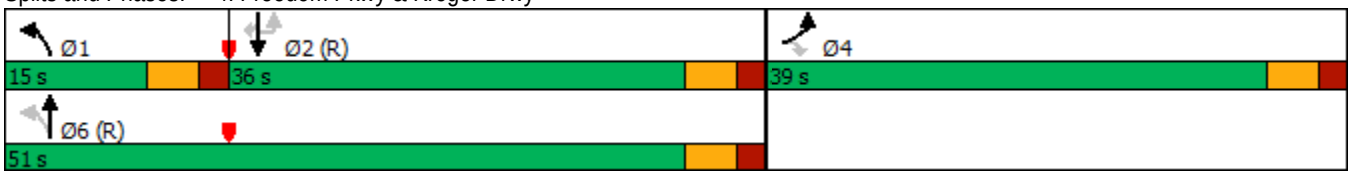
Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	234	99	67	242	34	229	57
Future Volume (vph)	234	99	67	242	34	229	57
Turn Type	Prot	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	4		1	6		2	
Permitted Phases		4	6		2		2
Detector Phase	4	4	1	6	2	2	2
Switch Phase							
Minimum Initial (s)	6.0	6.0	5.0	15.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	15.0	21.5	30.5	30.5	30.5
Total Split (s)	39.0	39.0	15.0	51.0	36.0	36.0	36.0
Total Split (%)	43.3%	43.3%	16.7%	56.7%	40.0%	40.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5		5.5	5.5
Lead/Lag			Lead		Lag	Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min	C-Min

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:SBTU and 6:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 4: Freedom Pkwy & Kroger Drwy



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	234	99	67	242	34	229	57
Future Volume (veh/h)	234	99	67	242	34	229	57
Initial Q (Qb), veh	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	279	118	80	288		273	68
Peak Hour Factor	0.84	0.84	0.84	0.84		0.84	0.84
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	332	296	735	2457		2069	923
Arrive On Green	0.19	0.19	0.05	0.69		0.58	0.58
Sat Flow, veh/h	1781	1585	1781	3647		3647	1585
Grp Volume(v), veh/h	279	118	80	288		273	68
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777		1777	1585
Q Serve(g_s), s	13.6	5.9	1.5	2.4		3.1	1.7
Cycle Q Clear(g_c), s	13.6	5.9	1.5	2.4		3.1	1.7
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	332	296	735	2457		2069	923
V/C Ratio(X)	0.84	0.40	0.11	0.12		0.13	0.07
Avail Cap(c_a), veh/h	663	590	837	2457		2069	923
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		0.94	0.94
Uniform Delay (d), s/veh	35.3	32.2	5.8	4.7		8.5	8.2
Incr Delay (d2), s/veh	5.7	0.9	0.1	0.1		0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(95%),veh/ln	10.5	4.2	0.8	1.2		1.9	0.9
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	41.0	33.1	5.9	4.8		8.6	8.4
LnGrp LOS	D	C	A	A		A	A
Approach Vol, veh/h	397			368		341	
Approach Delay, s/veh	38.7			5.0		8.6	
Approach LOS	D			A		A	

Timer - Assigned Phs	1	2		4		6	
Phs Duration (G+Y+Rc), s	9.8	57.9		22.3		67.7	
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5	
Max Green Setting (Gmax), s	9.5	30.5		33.5		45.5	
Max Q Clear Time (g_c+I1), s	3.5	5.1		15.6		4.4	
Green Ext Time (p_c), s	0.1	3.5		1.2		3.6	

Intersection Summary			
HCM 6th Ctrl Delay		18.2	
HCM 6th LOS		B	

Notes

User approved ignoring U-Turning movement.

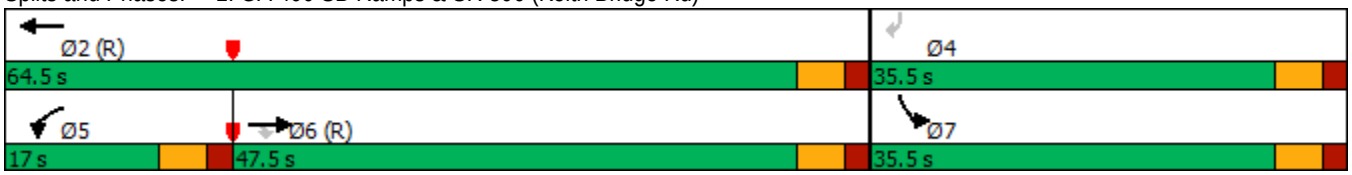
Future “Build” Intersections Analysis

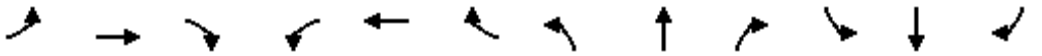
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	434	167	211	1105	151	393
Future Volume (vph)	434	167	211	1105	151	393
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	6		5	2	7	
Permitted Phases		6				4
Detector Phase	6	6	5	2	7	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	5.0	15.0	5.0	6.0
Minimum Split (s)	28.5	28.5	15.0	28.5	15.0	35.5
Total Split (s)	47.5	47.5	17.0	64.5	35.5	35.5
Total Split (%)	47.5%	47.5%	17.0%	64.5%	35.5%	35.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 1: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	434	167	211	1105	0	0	0	0	151	0	393
Future Volume (veh/h)	0	434	167	211	1105	0	0	0	0	151	0	393
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1826	1870	1870	1826	0				1870	0	1870
Adj Flow Rate, veh/h	0	472	0	229	1201	0				164	0	427
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	5	2	2	5	0				2	0	2
Cap, veh/h	0	1605		295	1101	0				511	0	455
Arrive On Green	0.00	0.46	0.00	0.17	1.00	0.00				0.29	0.00	0.29
Sat Flow, veh/h	0	3561	1585	3456	1826	0				1781	0	1585
Grp Volume(v), veh/h	0	472	0	229	1201	0				164	0	427
Grp Sat Flow(s),veh/h/ln	0	1735	1585	1728	1826	0				1781	0	1585
Q Serve(g_s), s	0.0	8.5	0.0	6.3	60.3	0.0				7.2	0.0	26.3
Cycle Q Clear(g_c), s	0.0	8.5	0.0	6.3	60.3	0.0				7.2	0.0	26.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1605		295	1101	0				511	0	455
V/C Ratio(X)	0.00	0.29		0.78	1.09	0.00				0.32	0.00	0.94
Avail Cap(c_a), veh/h	0	1605		397	1101	0				534	0	476
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.83	0.83	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.7	0.0	40.6	0.0	0.0				28.0	0.0	34.8
Incr Delay (d2), s/veh	0.0	0.5	0.0	5.6	53.4	0.0				0.4	0.0	26.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	5.7	0.0	4.7	23.9	0.0				5.4	0.0	31.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	17.2	0.0	46.1	53.4	0.0				28.3	0.0	60.8
LnGrp LOS	A	B		D	F	A				C	A	E
Approach Vol, veh/h		472	A		1430						591	
Approach Delay, s/veh		17.2			52.3						51.8	
Approach LOS		B			D						D	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		65.8		34.2	14.0	51.8						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		59.0		30.0	11.5	42.0						
Max Q Clear Time (g_c+I1), s		62.3		28.3	8.3	10.5						
Green Ext Time (p_c), s		0.0		0.4	0.2	5.7						

Intersection Summary		
HCM 6th Ctrl Delay		45.5
HCM 6th LOS		D

Notes

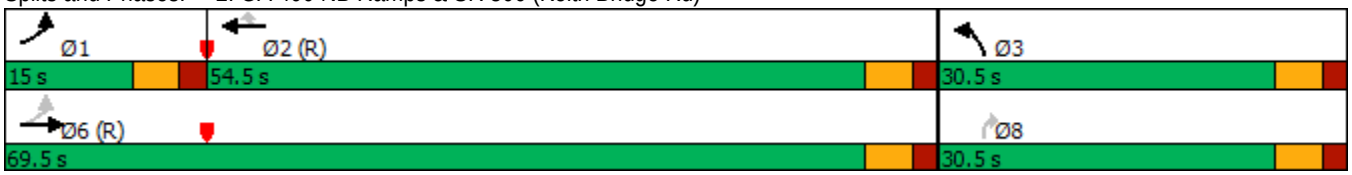
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

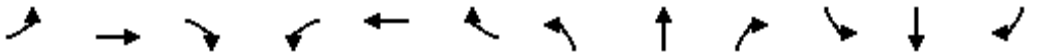
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	67	518	1253	103	63	480
Future Volume (vph)	67	518	1253	103	63	480
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		3	
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	3	8
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	5.0	6.0
Minimum Split (s)	15.0	34.5	23.5	23.5	15.0	30.5
Total Split (s)	15.0	69.5	54.5	54.5	30.5	30.5
Total Split (%)	15.0%	69.5%	54.5%	54.5%	30.5%	30.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	518	0	0	1253	103	63	0	480	0	0	0
Future Volume (veh/h)	67	518	0	0	1253	103	63	0	480	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1826	0	0	1826	1870	1870	0	1870			
Adj Flow Rate, veh/h	70	540	0	0	1305	0	66	0	500			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	5	0	0	5	2	2	0	2			
Cap, veh/h	396	2375	0	0	2036		366	0	573			
Arrive On Green	0.09	1.00	0.00	0.00	1.00	0.00	0.21	0.00	0.21			
Sat Flow, veh/h	1781	3561	0	0	3561	1585	1781	0	2790			
Grp Volume(v), veh/h	70	540	0	0	1305	0	66	0	500			
Grp Sat Flow(s),veh/h/ln	1781	1735	0	0	1735	1585	1781	0	1395			
Q Serve(g_s), s	1.4	0.0	0.0	0.0	0.0	0.0	3.1	0.0	17.4			
Cycle Q Clear(g_c), s	1.4	0.0	0.0	0.0	0.0	0.0	3.1	0.0	17.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	396	2375	0	0	2036		366	0	573			
V/C Ratio(X)	0.18	0.23	0.00	0.00	0.64		0.18	0.00	0.87			
Avail Cap(c_a), veh/h	489	2375	0	0	2036		445	0	697			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.96	0.96	0.00	0.00	0.29	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	6.1	0.0	0.0	0.0	0.0	0.0	32.8	0.0	38.5			
Incr Delay (d2), s/veh	0.2	0.2	0.0	0.0	0.5	0.0	0.2	0.0	10.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.8	0.1	0.0	0.0	0.2	0.0	2.3	0.0	10.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.3	0.2	0.0	0.0	0.5	0.0	33.0	0.0	48.7			
LnGrp LOS	A	A	A	A	A		C	A	D			
Approach Vol, veh/h		610			1305	A		566				
Approach Delay, s/veh		0.9			0.5			46.8				
Approach LOS		A			A			D				

Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	9.8	64.2				74.0		26.0				
Change Period (Y+Rc), s	5.5	5.5				5.5		5.5				
Max Green Setting (Gmax), s	9.5	49.0				64.0		25.0				
Max Q Clear Time (g_c+I1), s	3.4	2.0				2.0		19.4				
Green Ext Time (p_c), s	0.1	24.0				7.5		1.2				

Intersection Summary												
HCM 6th Ctrl Delay			11.2									
HCM 6th LOS			B									

Notes

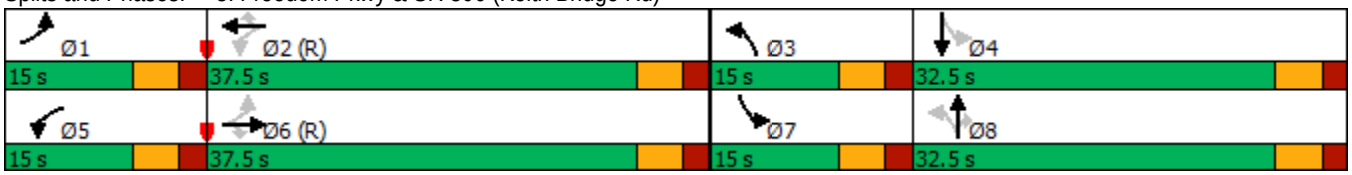
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

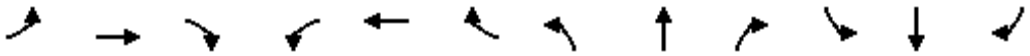
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	22	555	74	85	1071	20	80	111	49	22	24
Future Volume (vph)	22	555	74	85	1071	20	80	111	49	22	24
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	1	6		5	2		3	8		7	4
Permitted Phases	6		6	2		2	8		8	4	
Detector Phase	1	6	6	5	2	2	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	33.5	33.5	15.0	33.5	33.5	15.0	27.5	27.5	15.0	32.5
Total Split (s)	15.0	37.5	37.5	15.0	37.5	37.5	15.0	32.5	32.5	15.0	32.5
Total Split (%)	15.0%	37.5%	37.5%	15.0%	37.5%	37.5%	15.0%	32.5%	32.5%	15.0%	32.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 3: Freedom Pkwy & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	555	74	85	1071	20	80	111	49	22	24	9
Future Volume (veh/h)	22	555	74	85	1071	20	80	111	49	22	24	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1826	1870	1870	1826	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	584	0	89	1127	21	84	117	0	23	25	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	5	2	2	5	2	2	2	2	2	2	2
Cap, veh/h	142	1127		666	1167	1013	240	175		156	111	
Arrive On Green	0.05	1.00	0.00	0.05	0.64	0.64	0.06	0.09	0.00	0.02	0.06	0.00
Sat Flow, veh/h	1781	1826	1585	1781	1826	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	23	584	0	89	1127	21	84	117	0	23	25	0
Grp Sat Flow(s),veh/h/ln	1781	1826	1585	1781	1826	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.5	0.0	0.0	1.8	58.2	0.5	4.4	6.0	0.0	1.2	1.3	0.0
Cycle Q Clear(g_c), s	0.5	0.0	0.0	1.8	58.2	0.5	4.4	6.0	0.0	1.2	1.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	142	1127		666	1167	1013	240	175		156	111	
V/C Ratio(X)	0.16	0.52		0.13	0.97	0.02	0.35	0.67		0.15	0.23	
Avail Cap(c_a), veh/h	269	1127		754	1167	1013	306	505		284	505	
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.00	1.00	1.00	1.00	0.98	0.98	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.4	0.0	0.0	6.0	17.0	6.6	40.9	43.8	0.0	42.6	44.8	0.0
Incr Delay (d2), s/veh	0.5	1.5	0.0	0.1	19.3	0.0	0.9	4.3	0.0	0.4	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	0.9	0.0	1.0	32.7	0.3	3.4	5.2	0.0	1.0	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.9	1.5	0.0	6.1	36.3	6.6	41.8	48.1	0.0	43.1	45.9	0.0
LnGrp LOS	C	A		A	D	A	D	D		D	D	
Approach Vol, veh/h		607	A		1237			201	A		48	A
Approach Delay, s/veh		2.3			33.6			45.4			44.5	
Approach LOS		A			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	69.4	11.3	11.4	10.1	67.2	7.9	14.9
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	32.0	9.5	27.0	9.5	32.0	9.5	27.0
Max Q Clear Time (g_c+I1), s	2.5	60.2	6.4	3.3	3.8	2.0	3.2	8.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.1	7.5	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	25.9
HCM 6th LOS	C

Notes

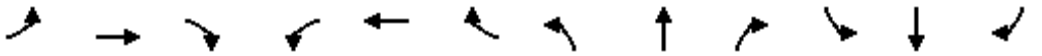
Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	80	2	25	2	19	127	15	14	156	28
Future Volume (vph)	80	2	25	2	19	127	15	14	156	28
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		8	1	6			2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	4	4	8	8	1	6	6	2	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	5.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	36.5	36.5	15.0	30.5	30.5	30.5	30.5	30.5
Total Split (s)	39.0	39.0	39.0	39.0	16.0	51.0	51.0	35.0	35.0	35.0
Total Split (%)	43.3%	43.3%	43.3%	43.3%	17.8%	56.7%	56.7%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag					Lead			Lag	Lag	Lag
Lead-Lag Optimize?					Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 4: Freedom Pkwy & Kroger Drwy/Site Drwy 1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	2	19	25	2	33	19	127	15	14	156	28
Future Volume (veh/h)	80	2	19	25	2	33	19	127	15	14	156	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	2	22	29	2	39	22	149	18	16	184	33
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	15	170	222	9	176	890	2709	1208	906	2408	1074
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.02	0.76	0.76	0.68	0.68	0.68
Sat Flow, veh/h	1366	134	1472	1387	78	1519	1781	3554	1585	1218	3554	1585
Grp Volume(v), veh/h	94	0	24	29	0	41	22	149	18	16	184	33
Grp Sat Flow(s),veh/h/ln	1366	0	1605	1387	0	1597	1781	1777	1585	1218	1777	1585
Q Serve(g_s), s	6.0	0.0	1.2	1.7	0.0	2.1	0.3	0.9	0.2	0.4	1.6	0.6
Cycle Q Clear(g_c), s	8.1	0.0	1.2	2.9	0.0	2.1	0.3	0.9	0.2	0.4	1.6	0.6
Prop In Lane	1.00		0.92	1.00		0.95	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	206	0	186	222	0	185	890	2709	1208	906	2408	1074
V/C Ratio(X)	0.46	0.00	0.13	0.13	0.00	0.22	0.02	0.06	0.01	0.02	0.08	0.03
Avail Cap(c_a), veh/h	557	0	598	578	0	594	1056	2709	1208	906	2408	1074
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99
Uniform Delay (d), s/veh	39.8	0.0	35.7	37.0	0.0	36.1	3.6	2.7	2.6	4.7	4.9	4.8
Incr Delay (d2), s/veh	1.6	0.0	0.3	0.3	0.0	0.6	0.0	0.0	0.0	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.8	0.0	0.9	1.1	0.0	1.5	0.1	0.4	0.1	0.1	0.8	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.4	0.0	36.0	37.3	0.0	36.7	3.6	2.7	2.6	4.8	5.0	4.8
LnGrp LOS	D	A	D	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		118			70			189			233	
Approach Delay, s/veh		40.3			37.0			2.8			5.0	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.6	66.5		15.9		74.1		15.9				
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s	10.5	29.5		33.5		45.5		33.5				
Max Q Clear Time (g_c+I1), s	2.3	3.6		10.1		2.9		4.9				
Green Ext Time (p_c), s	0.0	2.3		0.4		1.9		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			14.8									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	10.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	602	24	17	1097	78	13
Future Vol, veh/h	602	24	17	1097	78	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	225	0	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	2	2	5	2	2
Mvmt Flow	654	26	18	1192	85	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	680	0	1882	654
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	1228	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	912	-	~ 78	467
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	277	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	912	-	~ 76	467
Mov Cap-2 Maneuver	-	-	-	-	~ 76	-
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	271	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	203.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	76	467	-	-	912	-
HCM Lane V/C Ratio	1.116	0.03	-	-	0.02	-
HCM Control Delay (s)	234.8	12.9	-	-	9	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	6.2	0.1	-	-	0.1	-

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

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	591	24	0	1114	0	17
Future Vol, veh/h	591	24	0	1114	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	Yield
Storage Length	-	150	35	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	2	2	5	2	2
Mvmt Flow	642	26	0	1211	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	642
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.319
Pot Cap-1 Maneuver	-	0	0	-	0	473
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	473
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.9
HCM LOS			B

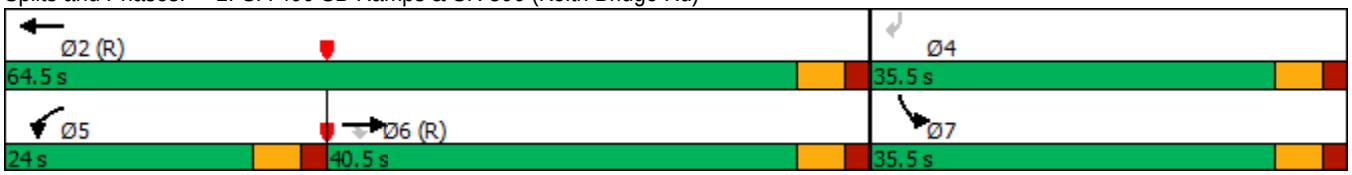
Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	473	-	-
HCM Lane V/C Ratio	0.039	-	-
HCM Control Delay (s)	12.9	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-

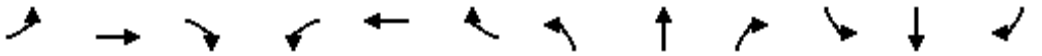
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	510	301	403	868	265	326
Future Volume (vph)	510	301	403	868	265	326
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	6		5	2	7	
Permitted Phases		6				4
Detector Phase	6	6	5	2	7	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	5.0	15.0	5.0	6.0
Minimum Split (s)	28.5	28.5	15.0	28.5	15.0	35.5
Total Split (s)	40.5	40.5	24.0	64.5	35.5	35.5
Total Split (%)	40.5%	40.5%	24.0%	64.5%	35.5%	35.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 1: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	510	301	403	868	0	0	0	0	265	0	326
Future Volume (veh/h)	0	510	301	403	868	0	0	0	0	265	0	326
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1826	1870	1870	1826	0				1870	0	1870
Adj Flow Rate, veh/h	0	543	0	429	923	0				282	0	347
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	5	2	2	5	0				2	0	2
Cap, veh/h	0	1547		499	1178	0				436	0	388
Arrive On Green	0.00	0.45	0.00	0.29	1.00	0.00				0.24	0.00	0.24
Sat Flow, veh/h	0	3561	1585	3456	1826	0				1781	0	1585
Grp Volume(v), veh/h	0	543	0	429	923	0				282	0	347
Grp Sat Flow(s),veh/h/ln	0	1735	1585	1728	1826	0				1781	0	1585
Q Serve(g_s), s	0.0	10.3	0.0	11.7	0.0	0.0				14.2	0.0	21.2
Cycle Q Clear(g_c), s	0.0	10.3	0.0	11.7	0.0	0.0				14.2	0.0	21.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1547		499	1178	0				436	0	388
V/C Ratio(X)	0.00	0.35		0.86	0.78	0.00				0.65	0.00	0.89
Avail Cap(c_a), veh/h	0	1547		639	1178	0				534	0	476
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.60	0.60	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.2	0.0	34.6	0.0	0.0				33.9	0.0	36.5
Incr Delay (d2), s/veh	0.0	0.6	0.0	5.9	3.2	0.0				1.9	0.0	16.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	6.9	0.0	7.0	1.9	0.0				10.2	0.0	25.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	18.8	0.0	40.5	3.2	0.0				35.8	0.0	53.3
LnGrp LOS	A	B		D	A	A				D	A	D
Approach Vol, veh/h		543	A		1352						629	
Approach Delay, s/veh		18.8			15.0						45.5	
Approach LOS		B			B						D	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		70.0		30.0	19.9	50.1						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		59.0		30.0	18.5	35.0						
Max Q Clear Time (g_c+I1), s		2.0		23.2	13.7	12.3						
Green Ext Time (p_c), s		18.8		1.3	0.7	6.0						

Intersection Summary		
HCM 6th Ctrl Delay		23.4
HCM 6th LOS		C

Notes

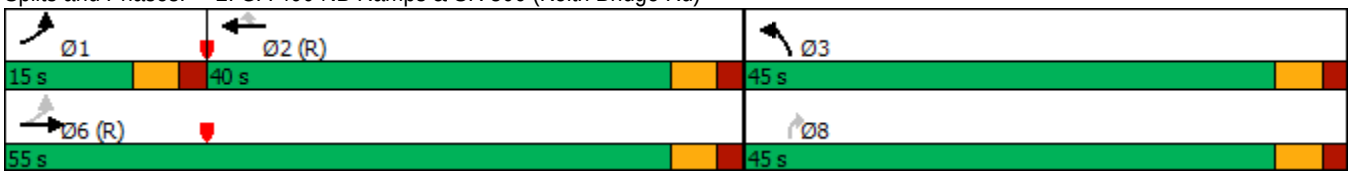
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

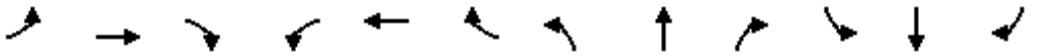
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	189	585	1021	204	239	998
Future Volume (vph)	189	585	1021	204	239	998
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		3	
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	3	8
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	5.0	6.0
Minimum Split (s)	15.0	34.5	23.5	23.5	15.0	30.5
Total Split (s)	15.0	55.0	40.0	40.0	45.0	45.0
Total Split (%)	15.0%	55.0%	40.0%	40.0%	45.0%	45.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	585	0	0	1021	204	239	0	998	0	0	0
Future Volume (veh/h)	189	585	0	0	1021	204	239	0	998	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1826	0	0	1826	1870	1870	0	1870			
Adj Flow Rate, veh/h	201	622	0	0	1086	0	254	0	1062			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	2	5	0	0	5	2	2	0	2			
Cap, veh/h	262	1720	0	0	1215		702	0	1099			
Arrive On Green	0.18	0.99	0.00	0.00	0.35	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	1781	3561	0	0	3561	1585	1781	0	2790			
Grp Volume(v), veh/h	201	622	0	0	1086	0	254	0	1062			
Grp Sat Flow(s),veh/h/ln	1781	1735	0	0	1735	1585	1781	0	1395			
Q Serve(g_s), s	7.1	0.2	0.0	0.0	29.6	0.0	10.1	0.0	37.2			
Cycle Q Clear(g_c), s	7.1	0.2	0.0	0.0	29.6	0.0	10.1	0.0	37.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	262	1720	0	0	1215		702	0	1099			
V/C Ratio(X)	0.77	0.36	0.00	0.00	0.89		0.36	0.00	0.97			
Avail Cap(c_a), veh/h	269	1720	0	0	1215		704	0	1102			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.87	0.87	0.00	0.00	0.09	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	20.6	0.2	0.0	0.0	30.7	0.0	21.4	0.0	29.6			
Incr Delay (d2), s/veh	10.8	0.5	0.0	0.0	1.1	0.0	0.3	0.0	19.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	5.5	0.3	0.0	0.0	13.1	0.0	7.3	0.0	20.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.4	0.7	0.0	0.0	31.8	0.0	21.7	0.0	49.0			
LnGrp LOS	C	A	A	A	C		C	A	D			
Approach Vol, veh/h		823			1086	A		1316				
Approach Delay, s/veh		8.2			31.8			43.7				
Approach LOS		A			C			D				

Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	14.6	40.5				55.1		44.9				
Change Period (Y+Rc), s	5.5	5.5				5.5		5.5				
Max Green Setting (Gmax), s	9.5	34.5				49.5		39.5				
Max Q Clear Time (g_c+I1), s	9.1	31.6				2.2		39.2				
Green Ext Time (p_c), s	0.0	2.3				8.7		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			30.7									
HCM 6th LOS			C									

Notes

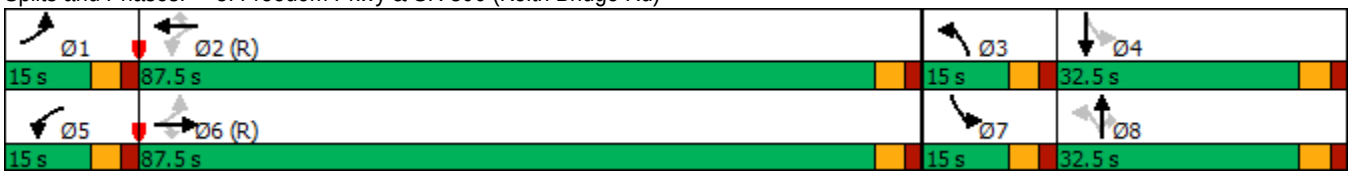
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

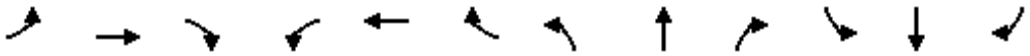
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	82	792	97	103	1221	148	95	231	51	151	112
Future Volume (vph)	82	792	97	103	1221	148	95	231	51	151	112
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	1	6		5	2		3	8		7	4
Permitted Phases	6		6	2		2	8		8	4	
Detector Phase	1	6	6	5	2	2	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	33.5	33.5	15.0	33.5	33.5	15.0	27.5	27.5	15.0	32.5
Total Split (s)	15.0	87.5	87.5	15.0	87.5	87.5	15.0	32.5	32.5	15.0	32.5
Total Split (%)	10.0%	58.3%	58.3%	10.0%	58.3%	58.3%	10.0%	21.7%	21.7%	10.0%	21.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 3: Freedom Pkwy & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	792	97	103	1221	148	95	231	51	151	112	87
Future Volume (veh/h)	82	792	97	103	1221	148	95	231	51	151	112	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1826	1870	1870	1826	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	87	843	0	110	1299	157	101	246	0	161	119	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	5	2	2	5	2	2	2	2	2	2	2
Cap, veh/h	109	1108		290	1113	966	272	274		180	280	
Arrive On Green	0.03	0.61	0.00	0.04	0.61	0.61	0.06	0.15	0.00	0.06	0.15	0.00
Sat Flow, veh/h	1781	1826	1585	1781	1826	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	87	843	0	110	1299	157	101	246	0	161	119	0
Grp Sat Flow(s),veh/h/ln	1781	1826	1585	1781	1826	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	3.2	50.6	0.0	3.5	91.5	6.4	7.2	19.4	0.0	9.5	8.7	0.0
Cycle Q Clear(g_c), s	3.2	50.6	0.0	3.5	91.5	6.4	7.2	19.4	0.0	9.5	8.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	109	1108		290	1113	966	272	274		180	280	
V/C Ratio(X)	0.80	0.76		0.38	1.17	0.16	0.37	0.90		0.89	0.43	
Avail Cap(c_a), veh/h	161	1108		337	1113	966	277	337		180	337	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.67	0.67	0.00	1.00	1.00	1.00	0.90	0.90	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.9	21.5	0.0	20.4	29.3	12.7	50.3	62.9	0.0	56.1	57.9	0.0
Incr Delay (d2), s/veh	11.1	3.4	0.0	0.8	85.1	0.4	0.8	20.9	0.0	38.8	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.0	26.9	0.0	2.6	84.9	4.2	5.8	15.7	0.0	6.3	7.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.0	24.9	0.0	21.2	114.4	13.0	51.1	83.8	0.0	94.9	59.0	0.0
LnGrp LOS	D	C		C	F	B	D	F		F	E	
Approach Vol, veh/h		930	A		1566			347	A		280	A
Approach Delay, s/veh		27.4			97.7			74.3			79.6	
Approach LOS		C			F			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	97.0	14.5	27.9	11.0	96.5	15.0	27.4
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	82.0	9.5	27.0	9.5	82.0	9.5	27.0
Max Q Clear Time (g_c+I1), s	5.2	93.5	9.2	10.7	5.5	52.6	11.5	21.4
Green Ext Time (p_c), s	0.1	0.0	0.0	0.5	0.1	12.4	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	72.5
HCM 6th LOS	E

Notes

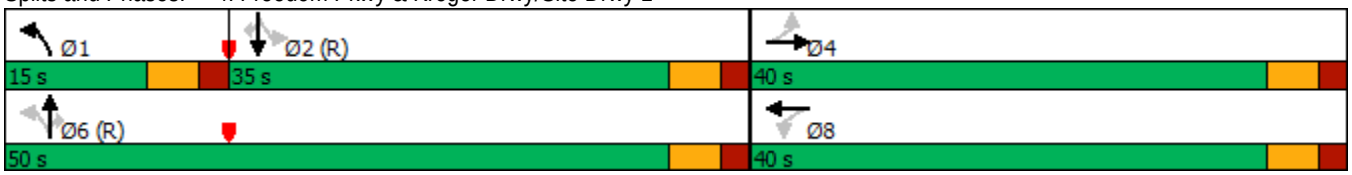
Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

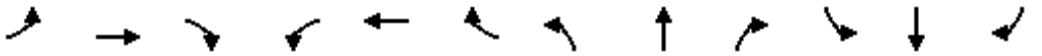
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	234	2	37	2	67	254	49	77	241	57
Future Volume (vph)	234	2	37	2	67	254	49	77	241	57
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		8	1	6			2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	4	4	8	8	1	6	6	2	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	5.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	36.5	36.5	15.0	30.5	30.5	30.5	30.5	30.5
Total Split (s)	40.0	40.0	40.0	40.0	15.0	50.0	50.0	35.0	35.0	35.0
Total Split (%)	44.4%	44.4%	44.4%	44.4%	16.7%	55.6%	55.6%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag					Lead			Lag	Lag	Lag
Lead-Lag Optimize?					Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 4: Freedom Pkwy & Kroger Drwy/Site Drwy 1





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	2	99	37	2	50	67	254	49	77	241	57
Future Volume (veh/h)	234	2	99	37	2	50	67	254	49	77	241	57
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	279	2	118	44	2	60	80	302	58	92	287	68
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	398	7	417	344	14	412	635	2170	968	620	1782	795
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.05	0.61	0.61	0.50	0.50	0.50
Sat Flow, veh/h	1340	26	1563	1272	51	1542	1781	3554	1585	1077	3554	1585
Grp Volume(v), veh/h	279	0	120	44	0	62	80	302	58	92	287	68
Grp Sat Flow(s),veh/h/ln	1340	0	1589	1272	0	1593	1781	1777	1585	1077	1777	1585
Q Serve(g_s), s	18.0	0.0	5.4	2.6	0.0	2.7	1.8	3.3	1.3	4.2	3.9	2.0
Cycle Q Clear(g_c), s	20.7	0.0	5.4	7.9	0.0	2.7	1.8	3.3	1.3	4.2	3.9	2.0
Prop In Lane	1.00		0.98	1.00		0.97	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	398	0	425	344	0	426	635	2170	968	620	1782	795
V/C Ratio(X)	0.70	0.00	0.28	0.13	0.00	0.15	0.13	0.14	0.06	0.15	0.16	0.09
Avail Cap(c_a), veh/h	554	0	609	491	0	611	738	2170	968	620	1782	795
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.86	0.86	0.86
Uniform Delay (d), s/veh	33.0	0.0	26.1	29.3	0.0	25.1	8.9	7.5	7.1	12.2	12.2	11.7
Incr Delay (d2), s/veh	2.3	0.0	0.4	0.2	0.0	0.2	0.1	0.1	0.1	0.4	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.1	0.0	3.7	1.4	0.0	1.8	1.1	1.9	0.7	1.7	2.6	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.3	0.0	26.5	29.5	0.0	25.3	8.9	7.6	7.2	12.7	12.3	11.9
LnGrp LOS	D	A	C	C	A	C	A	A	A	B	B	B
Approach Vol, veh/h		399			106			440			447	
Approach Delay, s/veh		32.7			27.0			7.8			12.3	
Approach LOS		C			C			A			B	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	9.8	50.6		29.5		60.5		29.5				
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s	9.5	29.5		34.5		44.5		34.5				
Max Q Clear Time (g_c+I1), s	3.8	6.2		22.7		5.3		9.9				
Green Ext Time (p_c), s	0.1	4.4		1.3		4.2		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			17.8									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	99.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	915	80	55	1355	117	20
Future Vol, veh/h	915	80	55	1355	117	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	225	0	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	2	2	5	2	2
Mvmt Flow	995	87	60	1473	127	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1082	0	2588	995
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	1593	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	645	-	~ 28	297
Stage 1	-	-	-	-	358	-
Stage 2	-	-	-	-	183	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	645	-	~ 25	297
Mov Cap-2 Maneuver	-	-	-	-	~ 25	-
Stage 1	-	-	-	-	358	-
Stage 2	-	-	-	-	166	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	$ 1841
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	25	297	-	-	645	-
HCM Lane V/C Ratio	5.087	0.073	-	-	0.093	-
HCM Control Delay (s)	$ 2152.6	18.1	-	-	11.2	-
HCM Lane LOS	F	C	-	-	B	-
HCM 95th %tile Q(veh)	15.8	0.2	-	-	0.3	-

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	855	80	0	1410	0	25
Future Vol, veh/h	855	80	0	1410	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	Yield
Storage Length	-	150	35	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	2	2	5	2	2
Mvmt Flow	929	87	0	1533	0	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	929
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.319
Pot Cap-1 Maneuver	-	0	0	-	0	324
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	324
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	324	-	-
HCM Lane V/C Ratio	0.084	-	-
HCM Control Delay (s)	17.1	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.3	-	-

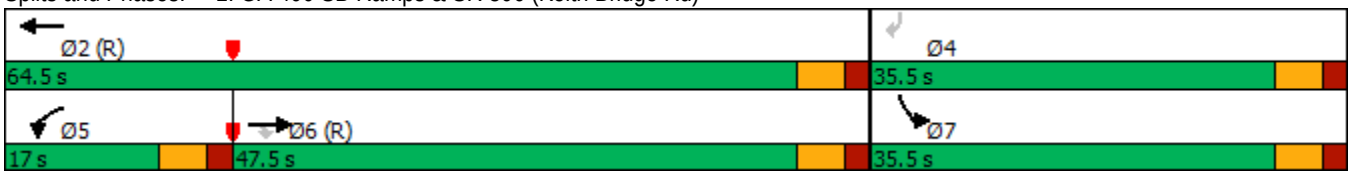
Future “Build” Intersections Analysis with System Improvements Only

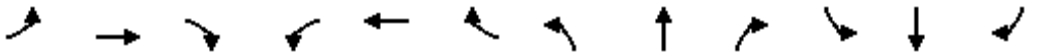
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	434	167	211	1105	151	393
Future Volume (vph)	434	167	211	1105	151	393
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	6		5	2	7	
Permitted Phases		6				4
Detector Phase	6	6	5	2	7	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	5.0	15.0	5.0	6.0
Minimum Split (s)	28.5	28.5	15.0	28.5	15.0	35.5
Total Split (s)	47.5	47.5	17.0	64.5	35.5	35.5
Total Split (%)	47.5%	47.5%	17.0%	64.5%	35.5%	35.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 1: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	434	167	211	1105	0	0	0	0	151	0	393
Future Volume (veh/h)	0	434	167	211	1105	0	0	0	0	151	0	393
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1826	1870	1870	1826	0				1870	0	1870
Adj Flow Rate, veh/h	0	472	0	229	1201	0				164	0	427
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	5	2	2	5	0				2	0	2
Cap, veh/h	0	1605		295	1101	0				511	0	455
Arrive On Green	0.00	0.46	0.00	0.17	1.00	0.00				0.29	0.00	0.29
Sat Flow, veh/h	0	3561	1585	3456	1826	0				1781	0	1585
Grp Volume(v), veh/h	0	472	0	229	1201	0				164	0	427
Grp Sat Flow(s),veh/h/ln	0	1735	1585	1728	1826	0				1781	0	1585
Q Serve(g_s), s	0.0	8.5	0.0	6.3	60.3	0.0				7.2	0.0	26.3
Cycle Q Clear(g_c), s	0.0	8.5	0.0	6.3	60.3	0.0				7.2	0.0	26.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1605		295	1101	0				511	0	455
V/C Ratio(X)	0.00	0.29		0.78	1.09	0.00				0.32	0.00	0.94
Avail Cap(c_a), veh/h	0	1605		397	1101	0				534	0	476
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.83	0.83	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.7	0.0	40.6	0.0	0.0				28.0	0.0	34.8
Incr Delay (d2), s/veh	0.0	0.5	0.0	5.6	53.4	0.0				0.4	0.0	26.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	5.7	0.0	4.7	23.9	0.0				5.4	0.0	31.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	17.2	0.0	46.1	53.4	0.0				28.3	0.0	60.8
LnGrp LOS	A	B		D	F	A				C	A	E
Approach Vol, veh/h		472	A		1430						591	
Approach Delay, s/veh		17.2			52.3						51.8	
Approach LOS		B			D						D	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		65.8		34.2	14.0	51.8						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		59.0		30.0	11.5	42.0						
Max Q Clear Time (g_c+I1), s		62.3		28.3	8.3	10.5						
Green Ext Time (p_c), s		0.0		0.4	0.2	5.7						

Intersection Summary		
HCM 6th Ctrl Delay		45.5
HCM 6th LOS		D

Notes

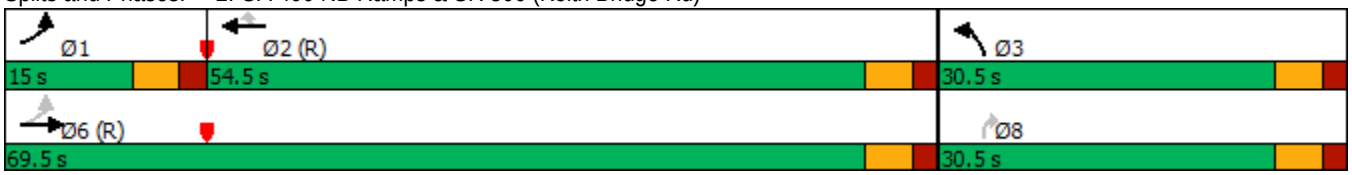
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

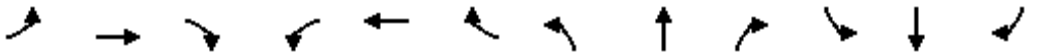
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	67	518	1253	103	63	480
Future Volume (vph)	67	518	1253	103	63	480
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		3	
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	3	8
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	5.0	6.0
Minimum Split (s)	15.0	34.5	23.5	23.5	15.0	30.5
Total Split (s)	15.0	69.5	54.5	54.5	30.5	30.5
Total Split (%)	15.0%	69.5%	54.5%	54.5%	30.5%	30.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	518	0	0	1253	103	63	0	480	0	0	0
Future Volume (veh/h)	67	518	0	0	1253	103	63	0	480	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1826	0	0	1826	1870	1870	0	1870			
Adj Flow Rate, veh/h	70	540	0	0	1305	0	66	0	500			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	5	0	0	5	2	2	0	2			
Cap, veh/h	396	2375	0	0	2036		366	0	573			
Arrive On Green	0.09	1.00	0.00	0.00	1.00	0.00	0.21	0.00	0.21			
Sat Flow, veh/h	1781	3561	0	0	3561	1585	1781	0	2790			
Grp Volume(v), veh/h	70	540	0	0	1305	0	66	0	500			
Grp Sat Flow(s),veh/h/ln	1781	1735	0	0	1735	1585	1781	0	1395			
Q Serve(g_s), s	1.4	0.0	0.0	0.0	0.0	0.0	3.1	0.0	17.4			
Cycle Q Clear(g_c), s	1.4	0.0	0.0	0.0	0.0	0.0	3.1	0.0	17.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	396	2375	0	0	2036		366	0	573			
V/C Ratio(X)	0.18	0.23	0.00	0.00	0.64		0.18	0.00	0.87			
Avail Cap(c_a), veh/h	489	2375	0	0	2036		445	0	697			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.96	0.96	0.00	0.00	0.86	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	6.1	0.0	0.0	0.0	0.0	0.0	32.8	0.0	38.5			
Incr Delay (d2), s/veh	0.2	0.2	0.0	0.0	1.3	0.0	0.2	0.0	10.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.8	0.1	0.0	0.0	0.7	0.0	2.3	0.0	10.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.3	0.2	0.0	0.0	1.3	0.0	33.0	0.0	48.7			
LnGrp LOS	A	A	A	A	A		C	A	D			
Approach Vol, veh/h		610			1305	A		566				
Approach Delay, s/veh		0.9			1.3			46.8				
Approach LOS		A			A			D				

Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	9.8	64.2				74.0		26.0				
Change Period (Y+Rc), s	5.5	5.5				5.5		5.5				
Max Green Setting (Gmax), s	9.5	49.0				64.0		25.0				
Max Q Clear Time (g_c+I1), s	3.4	2.0				2.0		19.4				
Green Ext Time (p_c), s	0.1	24.0				7.5		1.2				

Intersection Summary												
HCM 6th Ctrl Delay			11.6									
HCM 6th LOS			B									

Notes

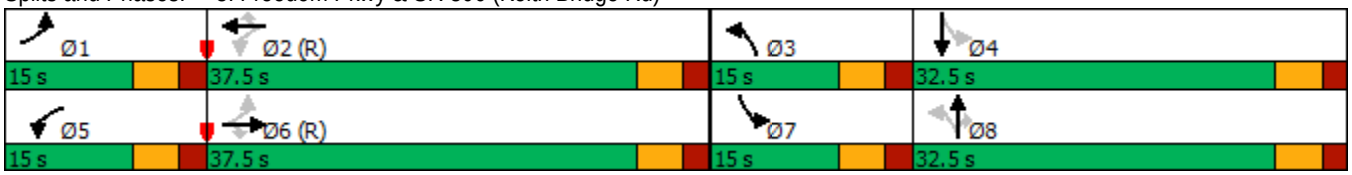
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

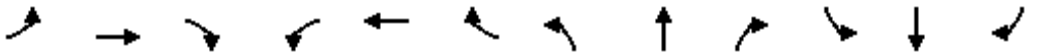
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	22	555	74	85	1071	20	80	111	49	22	24
Future Volume (vph)	22	555	74	85	1071	20	80	111	49	22	24
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	1	6		5	2		3	8		7	4
Permitted Phases	6		6	2		2	8		8	4	
Detector Phase	1	6	6	5	2	2	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	33.5	33.5	15.0	33.5	33.5	15.0	27.5	27.5	15.0	32.5
Total Split (s)	15.0	37.5	37.5	15.0	37.5	37.5	15.0	32.5	32.5	15.0	32.5
Total Split (%)	15.0%	37.5%	37.5%	15.0%	37.5%	37.5%	15.0%	32.5%	32.5%	15.0%	32.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 3: Freedom Pkwy & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	555	74	85	1071	20	80	111	49	22	24	9
Future Volume (veh/h)	22	555	74	85	1071	20	80	111	49	22	24	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1826	1870	1870	1826	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	584	0	89	1127	21	84	117	0	23	25	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	5	2	2	5	2	2	2	2	2	2	2
Cap, veh/h	342	2140		666	2217	1013	240	175		156	111	
Arrive On Green	0.05	1.00	0.00	0.05	0.64	0.64	0.06	0.09	0.00	0.02	0.06	0.00
Sat Flow, veh/h	1781	3469	1585	1781	3469	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	23	584	0	89	1127	21	84	117	0	23	25	0
Grp Sat Flow(s),veh/h/ln	1781	1735	1585	1781	1735	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.5	0.0	0.0	1.8	17.4	0.5	4.4	6.0	0.0	1.2	1.3	0.0
Cycle Q Clear(g_c), s	0.5	0.0	0.0	1.8	17.4	0.5	4.4	6.0	0.0	1.2	1.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	342	2140		666	2217	1013	240	175		156	111	
V/C Ratio(X)	0.07	0.27		0.13	0.51	0.02	0.35	0.67		0.15	0.23	
Avail Cap(c_a), veh/h	469	2140		754	2217	1013	306	505		284	505	
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.00	1.00	1.00	1.00	0.98	0.98	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.6	0.0	0.0	6.0	9.6	6.6	40.9	43.8	0.0	42.6	44.8	0.0
Incr Delay (d2), s/veh	0.1	0.3	0.0	0.1	0.8	0.0	0.9	4.3	0.0	0.4	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.2	0.0	1.0	9.3	0.3	3.4	5.2	0.0	1.0	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.6	0.3	0.0	6.1	10.5	6.6	41.8	48.1	0.0	43.1	45.9	0.0
LnGrp LOS	A	A		A	B	A	D	D		D	D	
Approach Vol, veh/h		607	A		1237			201	A		48	A
Approach Delay, s/veh		0.6			10.1			45.4			44.5	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	69.4	11.3	11.4	10.1	67.2	7.9	14.9
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	32.0	9.5	27.0	9.5	32.0	9.5	27.0
Max Q Clear Time (g_c+I1), s	2.5	19.4	6.4	3.3	3.8	2.0	3.2	8.0
Green Ext Time (p_c), s	0.0	8.7	0.0	0.1	0.1	7.2	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	11.5
HCM 6th LOS	B

Notes

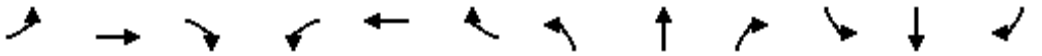
Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	80	2	25	2	19	127	15	14	156	28
Future Volume (vph)	80	2	25	2	19	127	15	14	156	28
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		8	1	6			2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	4	4	8	8	1	6	6	2	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	5.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	36.5	36.5	15.0	30.5	30.5	30.5	30.5	30.5
Total Split (s)	39.0	39.0	39.0	39.0	16.0	51.0	51.0	35.0	35.0	35.0
Total Split (%)	43.3%	43.3%	43.3%	43.3%	17.8%	56.7%	56.7%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag					Lead			Lag	Lag	Lag
Lead-Lag Optimize?					Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 4: Freedom Pkwy & Kroger Drwy/Site Drwy 1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	2	19	25	2	33	19	127	15	14	156	28
Future Volume (veh/h)	80	2	19	25	2	33	19	127	15	14	156	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	2	22	29	2	39	22	149	18	16	184	33
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	15	170	222	9	176	890	2709	1208	906	2408	1074
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.02	0.76	0.76	0.68	0.68	0.68
Sat Flow, veh/h	1366	134	1472	1387	78	1519	1781	3554	1585	1218	3554	1585
Grp Volume(v), veh/h	94	0	24	29	0	41	22	149	18	16	184	33
Grp Sat Flow(s),veh/h/ln	1366	0	1605	1387	0	1597	1781	1777	1585	1218	1777	1585
Q Serve(g_s), s	6.0	0.0	1.2	1.7	0.0	2.1	0.3	0.9	0.2	0.4	1.6	0.6
Cycle Q Clear(g_c), s	8.1	0.0	1.2	2.9	0.0	2.1	0.3	0.9	0.2	0.4	1.6	0.6
Prop In Lane	1.00		0.92	1.00		0.95	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	206	0	186	222	0	185	890	2709	1208	906	2408	1074
V/C Ratio(X)	0.46	0.00	0.13	0.13	0.00	0.22	0.02	0.06	0.01	0.02	0.08	0.03
Avail Cap(c_a), veh/h	557	0	598	578	0	594	1056	2709	1208	906	2408	1074
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.8	0.0	35.7	37.0	0.0	36.1	3.6	2.7	2.6	4.7	4.9	4.8
Incr Delay (d2), s/veh	1.6	0.0	0.3	0.3	0.0	0.6	0.0	0.0	0.0	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.8	0.0	0.9	1.1	0.0	1.5	0.1	0.4	0.1	0.1	0.8	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.4	0.0	36.0	37.3	0.0	36.7	3.6	2.7	2.6	4.8	5.0	4.8
LnGrp LOS	D	A	D	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		118			70			189			233	
Approach Delay, s/veh		40.3			37.0			2.8			5.0	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.6	66.5		15.9		74.1		15.9				
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s	10.5	29.5		33.5		45.5		33.5				
Max Q Clear Time (g_c+I1), s	2.3	3.6		10.1		2.9		4.9				
Green Ext Time (p_c), s	0.0	2.3		0.4		1.9		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			14.8									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	602	24	17	1097	78	13
Future Vol, veh/h	602	24	17	1097	78	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	225	0	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	2	2	5	2	2
Mvmt Flow	654	26	18	1192	85	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	680	0	1286	327
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	632	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	908	-	156	669
Stage 1	-	-	-	-	479	-
Stage 2	-	-	-	-	492	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	908	-	153	669
Mov Cap-2 Maneuver	-	-	-	-	153	-
Stage 1	-	-	-	-	479	-
Stage 2	-	-	-	-	482	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	48.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	153	669	-	-	908	-
HCM Lane V/C Ratio	0.554	0.021	-	-	0.02	-
HCM Control Delay (s)	54.4	10.5	-	-	9	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	2.8	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	591	24	0	1114	0	17
Future Vol, veh/h	591	24	0	1114	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	Yield
Storage Length	-	150	35	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	2	2	5	2	2
Mvmt Flow	642	26	0	1211	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	321
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	0	-	0	675
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	675
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.5
HCM LOS			B

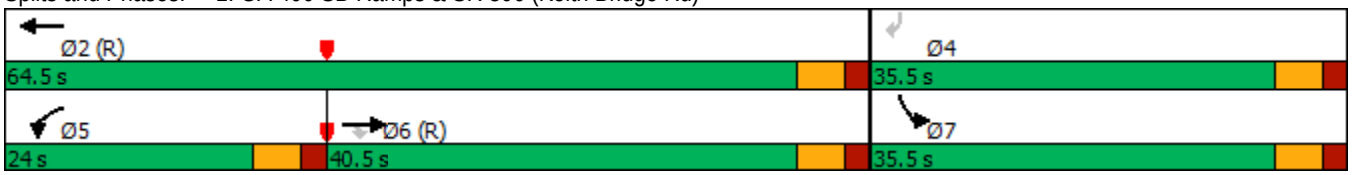
Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	675	-	-
HCM Lane V/C Ratio	0.027	-	-
HCM Control Delay (s)	10.5	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-

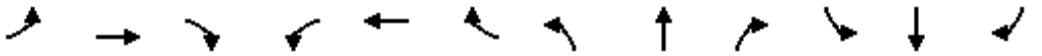
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	510	301	403	868	265	326
Future Volume (vph)	510	301	403	868	265	326
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	6		5	2	7	
Permitted Phases		6				4
Detector Phase	6	6	5	2	7	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	5.0	15.0	5.0	6.0
Minimum Split (s)	28.5	28.5	15.0	28.5	15.0	35.5
Total Split (s)	40.5	40.5	24.0	64.5	35.5	35.5
Total Split (%)	40.5%	40.5%	24.0%	64.5%	35.5%	35.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 1: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	510	301	403	868	0	0	0	0	265	0	326
Future Volume (veh/h)	0	510	301	403	868	0	0	0	0	265	0	326
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1826	1870	1870	1826	0				1870	0	1870
Adj Flow Rate, veh/h	0	543	0	429	923	0				282	0	347
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	5	2	2	5	0				2	0	2
Cap, veh/h	0	1547		499	1178	0				436	0	388
Arrive On Green	0.00	0.45	0.00	0.29	1.00	0.00				0.24	0.00	0.24
Sat Flow, veh/h	0	3561	1585	3456	1826	0				1781	0	1585
Grp Volume(v), veh/h	0	543	0	429	923	0				282	0	347
Grp Sat Flow(s),veh/h/ln	0	1735	1585	1728	1826	0				1781	0	1585
Q Serve(g_s), s	0.0	10.3	0.0	11.7	0.0	0.0				14.2	0.0	21.2
Cycle Q Clear(g_c), s	0.0	10.3	0.0	11.7	0.0	0.0				14.2	0.0	21.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1547		499	1178	0				436	0	388
V/C Ratio(X)	0.00	0.35		0.86	0.78	0.00				0.65	0.00	0.89
Avail Cap(c_a), veh/h	0	1547		639	1178	0				534	0	476
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.60	0.60	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.2	0.0	34.6	0.0	0.0				33.9	0.0	36.5
Incr Delay (d2), s/veh	0.0	0.6	0.0	5.9	3.2	0.0				1.9	0.0	16.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	6.9	0.0	7.0	1.9	0.0				10.2	0.0	25.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	18.8	0.0	40.5	3.2	0.0				35.8	0.0	53.3
LnGrp LOS	A	B		D	A	A				D	A	D
Approach Vol, veh/h		543	A		1352						629	
Approach Delay, s/veh		18.8			15.0						45.5	
Approach LOS		B			B						D	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		70.0		30.0	19.9	50.1						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		59.0		30.0	18.5	35.0						
Max Q Clear Time (g_c+I1), s		2.0		23.2	13.7	12.3						
Green Ext Time (p_c), s		18.8		1.3	0.7	6.0						

Intersection Summary		
HCM 6th Ctrl Delay		23.4
HCM 6th LOS		C

Notes

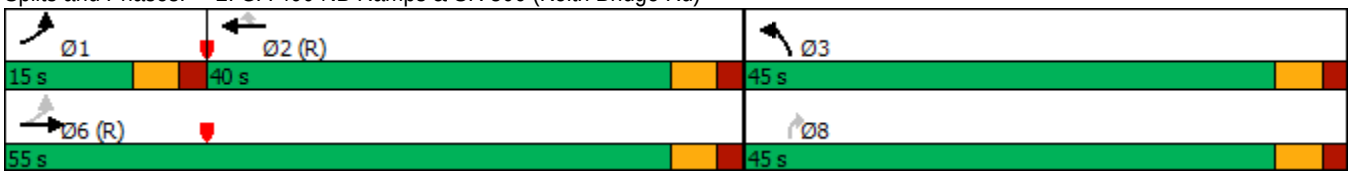
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

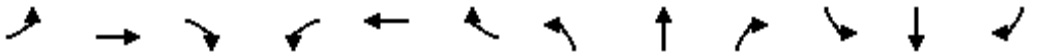
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	189	585	1021	204	239	998
Future Volume (vph)	189	585	1021	204	239	998
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		3	
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	3	8
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	5.0	6.0
Minimum Split (s)	15.0	34.5	23.5	23.5	15.0	30.5
Total Split (s)	15.0	55.0	40.0	40.0	45.0	45.0
Total Split (%)	15.0%	55.0%	40.0%	40.0%	45.0%	45.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	585	0	0	1021	204	239	0	998	0	0	0
Future Volume (veh/h)	189	585	0	0	1021	204	239	0	998	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1826	0	0	1826	1870	1870	0	1870			
Adj Flow Rate, veh/h	201	622	0	0	1086	0	254	0	1062			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	2	5	0	0	5	2	2	0	2			
Cap, veh/h	285	1720	0	0	1215		702	0	1099			
Arrive On Green	0.18	0.99	0.00	0.00	0.70	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	1781	3561	0	0	3561	1585	1781	0	2790			
Grp Volume(v), veh/h	201	622	0	0	1086	0	254	0	1062			
Grp Sat Flow(s),veh/h/ln	1781	1735	0	0	1735	1585	1781	0	1395			
Q Serve(g_s), s	7.1	0.2	0.0	0.0	25.1	0.0	10.1	0.0	37.2			
Cycle Q Clear(g_c), s	7.1	0.2	0.0	0.0	25.1	0.0	10.1	0.0	37.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	285	1720	0	0	1215		702	0	1099			
V/C Ratio(X)	0.70	0.36	0.00	0.00	0.89		0.36	0.00	0.97			
Avail Cap(c_a), veh/h	293	1720	0	0	1215		704	0	1102			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.87	0.87	0.00	0.00	0.48	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	19.7	0.2	0.0	0.0	13.5	0.0	21.4	0.0	29.6			
Incr Delay (d2), s/veh	6.4	0.5	0.0	0.0	5.4	0.0	0.3	0.0	19.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	5.0	0.3	0.0	0.0	7.6	0.0	7.3	0.0	20.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.0	0.7	0.0	0.0	18.9	0.0	21.7	0.0	49.0			
LnGrp LOS	C	A	A	A	B		C	A	D			
Approach Vol, veh/h		823			1086	A		1316				
Approach Delay, s/veh		6.9			18.9			43.7				
Approach LOS		A			B			D				

Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	14.6	40.5				55.1		44.9				
Change Period (Y+Rc), s	5.5	5.5				5.5		5.5				
Max Green Setting (Gmax), s	9.5	34.5				49.5		39.5				
Max Q Clear Time (g_c+I1), s	9.1	27.1				2.2		39.2				
Green Ext Time (p_c), s	0.0	5.4				8.7		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			26.0									
HCM 6th LOS			C									

Notes

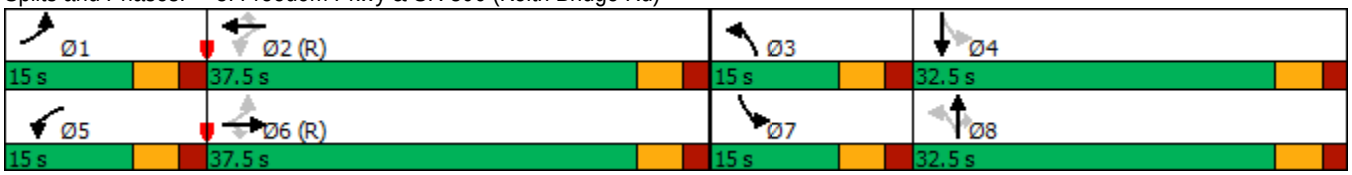
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

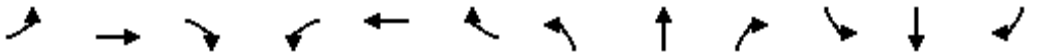
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	82	792	97	103	1221	148	95	231	51	151	112
Future Volume (vph)	82	792	97	103	1221	148	95	231	51	151	112
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	1	6		5	2		3	8		7	4
Permitted Phases	6		6	2		2	8		8	4	
Detector Phase	1	6	6	5	2	2	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	33.5	33.5	15.0	33.5	33.5	15.0	27.5	27.5	15.0	32.5
Total Split (s)	15.0	37.5	37.5	15.0	37.5	37.5	15.0	32.5	32.5	15.0	32.5
Total Split (%)	15.0%	37.5%	37.5%	15.0%	37.5%	37.5%	15.0%	32.5%	32.5%	15.0%	32.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Splits and Phases: 3: Freedom Pkwy & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	792	97	103	1221	148	95	231	51	151	112	87
Future Volume (veh/h)	82	792	97	103	1221	148	95	231	51	151	112	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1826	1870	1870	1826	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	87	843	0	110	1299	157	101	246	0	161	119	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	5	2	2	5	2	2	2	2	2	2	2
Cap, veh/h	217	1666		461	1679	767	353	293		272	350	
Arrive On Green	0.09	0.96	0.00	0.05	0.48	0.48	0.06	0.16	0.00	0.09	0.19	0.00
Sat Flow, veh/h	1781	3469	1585	1781	3469	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	87	843	0	110	1299	157	101	246	0	161	119	0
Grp Sat Flow(s),veh/h/ln	1781	1735	1585	1781	1735	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	2.4	1.9	0.0	3.1	30.9	5.7	4.7	12.8	0.0	7.4	5.5	0.0
Cycle Q Clear(g_c), s	2.4	1.9	0.0	3.1	30.9	5.7	4.7	12.8	0.0	7.4	5.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	217	1666		461	1679	767	353	293		272	350	
V/C Ratio(X)	0.40	0.51		0.24	0.77	0.20	0.29	0.84		0.59	0.34	
Avail Cap(c_a), veh/h	305	1666		543	1679	767	409	505		274	505	
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.67	0.67	0.00	1.00	1.00	1.00	0.90	0.90	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.0	1.1	0.0	11.8	21.3	14.8	32.3	40.9	0.0	31.8	35.3	0.0
Incr Delay (d2), s/veh	0.8	0.7	0.0	0.3	3.5	0.6	0.4	5.7	0.0	3.3	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	0.9	0.0	2.0	17.4	3.6	3.6	9.9	0.0	6.2	4.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.8	1.8	0.0	12.1	24.8	15.4	32.7	46.6	0.0	35.2	35.9	0.0
LnGrp LOS	B	A		B	C	B	C	D		D	D	
Approach Vol, veh/h		930	A		1566			347	A		280	A
Approach Delay, s/veh		3.3			23.0			42.6			35.5	
Approach LOS		A			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.1	53.9	11.8	24.2	10.4	53.5	14.8	21.2
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	32.0	9.5	27.0	9.5	32.0	9.5	27.0
Max Q Clear Time (g_c+I1), s	4.4	32.9	6.7	7.5	5.1	3.9	9.4	14.8
Green Ext Time (p_c), s	0.1	0.0	0.0	0.6	0.1	10.8	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	20.4
HCM 6th LOS	C

Notes

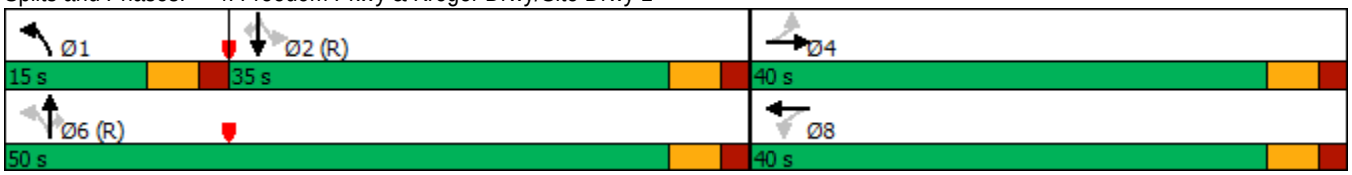
Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

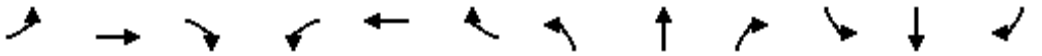
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	234	2	37	2	67	254	49	77	241	57
Future Volume (vph)	234	2	37	2	67	254	49	77	241	57
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		8	1	6			2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	4	4	8	8	1	6	6	2	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	5.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	36.5	36.5	15.0	30.5	30.5	30.5	30.5	30.5
Total Split (s)	40.0	40.0	40.0	40.0	15.0	50.0	50.0	35.0	35.0	35.0
Total Split (%)	44.4%	44.4%	44.4%	44.4%	16.7%	55.6%	55.6%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag					Lead			Lag	Lag	Lag
Lead-Lag Optimize?					Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 4: Freedom Pkwy & Kroger Drwy/Site Drwy 1





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	2	99	37	2	50	67	254	49	77	241	57
Future Volume (veh/h)	234	2	99	37	2	50	67	254	49	77	241	57
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	279	2	118	44	2	60	80	302	58	92	287	68
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	398	7	417	344	14	412	635	2170	968	620	1782	795
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.05	0.61	0.61	0.50	0.50	0.50
Sat Flow, veh/h	1340	26	1563	1272	51	1542	1781	3554	1585	1077	3554	1585
Grp Volume(v), veh/h	279	0	120	44	0	62	80	302	58	92	287	68
Grp Sat Flow(s),veh/h/ln	1340	0	1589	1272	0	1593	1781	1777	1585	1077	1777	1585
Q Serve(g_s), s	18.0	0.0	5.4	2.6	0.0	2.7	1.8	3.3	1.3	4.2	3.9	2.0
Cycle Q Clear(g_c), s	20.7	0.0	5.4	7.9	0.0	2.7	1.8	3.3	1.3	4.2	3.9	2.0
Prop In Lane	1.00		0.98	1.00		0.97	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	398	0	425	344	0	426	635	2170	968	620	1782	795
V/C Ratio(X)	0.70	0.00	0.28	0.13	0.00	0.15	0.13	0.14	0.06	0.15	0.16	0.09
Avail Cap(c_a), veh/h	554	0	609	491	0	611	738	2170	968	620	1782	795
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.93	0.93	0.93
Uniform Delay (d), s/veh	33.0	0.0	26.1	29.3	0.0	25.1	8.9	7.5	7.1	12.2	12.2	11.7
Incr Delay (d2), s/veh	2.3	0.0	0.4	0.2	0.0	0.2	0.1	0.1	0.1	0.5	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.1	0.0	3.7	1.4	0.0	1.8	1.1	1.9	0.7	1.8	2.6	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.3	0.0	26.5	29.5	0.0	25.3	8.9	7.6	7.2	12.7	12.3	11.9
LnGrp LOS	D	A	C	C	A	C	A	A	A	B	B	B
Approach Vol, veh/h		399			106			440			447	
Approach Delay, s/veh		32.7			27.0			7.8			12.3	
Approach LOS		C			C			A			B	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	9.8	50.6		29.5		60.5		29.5				
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s	9.5	29.5		34.5		44.5		34.5				
Max Q Clear Time (g_c+I1), s	3.8	6.2		22.7		5.3		9.9				
Green Ext Time (p_c), s	0.1	4.4		1.3		4.2		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			17.9									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	30.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	915	80	55	1355	117	20
Future Vol, veh/h	915	80	55	1355	117	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	225	0	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	2	2	5	2	2
Mvmt Flow	995	87	60	1473	127	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1082	0	1852	498
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	857	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	640	-	~ 66	518
Stage 1	-	-	-	-	318	-
Stage 2	-	-	-	-	376	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	640	-	~ 60	518
Mov Cap-2 Maneuver	-	-	-	-	~ 60	-
Stage 1	-	-	-	-	318	-
Stage 2	-	-	-	-	341	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	$ 569.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	60	518	-	-	640	-
HCM Lane V/C Ratio	2.12	0.042	-	-	0.093	-
HCM Control Delay (s)	$ 664.3	12.3	-	-	11.2	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th %tile Q(veh)	12.3	0.1	-	-	0.3	-

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

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	855	80	0	1410	0	25
Future Vol, veh/h	855	80	0	1410	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	Yield
Storage Length	-	150	35	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	2	2	5	2	2
Mvmt Flow	929	87	0	1533	0	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	465
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	0	-	0	544
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	544
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	544	-	-
HCM Lane V/C Ratio	0.05	-	-
HCM Control Delay (s)	12	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-

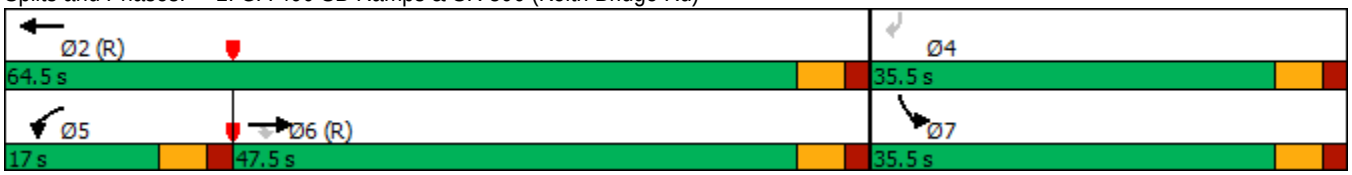
Future “Build” Intersections Analysis with System and Site Improvements

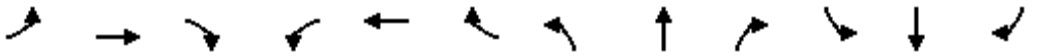
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	434	167	211	1105	151	393
Future Volume (vph)	434	167	211	1105	151	393
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	6		5	2	7	
Permitted Phases		6				4
Detector Phase	6	6	5	2	7	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	5.0	15.0	5.0	6.0
Minimum Split (s)	28.5	28.5	15.0	28.5	15.0	35.5
Total Split (s)	47.5	47.5	17.0	64.5	35.5	35.5
Total Split (%)	47.5%	47.5%	17.0%	64.5%	35.5%	35.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 1: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	434	167	211	1105	0	0	0	0	151	0	393
Future Volume (veh/h)	0	434	167	211	1105	0	0	0	0	151	0	393
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1826	1870	1870	1826	0				1870	0	1870
Adj Flow Rate, veh/h	0	472	0	229	1201	0				164	0	427
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	5	2	2	5	0				2	0	2
Cap, veh/h	0	1605		295	1101	0				511	0	455
Arrive On Green	0.00	0.46	0.00	0.17	1.00	0.00				0.29	0.00	0.29
Sat Flow, veh/h	0	3561	1585	3456	1826	0				1781	0	1585
Grp Volume(v), veh/h	0	472	0	229	1201	0				164	0	427
Grp Sat Flow(s),veh/h/ln	0	1735	1585	1728	1826	0				1781	0	1585
Q Serve(g_s), s	0.0	8.5	0.0	6.3	60.3	0.0				7.2	0.0	26.3
Cycle Q Clear(g_c), s	0.0	8.5	0.0	6.3	60.3	0.0				7.2	0.0	26.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1605		295	1101	0				511	0	455
V/C Ratio(X)	0.00	0.29		0.78	1.09	0.00				0.32	0.00	0.94
Avail Cap(c_a), veh/h	0	1605		397	1101	0				534	0	476
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.83	0.83	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.7	0.0	40.6	0.0	0.0				28.0	0.0	34.8
Incr Delay (d2), s/veh	0.0	0.5	0.0	5.6	53.4	0.0				0.4	0.0	26.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	5.7	0.0	4.7	23.9	0.0				5.4	0.0	31.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	17.2	0.0	46.1	53.4	0.0				28.3	0.0	60.8
LnGrp LOS	A	B		D	F	A				C	A	E
Approach Vol, veh/h		472	A		1430						591	
Approach Delay, s/veh		17.2			52.3						51.8	
Approach LOS		B			D						D	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		65.8		34.2	14.0	51.8						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		59.0		30.0	11.5	42.0						
Max Q Clear Time (g_c+I1), s		62.3		28.3	8.3	10.5						
Green Ext Time (p_c), s		0.0		0.4	0.2	5.7						

Intersection Summary		
HCM 6th Ctrl Delay		45.5
HCM 6th LOS		D

Notes

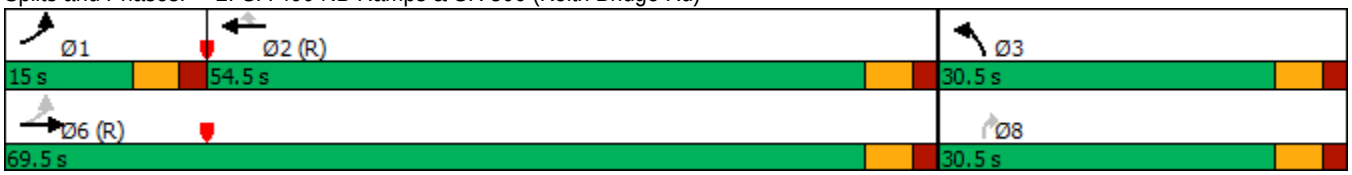
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

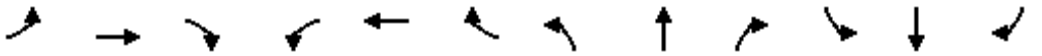
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	67	518	1253	103	63	480
Future Volume (vph)	67	518	1253	103	63	480
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		3	
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	3	8
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	5.0	6.0
Minimum Split (s)	15.0	34.5	23.5	23.5	15.0	30.5
Total Split (s)	15.0	69.5	54.5	54.5	30.5	30.5
Total Split (%)	15.0%	69.5%	54.5%	54.5%	30.5%	30.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	518	0	0	1253	103	63	0	480	0	0	0
Future Volume (veh/h)	67	518	0	0	1253	103	63	0	480	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1826	0	0	1826	1870	1870	0	1870			
Adj Flow Rate, veh/h	70	540	0	0	1305	0	66	0	500			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	5	0	0	5	2	2	0	2			
Cap, veh/h	396	2375	0	0	2036		366	0	573			
Arrive On Green	0.09	1.00	0.00	0.00	1.00	0.00	0.21	0.00	0.21			
Sat Flow, veh/h	1781	3561	0	0	3561	1585	1781	0	2790			
Grp Volume(v), veh/h	70	540	0	0	1305	0	66	0	500			
Grp Sat Flow(s),veh/h/ln	1781	1735	0	0	1735	1585	1781	0	1395			
Q Serve(g_s), s	1.4	0.0	0.0	0.0	0.0	0.0	3.1	0.0	17.4			
Cycle Q Clear(g_c), s	1.4	0.0	0.0	0.0	0.0	0.0	3.1	0.0	17.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	396	2375	0	0	2036		366	0	573			
V/C Ratio(X)	0.18	0.23	0.00	0.00	0.64		0.18	0.00	0.87			
Avail Cap(c_a), veh/h	489	2375	0	0	2036		445	0	697			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.96	0.96	0.00	0.00	0.86	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	6.1	0.0	0.0	0.0	0.0	0.0	32.8	0.0	38.5			
Incr Delay (d2), s/veh	0.2	0.2	0.0	0.0	1.3	0.0	0.2	0.0	10.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.8	0.1	0.0	0.0	0.7	0.0	2.3	0.0	10.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.3	0.2	0.0	0.0	1.3	0.0	33.0	0.0	48.7			
LnGrp LOS	A	A	A	A	A		C	A	D			
Approach Vol, veh/h		610			1305	A		566				
Approach Delay, s/veh		0.9			1.3			46.8				
Approach LOS		A			A			D				

Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	9.8	64.2				74.0		26.0				
Change Period (Y+Rc), s	5.5	5.5				5.5		5.5				
Max Green Setting (Gmax), s	9.5	49.0				64.0		25.0				
Max Q Clear Time (g_c+I1), s	3.4	2.0				2.0		19.4				
Green Ext Time (p_c), s	0.1	24.0				7.5		1.2				

Intersection Summary												
HCM 6th Ctrl Delay			11.6									
HCM 6th LOS			B									

Notes

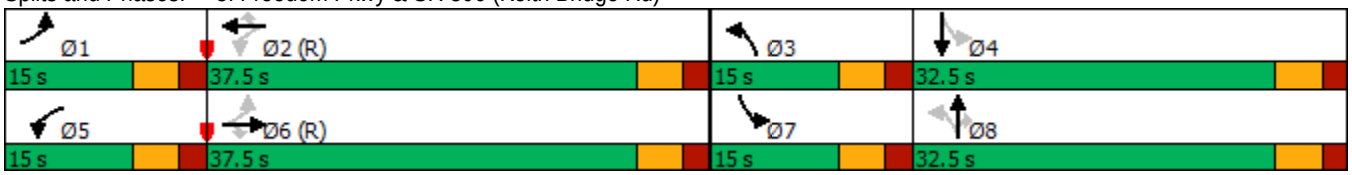
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

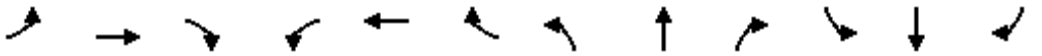
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	22	555	74	85	1071	20	80	111	49	22	24
Future Volume (vph)	22	555	74	85	1071	20	80	111	49	22	24
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	1	6		5	2		3	8		7	4
Permitted Phases	6		6	2		2	8		8	4	
Detector Phase	1	6	6	5	2	2	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	33.5	33.5	15.0	33.5	33.5	15.0	27.5	27.5	15.0	32.5
Total Split (s)	15.0	37.5	37.5	15.0	37.5	37.5	15.0	32.5	32.5	15.0	32.5
Total Split (%)	15.0%	37.5%	37.5%	15.0%	37.5%	37.5%	15.0%	32.5%	32.5%	15.0%	32.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 3: Freedom Pkwy & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	555	74	85	1071	20	80	111	49	22	24	9
Future Volume (veh/h)	22	555	74	85	1071	20	80	111	49	22	24	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1826	1870	1870	1826	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	584	0	89	1127	21	84	117	0	23	25	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	5	2	2	5	2	2	2	2	2	2	2
Cap, veh/h	416	2140		666	2217	1013	240	175		156	111	
Arrive On Green	0.05	1.00	0.00	0.09	1.00	1.00	0.06	0.09	0.00	0.02	0.06	0.00
Sat Flow, veh/h	1781	3469	1585	1781	3469	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	23	584	0	89	1127	21	84	117	0	23	25	0
Grp Sat Flow(s),veh/h/ln	1781	1735	1585	1781	1735	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.5	0.0	0.0	1.8	0.0	0.0	4.4	6.0	0.0	1.2	1.3	0.0
Cycle Q Clear(g_c), s	0.5	0.0	0.0	1.8	0.0	0.0	4.4	6.0	0.0	1.2	1.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	416	2140		666	2217	1013	240	175		156	111	
V/C Ratio(X)	0.06	0.27		0.13	0.51	0.02	0.35	0.67		0.15	0.23	
Avail Cap(c_a), veh/h	543	2140		754	2217	1013	306	505		284	505	
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.00	0.91	0.91	0.91	0.98	0.98	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.4	0.0	0.0	5.7	0.0	0.0	40.9	43.8	0.0	42.6	44.8	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.1	0.8	0.0	0.9	4.3	0.0	0.4	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.2	0.0	0.9	0.4	0.0	3.4	5.2	0.0	1.0	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.4	0.3	0.0	5.8	0.8	0.0	41.8	48.1	0.0	43.1	45.9	0.0
LnGrp LOS	A	A		A	A	A	D	D		D	D	
Approach Vol, veh/h		607	A		1237			201	A		48	A
Approach Delay, s/veh		0.5			1.1			45.4			44.5	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	69.4	11.3	11.4	10.1	67.2	7.9	14.9
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	32.0	9.5	27.0	9.5	32.0	9.5	27.0
Max Q Clear Time (g_c+I1), s	2.5	2.0	6.4	3.3	3.8	2.0	3.2	8.0
Green Ext Time (p_c), s	0.0	15.9	0.0	0.1	0.1	7.2	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	6.2
HCM 6th LOS	A

Notes

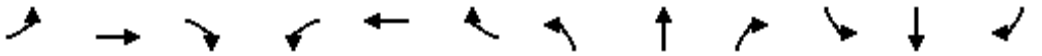
Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	80	2	25	2	19	127	15	14	156	28
Future Volume (vph)	80	2	25	2	19	127	15	14	156	28
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		8	1	6			2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	4	4	8	8	1	6	6	2	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	5.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	36.5	36.5	15.0	30.5	30.5	30.5	30.5	30.5
Total Split (s)	39.0	39.0	39.0	39.0	16.0	51.0	51.0	35.0	35.0	35.0
Total Split (%)	43.3%	43.3%	43.3%	43.3%	17.8%	56.7%	56.7%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag					Lead			Lag	Lag	Lag
Lead-Lag Optimize?					Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 4: Freedom Pkwy & Kroger Drwy/Site Drwy 1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	2	19	25	2	33	19	127	15	14	156	28
Future Volume (veh/h)	80	2	19	25	2	33	19	127	15	14	156	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	2	22	29	2	39	22	149	18	16	184	33
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	15	170	222	9	176	890	2709	1208	906	2408	1074
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.02	0.76	0.76	0.68	0.68	0.68
Sat Flow, veh/h	1366	134	1472	1387	78	1519	1781	3554	1585	1218	3554	1585
Grp Volume(v), veh/h	94	0	24	29	0	41	22	149	18	16	184	33
Grp Sat Flow(s),veh/h/ln	1366	0	1605	1387	0	1597	1781	1777	1585	1218	1777	1585
Q Serve(g_s), s	6.0	0.0	1.2	1.7	0.0	2.1	0.3	0.9	0.2	0.4	1.6	0.6
Cycle Q Clear(g_c), s	8.1	0.0	1.2	2.9	0.0	2.1	0.3	0.9	0.2	0.4	1.6	0.6
Prop In Lane	1.00		0.92	1.00		0.95	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	206	0	186	222	0	185	890	2709	1208	906	2408	1074
V/C Ratio(X)	0.46	0.00	0.13	0.13	0.00	0.22	0.02	0.06	0.01	0.02	0.08	0.03
Avail Cap(c_a), veh/h	557	0	598	578	0	594	1056	2709	1208	906	2408	1074
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.8	0.0	35.7	37.0	0.0	36.1	3.6	2.7	2.6	4.7	4.9	4.8
Incr Delay (d2), s/veh	1.6	0.0	0.3	0.3	0.0	0.6	0.0	0.0	0.0	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.8	0.0	0.9	1.1	0.0	1.5	0.1	0.4	0.1	0.1	0.8	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.4	0.0	36.0	37.3	0.0	36.7	3.6	2.7	2.6	4.8	5.0	4.8
LnGrp LOS	D	A	D	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		118			70			189			233	
Approach Delay, s/veh		40.3			37.0			2.8			5.0	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.6	66.5		15.9		74.1		15.9				
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s	10.5	29.5		33.5		45.5		33.5				
Max Q Clear Time (g_c+I1), s	2.3	3.6		10.1		2.9		4.9				
Green Ext Time (p_c), s	0.0	2.3		0.4		1.9		0.3				

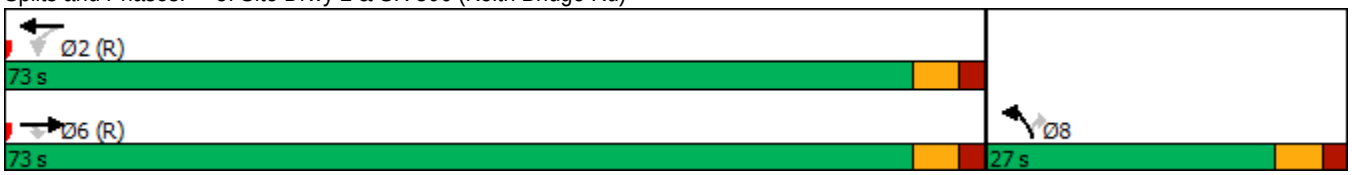
Intersection Summary												
HCM 6th Ctrl Delay			14.8									
HCM 6th LOS			B									

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	602	24	17	1097	78	13
Future Volume (vph)	602	24	17	1097	78	13
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases		6	2			8
Detector Phase	6	6	2	2	8	8
Switch Phase						
Minimum Initial (s)	15.0	15.0	15.0	15.0	6.0	6.0
Minimum Split (s)	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	73.0	73.0	73.0	73.0	27.0	27.0
Total Split (%)	73.0%	73.0%	73.0%	73.0%	27.0%	27.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated

Splits and Phases: 5: Site Drwy 2 & SR 306 (Keith Bridge Rd)



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	602	24	17	1097	78	13
Future Volume (veh/h)	602	24	17	1097	78	13
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1826	1870	1870	1826	1870	1870
Adj Flow Rate, veh/h	654	26	18	1192	85	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	2	2	5	2	2
Cap, veh/h	2864	1309	700	2864	115	102
Arrive On Green	1.00	1.00	0.83	0.83	0.06	0.06
Sat Flow, veh/h	3561	1585	760	3561	1781	1585
Grp Volume(v), veh/h	654	26	18	1192	85	14
Grp Sat Flow(s),veh/h/ln	1735	1585	760	1735	1781	1585
Q Serve(g_s), s	0.0	0.0	0.4	9.1	4.7	0.8
Cycle Q Clear(g_c), s	0.0	0.0	0.4	9.1	4.7	0.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2864	1309	700	2864	115	102
V/C Ratio(X)	0.23	0.02	0.03	0.42	0.74	0.14
Avail Cap(c_a), veh/h	2864	1309	700	2864	383	341
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	1.6	2.3	46.0	44.2
Incr Delay (d2), s/veh	0.2	0.0	0.1	0.4	9.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	0.0	0.1	2.1	4.3	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.2	0.0	1.6	2.8	55.0	44.8
LnGrp LOS	A	A	A	A	D	D
Approach Vol, veh/h	680			1210	99	
Approach Delay, s/veh	0.2			2.7	53.5	
Approach LOS	A			A	D	

Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	88.1				88.1	11.9
Change Period (Y+Rc), s	5.5				5.5	5.5
Max Green Setting (Gmax), s	67.5				67.5	21.5
Max Q Clear Time (g_c+I1), s	11.1				2.0	6.7
Green Ext Time (p_c), s	23.2				9.9	0.2

Intersection Summary	
HCM 6th Ctrl Delay	4.4
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	591	24	0	1114	0	17
Future Vol, veh/h	591	24	0	1114	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	Yield
Storage Length	-	150	35	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	2	2	5	2	2
Mvmt Flow	642	26	0	1211	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	321
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	0	-	0	675
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	675
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.5
HCM LOS			B

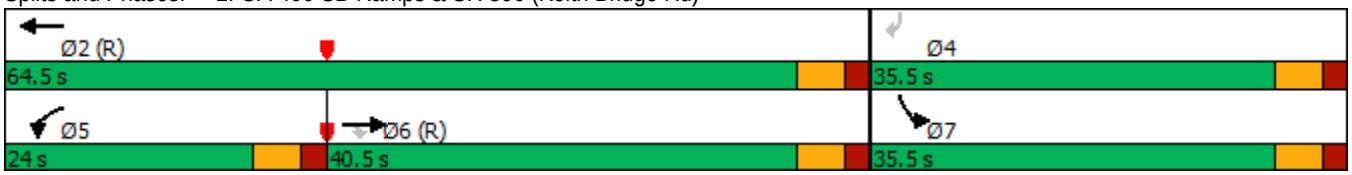
Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	675	-	-
HCM Lane V/C Ratio	0.027	-	-
HCM Control Delay (s)	10.5	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-

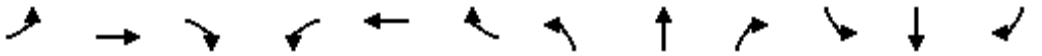
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	510	301	403	868	265	326
Future Volume (vph)	510	301	403	868	265	326
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	6		5	2	7	
Permitted Phases		6				4
Detector Phase	6	6	5	2	7	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	5.0	15.0	5.0	6.0
Minimum Split (s)	28.5	28.5	15.0	28.5	15.0	35.5
Total Split (s)	40.5	40.5	24.0	64.5	35.5	35.5
Total Split (%)	40.5%	40.5%	24.0%	64.5%	35.5%	35.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 1: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	510	301	403	868	0	0	0	0	265	0	326
Future Volume (veh/h)	0	510	301	403	868	0	0	0	0	265	0	326
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1826	1870	1870	1826	0				1870	0	1870
Adj Flow Rate, veh/h	0	543	0	429	923	0				282	0	347
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	5	2	2	5	0				2	0	2
Cap, veh/h	0	1547		499	1178	0				436	0	388
Arrive On Green	0.00	0.45	0.00	0.29	1.00	0.00				0.24	0.00	0.24
Sat Flow, veh/h	0	3561	1585	3456	1826	0				1781	0	1585
Grp Volume(v), veh/h	0	543	0	429	923	0				282	0	347
Grp Sat Flow(s),veh/h/ln	0	1735	1585	1728	1826	0				1781	0	1585
Q Serve(g_s), s	0.0	10.3	0.0	11.7	0.0	0.0				14.2	0.0	21.2
Cycle Q Clear(g_c), s	0.0	10.3	0.0	11.7	0.0	0.0				14.2	0.0	21.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1547		499	1178	0				436	0	388
V/C Ratio(X)	0.00	0.35		0.86	0.78	0.00				0.65	0.00	0.89
Avail Cap(c_a), veh/h	0	1547		639	1178	0				534	0	476
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.60	0.60	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.2	0.0	34.6	0.0	0.0				33.9	0.0	36.5
Incr Delay (d2), s/veh	0.0	0.6	0.0	5.9	3.2	0.0				1.9	0.0	16.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	6.9	0.0	7.0	1.9	0.0				10.2	0.0	25.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	18.8	0.0	40.5	3.2	0.0				35.8	0.0	53.3
LnGrp LOS	A	B		D	A	A				D	A	D
Approach Vol, veh/h		543	A		1352						629	
Approach Delay, s/veh		18.8			15.0						45.5	
Approach LOS		B			B						D	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		70.0		30.0	19.9	50.1						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		59.0		30.0	18.5	35.0						
Max Q Clear Time (g_c+I1), s		2.0		23.2	13.7	12.3						
Green Ext Time (p_c), s		18.8		1.3	0.7	6.0						

Intersection Summary		
HCM 6th Ctrl Delay		23.4
HCM 6th LOS		C

Notes

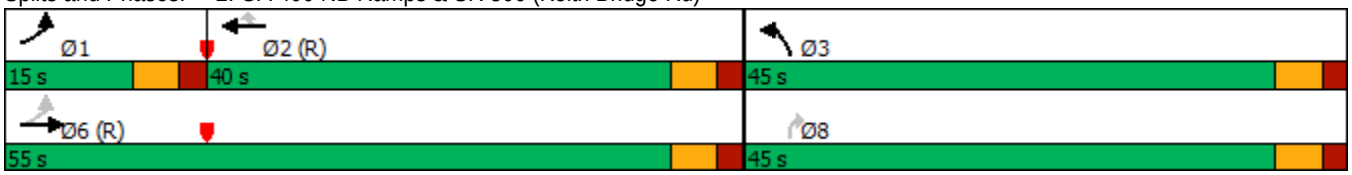
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

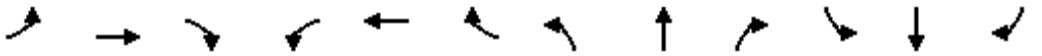
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	189	585	1021	204	239	998
Future Volume (vph)	189	585	1021	204	239	998
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		3	
Permitted Phases	6			2		8
Detector Phase	1	6	2	2	3	8
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	5.0	6.0
Minimum Split (s)	15.0	34.5	23.5	23.5	15.0	30.5
Total Split (s)	15.0	55.0	40.0	40.0	45.0	45.0
Total Split (%)	15.0%	55.0%	40.0%	40.0%	45.0%	45.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	585	0	0	1021	204	239	0	998	0	0	0
Future Volume (veh/h)	189	585	0	0	1021	204	239	0	998	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1826	0	0	1826	1870	1870	0	1870			
Adj Flow Rate, veh/h	201	622	0	0	1086	0	254	0	1062			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	2	5	0	0	5	2	2	0	2			
Cap, veh/h	285	1720	0	0	1215		702	0	1099			
Arrive On Green	0.18	0.99	0.00	0.00	0.70	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	1781	3561	0	0	3561	1585	1781	0	2790			
Grp Volume(v), veh/h	201	622	0	0	1086	0	254	0	1062			
Grp Sat Flow(s),veh/h/ln	1781	1735	0	0	1735	1585	1781	0	1395			
Q Serve(g_s), s	7.1	0.2	0.0	0.0	25.1	0.0	10.1	0.0	37.2			
Cycle Q Clear(g_c), s	7.1	0.2	0.0	0.0	25.1	0.0	10.1	0.0	37.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	285	1720	0	0	1215		702	0	1099			
V/C Ratio(X)	0.70	0.36	0.00	0.00	0.89		0.36	0.00	0.97			
Avail Cap(c_a), veh/h	293	1720	0	0	1215		704	0	1102			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.87	0.87	0.00	0.00	0.48	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	19.7	0.2	0.0	0.0	13.5	0.0	21.4	0.0	29.6			
Incr Delay (d2), s/veh	6.4	0.5	0.0	0.0	5.4	0.0	0.3	0.0	19.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	5.0	0.3	0.0	0.0	7.6	0.0	7.3	0.0	20.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.0	0.7	0.0	0.0	18.9	0.0	21.7	0.0	49.0			
LnGrp LOS	C	A	A	A	B		C	A	D			
Approach Vol, veh/h		823			1086	A		1316				
Approach Delay, s/veh		6.9			18.9			43.7				
Approach LOS		A			B			D				

Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	14.6	40.5				55.1		44.9				
Change Period (Y+Rc), s	5.5	5.5				5.5		5.5				
Max Green Setting (Gmax), s	9.5	34.5				49.5		39.5				
Max Q Clear Time (g_c+I1), s	9.1	27.1				2.2		39.2				
Green Ext Time (p_c), s	0.0	5.4				8.7		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		26.0	
HCM 6th LOS		C	

Notes

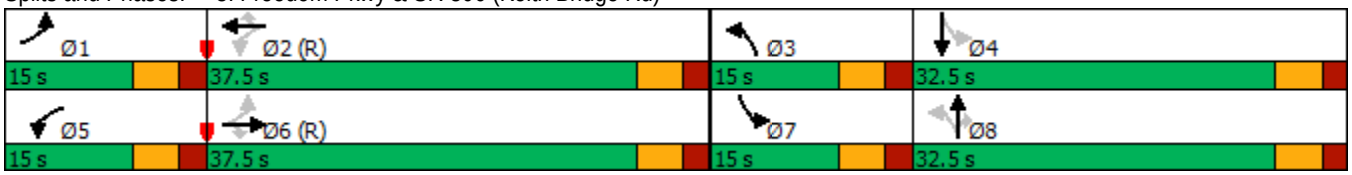
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

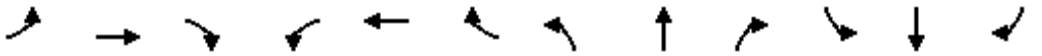
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	82	792	97	103	1221	148	95	231	51	151	112
Future Volume (vph)	82	792	97	103	1221	148	95	231	51	151	112
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	1	6		5	2		3	8		7	4
Permitted Phases	6		6	2		2	8		8	4	
Detector Phase	1	6	6	5	2	2	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	33.5	33.5	15.0	33.5	33.5	15.0	27.5	27.5	15.0	32.5
Total Split (s)	15.0	37.5	37.5	15.0	37.5	37.5	15.0	32.5	32.5	15.0	32.5
Total Split (%)	15.0%	37.5%	37.5%	15.0%	37.5%	37.5%	15.0%	32.5%	32.5%	15.0%	32.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Splits and Phases: 3: Freedom Pkwy & SR 306 (Keith Bridge Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	792	97	103	1221	148	95	231	51	151	112	87
Future Volume (veh/h)	82	792	97	103	1221	148	95	231	51	151	112	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1826	1870	1870	1826	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	87	843	0	110	1299	157	101	246	0	161	119	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	5	2	2	5	2	2	2	2	2	2	2
Cap, veh/h	313	1665		462	1679	767	353	293		272	350	
Arrive On Green	0.09	0.96	0.00	0.10	0.97	0.97	0.06	0.16	0.00	0.09	0.19	0.00
Sat Flow, veh/h	1781	3469	1585	1781	3469	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	87	843	0	110	1299	157	101	246	0	161	119	0
Grp Sat Flow(s),veh/h/ln	1781	1735	1585	1781	1735	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	2.4	1.9	0.0	3.1	4.7	0.4	4.7	12.8	0.0	7.4	5.5	0.0
Cycle Q Clear(g_c), s	2.4	1.9	0.0	3.1	4.7	0.4	4.7	12.8	0.0	7.4	5.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	313	1665		462	1679	767	353	293		272	350	
V/C Ratio(X)	0.28	0.51		0.24	0.77	0.20	0.29	0.84		0.59	0.34	
Avail Cap(c_a), veh/h	401	1665		542	1679	767	409	505		274	505	
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.67	0.67	0.00	0.81	0.81	0.81	0.90	0.90	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	11.4	1.1	0.0	11.2	0.9	0.8	32.3	40.9	0.0	31.8	35.3	0.0
Incr Delay (d2), s/veh	0.3	0.7	0.0	0.2	2.9	0.5	0.4	5.7	0.0	3.3	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	0.9	0.0	1.9	2.0	0.4	3.6	9.9	0.0	6.2	4.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.7	1.8	0.0	11.4	3.8	1.3	32.7	46.6	0.0	35.2	35.9	0.0
LnGrp LOS	B	A		B	A	A	C	D		D	D	
Approach Vol, veh/h		930	A		1566			347	A		280	A
Approach Delay, s/veh		2.7			4.1			42.6			35.5	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.1	53.9	11.8	24.2	10.5	53.5	14.8	21.2
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	32.0	9.5	27.0	9.5	32.0	9.5	27.0
Max Q Clear Time (g_c+I1), s	4.4	6.7	6.7	7.5	5.1	3.9	9.4	14.8
Green Ext Time (p_c), s	0.1	17.4	0.0	0.6	0.1	10.8	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	10.8
HCM 6th LOS	B

Notes

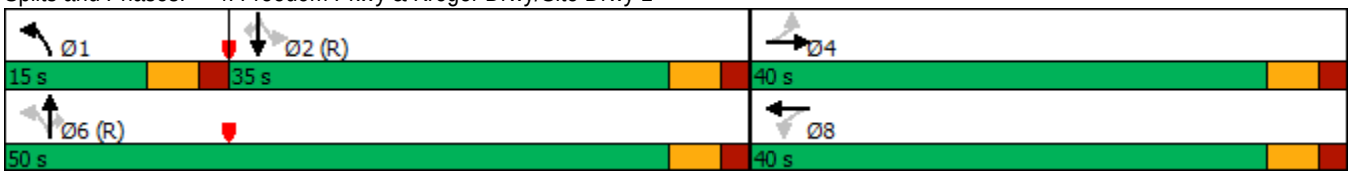
Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

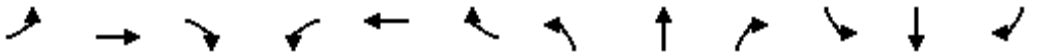
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	234	2	37	2	67	254	49	77	241	57
Future Volume (vph)	234	2	37	2	67	254	49	77	241	57
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		8	1	6			2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	4	4	8	8	1	6	6	2	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	5.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	36.5	36.5	15.0	30.5	30.5	30.5	30.5	30.5
Total Split (s)	40.0	40.0	40.0	40.0	15.0	50.0	50.0	35.0	35.0	35.0
Total Split (%)	44.4%	44.4%	44.4%	44.4%	16.7%	55.6%	55.6%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag					Lead			Lag	Lag	Lag
Lead-Lag Optimize?					Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 4: Freedom Pkwy & Kroger Drwy/Site Drwy 1





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	2	99	37	2	50	67	254	49	77	241	57
Future Volume (veh/h)	234	2	99	37	2	50	67	254	49	77	241	57
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	279	2	118	44	2	60	80	302	58	92	287	68
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	398	7	417	344	14	412	635	2170	968	620	1782	795
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.05	0.61	0.61	0.50	0.50	0.50
Sat Flow, veh/h	1340	26	1563	1272	51	1542	1781	3554	1585	1077	3554	1585
Grp Volume(v), veh/h	279	0	120	44	0	62	80	302	58	92	287	68
Grp Sat Flow(s),veh/h/ln	1340	0	1589	1272	0	1593	1781	1777	1585	1077	1777	1585
Q Serve(g_s), s	18.0	0.0	5.4	2.6	0.0	2.7	1.8	3.3	1.3	4.2	3.9	2.0
Cycle Q Clear(g_c), s	20.7	0.0	5.4	7.9	0.0	2.7	1.8	3.3	1.3	4.2	3.9	2.0
Prop In Lane	1.00		0.98	1.00		0.97	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	398	0	425	344	0	426	635	2170	968	620	1782	795
V/C Ratio(X)	0.70	0.00	0.28	0.13	0.00	0.15	0.13	0.14	0.06	0.15	0.16	0.09
Avail Cap(c_a), veh/h	554	0	609	491	0	611	738	2170	968	620	1782	795
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.93	0.93	0.93
Uniform Delay (d), s/veh	33.0	0.0	26.1	29.3	0.0	25.1	8.9	7.5	7.1	12.2	12.2	11.7
Incr Delay (d2), s/veh	2.3	0.0	0.4	0.2	0.0	0.2	0.1	0.1	0.1	0.5	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.1	0.0	3.7	1.4	0.0	1.8	1.1	1.9	0.7	1.8	2.6	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.3	0.0	26.5	29.5	0.0	25.3	8.9	7.6	7.2	12.7	12.3	11.9
LnGrp LOS	D	A	C	C	A	C	A	A	A	B	B	B
Approach Vol, veh/h		399			106			440			447	
Approach Delay, s/veh		32.7			27.0			7.8			12.3	
Approach LOS		C			C			A			B	

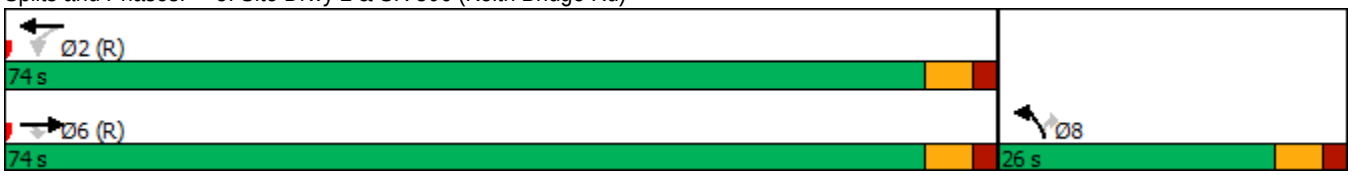
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	9.8	50.6		29.5		60.5		29.5				
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s	9.5	29.5		34.5		44.5		34.5				
Max Q Clear Time (g_c+I1), s	3.8	6.2		22.7		5.3		9.9				
Green Ext Time (p_c), s	0.1	4.4		1.3		4.2		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			17.9									
HCM 6th LOS			B									

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	915	80	55	1355	117	20
Future Volume (vph)	915	80	55	1355	117	20
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases		6	2			8
Detector Phase	6	6	2	2	8	8
Switch Phase						
Minimum Initial (s)	15.0	15.0	15.0	15.0	6.0	6.0
Minimum Split (s)	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	74.0	74.0	74.0	74.0	26.0	26.0
Total Split (%)	74.0%	74.0%	74.0%	74.0%	26.0%	26.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 5: Site Drwy 2 & SR 306 (Keith Bridge Rd)



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	915	80	55	1355	117	20
Future Volume (veh/h)	915	80	55	1355	117	20
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1826	1870	1870	1826	1870	1870
Adj Flow Rate, veh/h	995	87	60	1473	127	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	2	2	5	2	2
Cap, veh/h	2772	1266	524	2772	162	144
Arrive On Green	1.00	1.00	0.80	0.80	0.09	0.09
Sat Flow, veh/h	3561	1585	566	3561	1781	1585
Grp Volume(v), veh/h	995	87	60	1473	127	22
Grp Sat Flow(s),veh/h/ln	1735	1585	566	1735	1781	1585
Q Serve(g_s), s	0.0	0.0	2.4	14.8	7.0	1.3
Cycle Q Clear(g_c), s	0.0	0.0	2.4	14.8	7.0	1.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2772	1266	524	2772	162	144
V/C Ratio(X)	0.36	0.07	0.11	0.53	0.78	0.15
Avail Cap(c_a), veh/h	2772	1266	524	2772	365	325
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.81	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	2.3	3.5	44.5	41.9
Incr Delay (d2), s/veh	0.3	0.1	0.4	0.7	8.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	0.1	0.4	6.8	6.1	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.3	0.1	2.7	4.2	52.4	42.4
LnGrp LOS	A	A	A	A	D	D
Approach Vol, veh/h	1082			1533	149	
Approach Delay, s/veh	0.3			4.2	51.0	
Approach LOS	A			A	D	

Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	85.4				85.4	14.6
Change Period (Y+Rc), s	5.5				5.5	5.5
Max Green Setting (Gmax), s	68.5				68.5	20.5
Max Q Clear Time (g_c+I1), s	16.8				2.0	9.0
Green Ext Time (p_c), s	34.4				22.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	5.2
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	855	80	0	1410	0	25
Future Vol, veh/h	855	80	0	1410	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	Yield
Storage Length	-	150	35	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	2	2	5	2	2
Mvmt Flow	929	87	0	1533	0	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	465
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	0	-	0	544
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	544
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	544	-	-
HCM Lane V/C Ratio	0.05	-	-
HCM Control Delay (s)	12	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-

Traffic Volume Worksheets

22-024 EMPIRE Mixed-Use Dev. on SR 306 (Keith Bridge Rd) and Freedom Pkwy - Forsyth County

Traffic Volumes

A&R Engineering
May 2022

1. SR 306 @ GA 400 SB Ramps

A.M. Peak Hour

Condition	GA 400 Southbound On-Ramp Northbound				GA 400 Southbound Off-Ramp Southbound				SR 306 (Keith Bridge Road) Eastbound				SR 306 (Keith Bridge Road) Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	0	0	0	130	0	374	504	0	404	159	563	146	1035	0	1181
Growth Factor (%):	1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7	
No-Build 2025 Volumes:	0	0	0	0	137	0	393	530	0	425	167	592	153	1088	0	1241
Total New Trips:	0	0	0	0	14	0	0	14	0	9	0	9	58	17	0	75
Future 2025 Traffic Volumes:	0	0	0	0	151	0	393	544	0	434	167	601	211	1105	0	1316

P.M. Peak Hour

Condition	GA 400 Southbound On-Ramp Northbound				GA 400 Southbound Off-Ramp Southbound				SR 306 (Keith Bridge Road) Eastbound				SR 306 (Keith Bridge Road) Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	0	0	0	208	0	310	518	0	456	286	742	301	802	0	1103
Growth Factor (%):	1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7	
No-Build 2025 Volumes:	0	0	0	0	219	0	326	545	0	479	301	780	316	843	0	1159
Total New Trips:	0	0	0	0	46	0	0	46	0	31	0	31	87	25	0	112
Future 2025 Traffic Volumes:	0	0	0	0	265	0	326	591	0	510	301	811	403	868	0	1271

22-024 EMPIRE Mixed-Use Dev. on SR 306 (Keith Bridge Rd) and Freedom Pkwy - Forsyth County

Traffic Volumes

A&R Engineering
May 2022

2. SR 306 @ GA 400 NB Ramps

A.M. Peak Hour

	GA 400 Northbound Off-Ramp				GA 400 Northbound On-Ramp				SR 306 (Keith Bridge Road)				SR 306 (Keith Bridge Road)			
	Northbound				**Southbound**				**Eastbound**				**Westbound**			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	60	0	425	485	0	0	0	0	64	470	0	534	0	1121	74	1195
Growth Factor (%):	1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7	
No-Build 2025 Volumes:	63	0	447	510	0	0	0	0	67	494	0	561	0	1178	78	1256
Total New Trips:	0	0	33	33	0	0	0	0	0	24	0	24	0	75	25	100
Future 2025 Traffic Volumes:	63	0	480	543	0	0	0	0	67	518	0	585	0	1253	103	1356

P.M. Peak Hour

	GA 400 Northbound Off-Ramp				GA 400 Northbound On-Ramp				SR 306 (Keith Bridge Road)				SR 306 (Keith Bridge Road)			
	Northbound				**Southbound**				**Eastbound**				**Westbound**			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	227	0	848	1075	0	0	0	0	180	483	0	663	0	865	159	1024
Growth Factor (%):	1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7	
No-Build 2025 Volumes:	239	0	891	1130	0	0	0	0	189	508	0	697	0	909	167	1076
Total New Trips:	0	0	107	107	0	0	0	0	0	77	0	77	0	112	37	149
Future 2025 Traffic Volumes:	239	0	998	1237	0	0	0	0	189	585	0	774	0	1021	204	1225

22-024 EMPIRE Mixed-Use Dev. on SR 306 (Keith Bridge Rd) and Freedom Pkwy - Forsyth County

Traffic Volumes

A&R Engineering
May 2022

3. SR 306 @ Freedom Pkwy

A.M. Peak Hour

	Freedom Parkway Northbound				Ingles Markets & Others Drwy Southbound				SR 306 (Keith Bridge Road) Eastbound				SR 306 (Keith Bridge Road) Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	48	106	40	194	21	23	9	53	21	485	60	566	71	952	19	1042
Growth Factor (%):	1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7	
No-Build 2025 Volumes:	50	111	42	203	22	24	9	55	22	510	63	595	75	1001	20	1096
Total New Trips:	30	0	7	37	0	0	0	0	0	45	11	56	10	70	0	80
Future 2025 Traffic Volumes:	80	111	49	240	22	24	9	55	22	555	74	651	85	1071	20	1176

P.M. Peak Hour

	Freedom Parkway Northbound				Ingles Markets & Others Drwy Southbound				SR 306 (Keith Bridge Road) Eastbound				SR 306 (Keith Bridge Road) Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	48	220	32	300	144	107	83	334	78	614	57	749	80	1063	141	1284
Growth Factor (%):	1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7	
No-Build 2025 Volumes:	50	231	34	315	151	112	87	350	82	645	60	787	84	1117	148	1349
Total New Trips:	45	0	17	62	0	0	0	0	0	147	37	184	19	104	0	123
Future 2025 Traffic Volumes:	95	231	51	377	151	112	87	350	82	792	97	971	103	1221	148	1472

22-024 EMPIRE Mixed-Use Dev. on SR 306 (Keith Bridge Rd) and Freedom Pkwy - Forsyth County

Traffic Volumes

A&R Engineering
May 2022

4. Freedom Pkwy @ Kroger-Drwy 1

A.M. Peak Hour

	Freedom Parkway Northbound					Freedom Parkway Southbound					Kroger Driveway (Signalized) Eastbound					Site Driveway 1 Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	0	18	117	0	135	1	0	141	27	169	0	76	0	18	94	0	0	0	0	0
Growth Factor (%):	#	1.7	1.7	1.7		1.7	1.7	1.7	1.7		#	1.7	1.7	1.7		#	1.7	1.7	1.7	
No-Build 2025 Volumes:	0	19	123	0	142	1	0	148	28	177	0	80	0	19	99	0	0	0	0	0
Total New Trips:	0	0	4	15	19	0	13	8	0	21	0	0	2	0	2	0	25	2	33	60
Future 2025 Traffic Volumes:	0	19	127	15	161	1	13	156	28	198	0	80	2	19	101	0	25	2	33	60

P.M. Peak Hour

	Freedom Parkway Northbound					Freedom Parkway Southbound					Kroger Driveway (Signalized) Eastbound					Site Driveway 1 Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	0	64	230	0	294	32	0	218	54	304	0	223	0	94	317	0	0	0	0	0
Growth Factor (%):	#	1.7	1.7	1.7		1.7	1.7	1.7	1.7		#	1.7	1.7	1.7		#	1.7	1.7	1.7	
No-Build 2025 Volumes:	0	67	242	0	309	34	0	229	57	320	0	234	0	99	333	0	0	0	0	0
Total New Trips:	0	0	12	49	61	0	43	12	0	55	0	0	2	0	2	0	37	2	50	89
Future 2025 Traffic Volumes:	0	67	254	49	370	34	43	241	57	375	0	234	2	99	335	0	37	2	50	89

22-024 EMPIRE Mixed-Use Dev. on SR 306 (Keith Bridge Rd) and Freedom Pkwy - Forsyth County

Traffic Volumes

A&R Engineering
May 2022

5. SR 306 @ Drwy 2

A.M. Peak Hour

Condition	Site Driveway 2 Northbound				- Southbound				SR 306 (Keith Bridge Road) Eastbound				SR 306 (Keith Bridge Road) Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	0	0	0	0	0	0	0	0	546	0	546	0	1042	0	1042
Growth Factor (%):	1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7	
No-Build 2025 Volumes:	0	0	0	0	0	0	0	0	0	574	0	574	0	1095	0	1095
Total New Trips:	78	0	13	91	0	0	0	0	0	28	24	52	17	2	0	19
Future 2025 Traffic Volumes:	78	0	13	91	0	0	0	0	0	602	24	626	17	1097	0	1114

P.M. Peak Hour

Condition	Site Driveway 2 Northbound				- Southbound				SR 306 (Keith Bridge Road) Eastbound				SR 306 (Keith Bridge Road) Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	0	0	0	0	0	0	0	0	790	0	790	0	1284	0	1284
Growth Factor (%):	1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7	
No-Build 2025 Volumes:	0	0	0	0	0	0	0	0	0	830	0	830	0	1349	0	1349
Total New Trips:	117	0	20	137	0	0	0	0	0	85	80	165	55	6	0	61
Future 2025 Traffic Volumes:	117	0	20	137	0	0	0	0	0	915	80	995	55	1355	0	1410

22-024 EMPIRE Mixed-Use Dev. on SR 306 (Keith Bridge Rd) and Freedom Pkwy - Forsyth County

Traffic Volumes

A&R Engineering
May 2022

6. SR 306 @ Drwy 3 (RIRO)

A.M. Peak Hour

	Site Driveway 3 (RIRO) Northbound				- Southbound				SR 306 (Keith Bridge Road) Eastbound				SR 306 (Keith Bridge Road) Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	0	0	0	0	0	0	0	0	546	0	546	0	1042	0	1042
Growth Factor (%):	1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7	
No-Build 2025 Volumes:	0	0	0	0	0	0	0	0	0	574	0	574	0	1095	0	1095
Total New Trips:	0	0	17	17	0	0	0	0	0	17	24	41	0	19	0	19
Future 2025 Traffic Volumes:	0	0	17	17	0	0	0	0	0	591	24	615	0	1114	0	1114

P.M. Peak Hour

	Site Driveway 3 (RIRO) Northbound				- Southbound				SR 306 (Keith Bridge Road) Eastbound				SR 306 (Keith Bridge Road) Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	0	0	0	0	0	0	0	0	790	0	790	0	1284	0	1284
Growth Factor (%):	1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7		1.7	1.7	1.7	
No-Build 2025 Volumes:	0	0	0	0	0	0	0	0	0	830	0	830	0	1349	0	1349
Total New Trips:	0	0	25	25	0	0	0	0	0	25	80	105	0	61	0	61
Future 2025 Traffic Volumes:	0	0	25	25	0	0	0	0	0	855	80	935	0	1410	0	1410