

**DEVELOPMENT OF REGIONAL IMPACT
(DRI #3782)**

**TRAFFIC STUDY
FOR
NORTH PARK MIXED-USE DEVELOPMENT AT SR 306
(KEITH BRIDGE ROAD) AND STATE BARN ROAD**

FORSYTH COUNTY, GEORGIA



Prepared for:

***Retail Planning Corporation
EVP Development
35 Johnson Ferry Road,
Marietta, GA 30068***

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

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A & R Project # 22-177

EXECUTIVE SUMMARY

Traffic impacts were evaluated for the proposed mixed-use development that will be located to northwest of GA 400 and SR 306 (Keith Bridge Road) and on both sides of State Barn Road in Forsyth County, Georgia. The development will consist of following:

- Warehousing: 200,000 sf
- Mini-Warehouse: 55,000 sf
- Single-Family Attached Housing: 172 homes
- Multifamily Housing (Low-Rise): 216 dwelling units
- Multifamily Housing (Mid-Rise): 240 dwelling units
- Senior Adult Housing - Multifamily: 200 dwelling units
- General Office Building: 400,000 sf
- Shopping Plaza (40-150k): 106,700 sf
- Strip Retail Plaza (<40k): 33,600 sf
- Drive-In Bank: 4,000 sf
- High-Turnover (Sit-Down) Restaurant: 8,000 sf
- Fast-Food Restaurant with Drive-Through Window: 8,000 sf
- Convenience Store/Gas Station - GFA (5.5-10k): 5,900 sf and 18 vehicle fueling stations

The development proposes accesses at the following locations:

- Site Driveway 1: Full access driveway on SR 306 (Keith Bridge Road)
- Site Driveway 2: Full access driveway on State Barn Road (aligns with Site Driveway 3)
- Site Driveway 3: Full access driveway on State Barn Road (aligns with Site Driveway 2)
- Site Driveway 4: Full access driveway on State Barn Road (aligns with Site Driveway 5)
- Site Driveway 5: Full access driveway on State Barn Road (aligns with Site Driveway 4)

The AM and PM peak hours have been analyzed in this study. This study includes the evaluation of traffic operations at the intersections of:

1. SR 306 (Keith Bridge Road) and Freedom Parkway
2. SR 306 (Keith Bridge Road) and GA 400 Northbound Ramps
3. SR 306 (Keith Bridge Road) and GA 400 Southbound Ramps
4. SR 306 (Keith Bridge Road) and State Barn Road
5. SR 306 (Keith Bridge Road) and Central Park Driveway
6. SR 306 (Keith Bridge Road) and SR 9 (Dahlonega Highway)
7. SR 9 (Dahlonega Highway) and State Barn Road
8. SR 9 (Dahlonega Highway) and Johnson Drive
9. SR 9 (Dahlonega Highway) and Spot Road
10. State Barn Road and Site Driveway 4/ Driveway 5
11. State Barn Road and Site Driveway 2/ Driveway 3
12. SR 306 (Keith Bridge Road) and Site Driveway 1

Traffic Operations Summary

Table E1 below provides a summary of traffic operations for the “No-Build 2027” conditions, and “Build 2027” conditions both with and without site improvements. As per GRTA requirements, all approaches that do not meet the level-of-service (LOS) standard are highlighted in Table E1. Table E1 for “Build” conditions also includes the project’s total added trip and the respective percentage of overall total “Build” condition approach traffic volume for all failing LOS approaches after all improvements are completed.

TABLE E1 — FUTURE INTERSECTION OPERATIONS AT FAILING APPROACHES											
Intersection		No-Build Condition: LOS (Delay)			Build Condition: LOS (Delay)						
		NO IMPROVEMENTS		NO IMPROVEMENTS		SITE IMPROVEMENTS		SITE VOLUMES AT FAILING APPROACH BUILD WITH IMPROVEMENTS		PERCENT 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
4	SR 306 @ State Barn Rd -Eastbound Approach -Southbound Approach	B (11.3)	A (5.8)	D (31.9)	B (11.1)	D (29.9) F (49.9) E (35.7)	B (10.5) C (14.5) B (12.6)	147 243	123 322	26% 29%	24% 59%
		B (14.8) B (14.0)	A (7.4) A (6.0)	F (53.8) E (37.9)	C (15.8) B (13.5)						
7	SR 9 @ State Barn Rd -Westbound Approach	B (11.9)	E (41.3)	C (12.8)	F (83.6)	B (12.8)	F (69.4)	63	110	37%	24%
10	State Barn Road @ Site Drwy 4/ Drwy 5 -Westbound Approach	N/A	N/A	E (41.6)	E (38.7)	E (41.6)	E (38.7)	74	140	75%	85%
11	State Barn Road @ Site Drwy 2/ Drwy 3 -Westbound Approach	N/A	N/A	F (81.7)	F (115.2)	F (81.7)	F (115.2)	80	153	76%	86%

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 “Build” traffic operations indicate that all signalized intersections will operate at overall levels-of-service “D” or better along with all approaches also performing at similar levels. Following approaches at the un-signalized intersection and the roundabout will be operating at “E” or “F” in the AM or PM peak hour or both:

- Intersection 4: SR 306 (Keith Bridge Road) at State Barn Road/Vanderbilt Way (Roundabout)
Although the roundabout operates at overall LOS “D” in AM peak, the eastbound approach will operate at LOS “F” and southbound approach will operate at LOS “E”.
The design of the existing roundabout is not consistent with GDOT’s current standards.
- Intersection 7: SR 9 (Dahlonge Highway) at State Barn Road
The westbound stop-controlled acute-angled approach of State Barn Road will experience longer delays in the “Build” conditions and will operate at LOS “F” in the PM peak hour. The delay increases by approximately 40 seconds from “No-Build” conditions.
The intersection does not seem to warrant a traffic signal and does not seem to have adequate right-of-way to make any improvements. It is not uncommon for the stop-controlled approaches at un-signalized intersections to experience longer delays turning onto major roadways.
- Intersection 10: State Barn Road at Site Driveway 4/ Driveway 5 &
- Intersection 11: State Barn Road at Site Driveway 2/ Driveway 3
The stop-controlled site driveways will experience some delays and will operate at levels-of-service “E” and “F” in both AM and PM peak hours. It is not uncommon for side street stop-controlled approaches to experience longer delays turning onto major roadways. The volumes at the driveways do not warrant installation of traffic signals.

The table below includes 95th percentile Synchro HCM 6 queue length for failing level-of-service approaches for the build condition with improvements that had site generated traffic. Queue length reports are included in the Appendix.

TABLE E2 — FUTURE 95TH PERCENTILE QUEUES (FT) FOR FAILING APPROACHES				
Intersection		Available Storage (ft)	Queue in feet	
			BUILD with Improvements	
			AM Peak	PM Peak
4	<u>SR 306 @ State Barn Rd</u>			
	-Eastbound Approach	-	325'	125'
	-Southbound Approach	-	350'	100
7	<u>SR 9 (Dahlonge Hwy) @ State Barn Rd</u>			
	-Westbound Approach	-	30'	380'
10	<u>State Barn Road @ Site Drwy 4/ Drwy 5</u>			
	-Westbound left	-	60'	78'
	-Westbound Right	-	8'	13'
11	<u>State Barn Road @ Site Drwy 2/ Drwy 3</u>			
	-Westbound left	-	93'	163'
	-Westbound Right	-	8'	18'

Recommendations for Site Improvements

Intersection 12: SR 306 (Keith Bridge Road) at Site Driveway 1 (Full Access)

Although the signalized intersection operates at satisfactory level-of-service “C” in both AM and PM peak hours, we recommend following improvements to SR 306 (Keith Bridge Road) to accommodate the site generated traffic and provide efficient flow of traffic at the adjacent signalized intersection of SR 306 and GA 400 SB ramp.

- Provide an additional westbound lane from SR 400 SB Ramp to Site Driveway 1. This second westbound lane will start as a free flow right-turn lane for southbound off-ramp and terminate as a right-turn lane at Site Driveway 1.
- Provide an additional eastbound lane on SR 306 from Site Driveway 1 to GA 400 SB on-ramp deceleration lane. This additional lane will serve as a receiving lane for the second southbound left-turn lane from Site Driveway 1 and will terminate as a right-turn lane at GA 400 SB on-ramp. The existing configuration of two through lanes and one right-turn lane will remain as the eastbound approach of SR 306 at GA 400 SB Ramp.

Intersection 4: SR 306 (Keith Bridge Road) @ State Barn Road

- Improve the existing roundabout to GDOT’s standards
- Re-align State Barn Road approach to approach the roundabout at right-angle.

Recommendations for Site Access Configuration

Intersection 10: State Barn Road at Site Driveway 4 (Eastbound) & Driveway 5 (Westbound)

- One entering and two exiting lanes (one right-turn lane and one shared thru and left-turn lane)
- Stop sign controlled on both the driveway approaches
- Northbound and southbound Left-turn lanes on State Barn Road for entering traffic for both driveways
- Northbound right-turn-lane on State Barn Road for entering traffic for Site Driveway 5

Intersection 11: State Barn Road at Site Driveway 2 (Eastbound) & Driveway 3 (Westbound)

- One entering and two exiting lanes (one right-turn lane and one shared thru and left-turn lane)
- Stop sign controlled on both the driveway approaches
- Northbound and southbound Left-turn lanes on State Barn Road for entering traffic for both driveways
- Northbound right-turn-lane on State Barn Road for entering traffic for Site Driveway 3

Intersection 12: SR 306 (Keith Bridge Road) at Site Driveway 1 (Full Access)

- One entering and three exiting lanes (one channelized right-turn lane and dual left-turn lanes) on Site Driveway 1
- Intersection to be signalized with a “protected-permissive” phase for eastbound left-turns
- Left-turn Lane on SR 306 for entering traffic
- Right-turn Lane on SR 306 for entering traffic extended up to GA 400 SB off-ramp
- A second receiving lane on eastbound SR 306 up to GA 400 SB on-ramp

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INTRODUCTION

The purpose of this study is to determine the traffic impact that will result from the proposed mixed use development that will be located to the northwest of GA 400 and SR 306 (Keith Bridge Road) and either side of State Barn Road in the 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 the following:

- Warehousing: 200,000 sf
- Mini-Warehouse: 55,000 sf
- Single-Family Attached Housing: 172 homes
- Multifamily Housing (Low-Rise): 216 dwelling units
- Multifamily Housing (Mid-Rise): 240 dwelling units
- Senior Adult Housing - Multifamily: 200 dwelling units
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- Convenience Store/Gas Station - GFA (5.5-10k): 5,900 sf and 18 vehicle fueling stations



The development proposes access at the following locations:

- Site Driveway 1: Full access driveway on SR 306 (Keith Bridge Road)
- Site Driveway 2: Full access driveway on State Barn Road (aligned with Site Driveway 3)
- Site Driveway 3: Full access driveway on State Barn Road (aligned with Site Driveway 2)
- Site Driveway 4: Full access driveway on State Barn Road (aligned with Site Driveway 5)
- Site Driveway 5: Full access driveway on State Barn Road (aligned with Site Driveway 4)

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) and Freedom Parkway
2. SR 306 (Keith Bridge Road) and GA 400 Northbound Ramps
3. SR 306 (Keith Bridge Road) and GA 400 Southbound Ramps
4. SR 306 (Keith Bridge Road) and State Barn Road
5. SR 306 (Keith Bridge Road) and Central Park Driveway
6. SR 306 (Keith Bridge Road) and SR 9 (Dahlonega Highway)
7. SR 9 (Dahlonega Highway) and State Barn Road
8. SR 9 (Dahlonega Highway) and Johnson Drive
9. SR 9 (Dahlonega Highway) and Spot Road

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

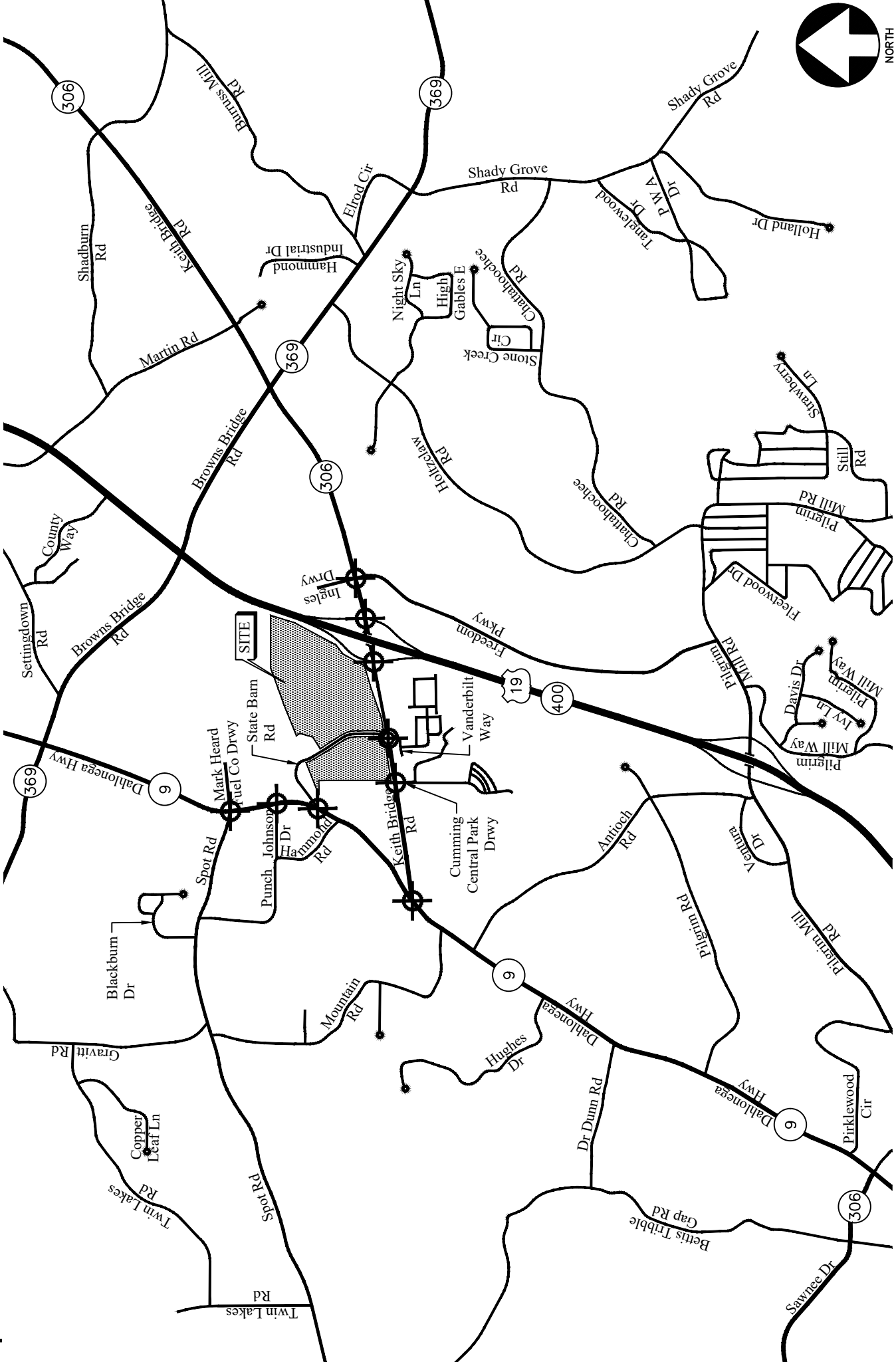
The study network was determined by evaluating the amount of traffic that the proposed development will add to each roadway segment in the area. According to GRTA requirements, a roadway segment carries a “significant” amount of traffic if the project contributes 7% or more trips to the two-way daily 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 GRTA, ARC, GDOT and Forsyth County:

1. SR 306 (Keith Bridge Road) and Freedom Parkway
2. SR 306 (Keith Bridge Road) and GA 400 Northbound Ramps
3. SR 306 (Keith Bridge Road) and GA 400 Southbound Ramps
4. SR 306 (Keith Bridge Road) and State Barn Road
5. SR 306 (Keith Bridge Road) and Central Park Driveway
6. SR 306 (Keith Bridge Road) and SR 9 (Dahlonega Highway)
7. SR 9 (Dahlonega Highway) and State Barn Road
8. SR 9 (Dahlonega Highway) and Johnson Drive
9. SR 9 (Dahlonega Highway) and Spot Road

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.

Study Intersections



LOCATION MAP

FIGURE 1

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EXISTING ROADWAY FACILITIES

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

SR 306 (Keith Bridge Road)

SR 306 (Keith Bridge Road) is an east-west, two-lane, undivided roadway with a posted speed limit of 55 mph in the vicinity of the site. Georgia Department of Transportation (GDOT) (Station ID's: 117-0051) indicate that the daily traffic volume on SR 306 (Keith Bridge Road) in 2019 was 8,610 vehicles per day east of SR 9 (Dahlonega Highway). GDOT classifies S SR 306 (Keith Bridge Road) as an Urban Minor Arterial roadway.

GA 400/ US 19

GA 400/ US 19 is a north-south, six-lane, median-divided roadway with a posted speed limit of 55 mph in the vicinity of the site. GDOT traffic counts (Station ID: 117-r611 & 117-r612) indicate that the daily traffic volume on GA 400/ US 19 Southbound Ramps in 2019 was 2,160 vehicles per day north of SR 306 (Keith Bridge Road) and 8,810 vehicles per day south of SR 306 (Keith Bridge Road). GDOT traffic counts (Station ID: 117-r012 & 117-r011) indicate that the daily traffic volume on GA 400/ US 19 Northbound Ramps in 2019 was 2,320 vehicles per day north of SR 306 (Keith Bridge Road) and 8,770 vehicles per day south of SR 306 (Keith Bridge Road). GDOT classifies GA 400/ US 19 as a Principal Urban Arterial roadway.

SR 9 (Dahlonega Highway)

SR 9 (Dahlonega Highway) is a north-south, two-lane, undivided roadway with a posted speed limit of 55 mph the vicinity of the site. GDOT traffic counts (Station ID: 117-0015) indicate that the daily traffic volume on SR 9 (Dahlonega Highway) in 2019 was 9,490 vehicles per day northeast of SR 306 (Keith Bridge Road). GDOT classifies SR 9 (Dahlonega Highway) as an Urban Minor Arterial roadway.

Freedom Parkway

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

State Barn Road

State Barn Road is a north-south, two-lane, undivided roadway with a posted speed limit of 30 mph in the vicinity of the site.

Spot Road

Spot Road is an east-west, two-lane, undivided roadway with a posted speed limit of 50 mph in the vicinity of the site

Johnson Drive

Johnson Drive is an east-west, two-lane, undivided roadway with a posted speed limit of 25 mph in the vicinity of the site

Central Park Driveway

Central Park Driveway is a north-south, two-lane, undivided roadway with a posted speed limit of 25 mph in the vicinity of the site.

Existing Bicycle and Pedestrian Facilities

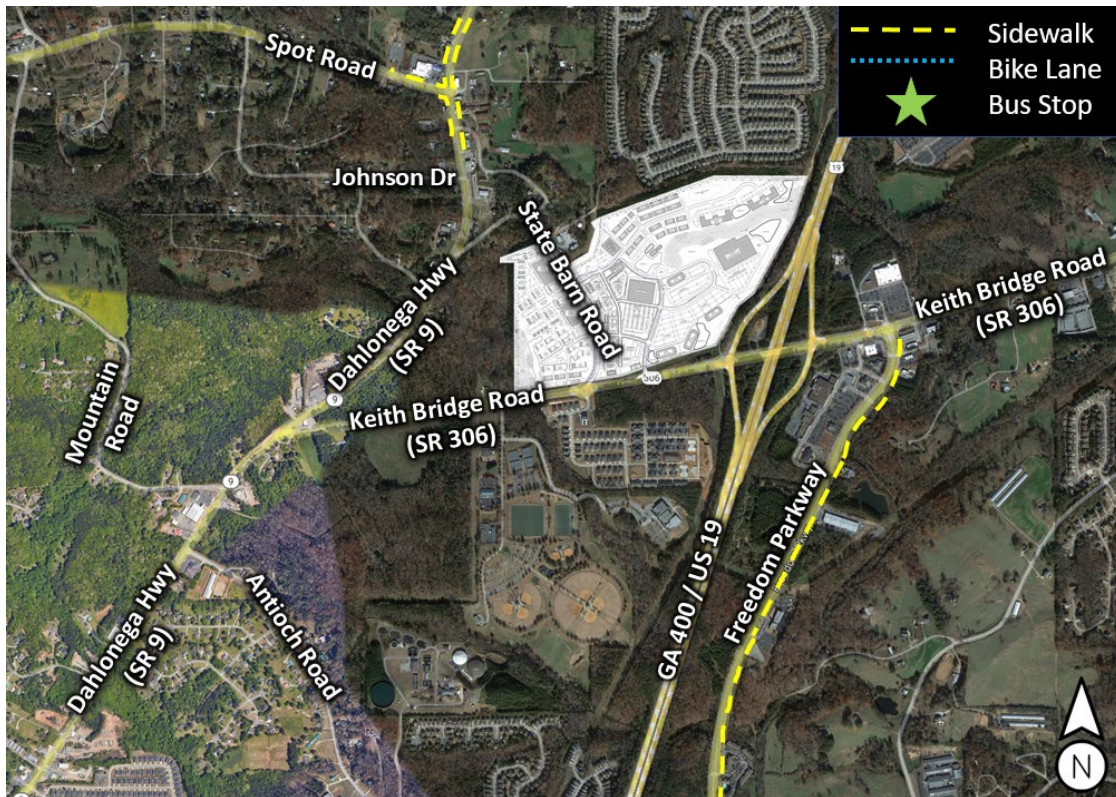
- No bike lanes, or bus stops were identified in the vicinity of the proposed development.
- Sidewalk is present on the east side of Freedom Parkway and north side of Pilgrim Mill Road
- Sidewalk is present on both sides of SR 9 (Dahlongega Highway) for approximately 700 feet south of Spot Road to 800 feet north of Spot Road
- Crosswalks are present at the signalized intersections of:
 - SR 9 (Dahlongega Highway) and SR 306 (Keith Bridge Road) on all the three legs
 - SR 306 (Keith Bridge Road) and GA 400 southbound ramps on the eastbound and southbound legs
 - SR 306 (Keith Bridge Road) and GA 400 northbound ramps on the westbound, northbound and southbound legs
 - SR 306 (Keith Bridge Road) and Freedom Parkway on all the four legs
 - SR 9 (Dahlongega Highway) and Spot Road on all the four legs
- Bike paths are not present in the study network

Alternative Modes of Access

- No existing transit routes were 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 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 greater than 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) and Freedom Parkway
2. SR 306 (Keith Bridge Road) and GA 400 Northbound Ramps
3. SR 306 (Keith Bridge Road) and GA 400 Southbound Ramps
4. SR 306 (Keith Bridge Road) and State Barn Road
5. SR 306 (Keith Bridge Road) and Central Park Driveway
6. SR 306 (Keith Bridge Road) and SR 9 (Dahlonega Highway)
7. SR 9 (Dahlonega Highway) and State Barn Road
8. SR 9 (Dahlonega Highway) and Johnson Drive
9. SR 9 (Dahlonega Highway) and Spot Road

Turning movement counts were collected on Tuesday, October 18, 2022 (intersections: 1, 2, 3, 4 and 5) and Wednesday, October 19, 2022 (intersections: 6, 7, 8 and 9). 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 intervals that produced 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.

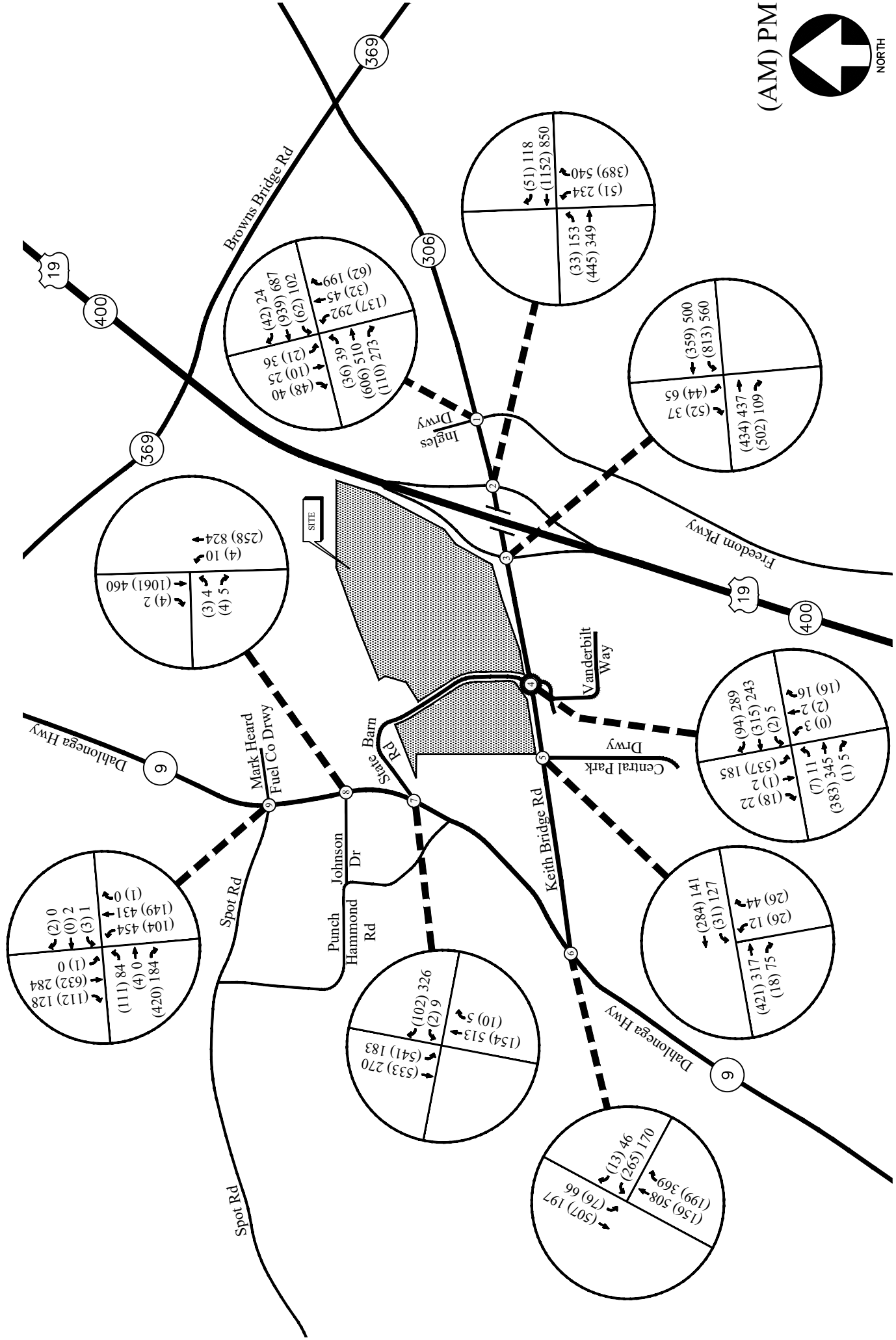
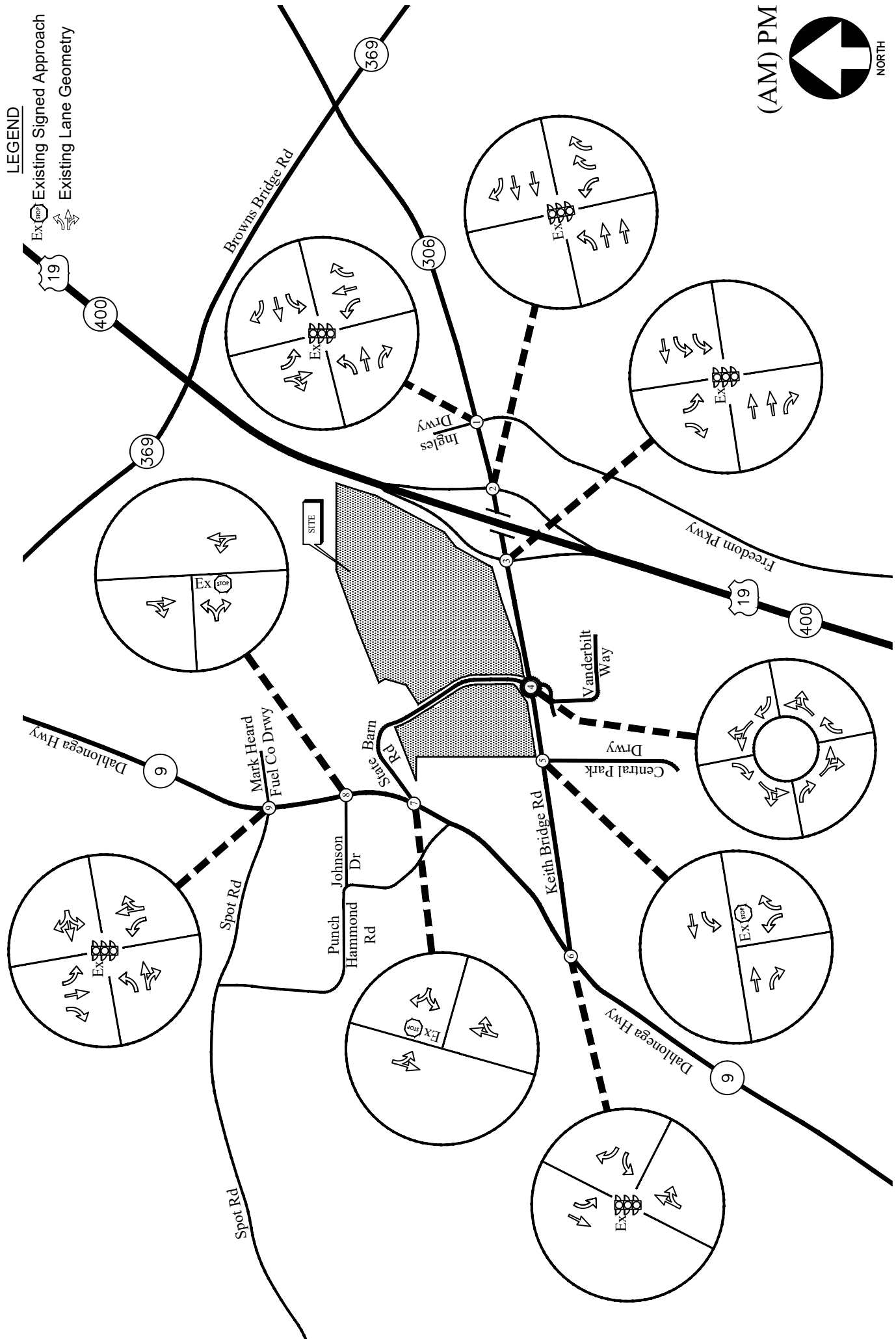


FIGURE 2

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EXISTING TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 3

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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.

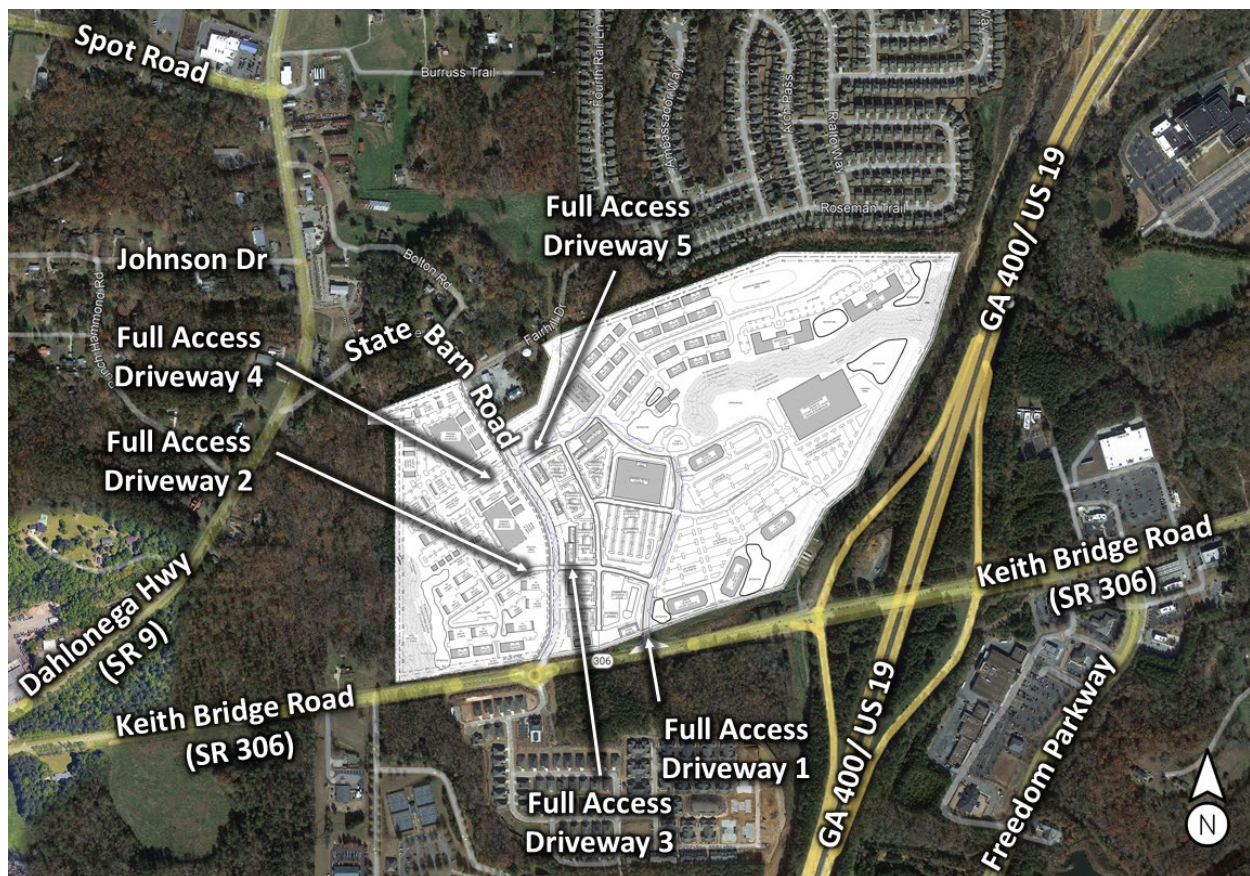
TABLE 3 — EXISTING INTERSECTION OPERATIONS					
Intersection		Traffic Control	AM Peak	PM Peak	LOS Standard
1	<u>SR 306 @ Freedom Pkwy/ Ingles Drwy</u>	Signalized	<u>B (17.5)</u>	<u>C (20.7)</u>	<u>D/D</u>
	-Eastbound Approach		A (2.4)	A (2.5)	D/D
	-Westbound Approach		C (20.8)	B (19.7)	D/D
	-Northbound Approach		D (48.2)	D (46.8)	D/D
	-Southbound Approach		D (54.2)	D (54.3)	D/D
2	<u>SR 306 @ GA 400 NB Ramps</u>	Signalized	<u>B (11.2)</u>	<u>B (17.6)</u>	<u>D/D</u>
	-Eastbound Approach		A (5.1)	A (2.7)	D/D
	-Westbound Approach		A (0.4)	A (0.5)	D/D
	-Northbound Approach		D (50.9)	D (46.2)	D/D
3	<u>SR 306 @ GA 400 SB Ramps</u>	Signalized	<u>C (27.4)</u>	<u>C (22.3)</u>	<u>D/D</u>
	-Eastbound Approach		B (14.1)	B (11.0)	D/D
	-Westbound Approach		C (29.4)	C (23.1)	D/D
	-Southbound Approach		E (63.1)	E (62.1)	<u>E/E</u>
4	<u>SR 306 @ Vanderbilt Way/ State Barn Rd</u>	Roundabout	<u>A (9.8)</u>	<u>A (5.5)</u>	<u>D/D</u>
	-Eastbound Approach		B (12.7)	A (7.0)	D/D
	-Westbound Approach		A (4.4)	A (4.5)	D/D
	-Northbound Approach		A (7.5)	A (5.1)	D/D
	-Southbound Approach		B (11.8)	A (5.5)	D/D
5	<u>SR 306 @ Central Park Drwy</u>	Stop Controlled on NB approach	A (8.5)	A (8.8)	D/D
	-Westbound Left		C (15.0)	B (12.5)	D/D
	-Northbound Approach				
6	<u>SR 306 @ SR 9 (Dahlonega Hwy)</u>	Signalized	<u>C (19.3)</u>	<u>B (16.9)</u>	<u>D/D</u>
	-Westbound Approach		D (51.2)	D (52.7)	D/D
	-Northbound Approach		A (8.7)	A (8.6)	D/D
	-Southbound Approach		A (7.0)	A (3.7)	D/D
7	<u>SR 9 (Dahlonega Hwy) @ State Barn Rd</u>	Stop Controlled on WB approach	B (11.5)	D (31.3)	D/D
	-Westbound Approach		A (9.3)	A (9.5)	D/D
	-Southbound Left				
8	<u>SR 9 (Dahlonega Hwy) @ Johnson Dr</u>	Stop Controlled on EB approach	C (23.5)	C (19.9)	D/D
	-Eastbound Approach		B (10.8)	A (8.4)	D/D
	-Northbound Left				
9	<u>SR 9 @ Spot Rd/ Mark Heard Fuel Co. Drwy</u>	Signalized	<u>C (33.7)</u>	<u>B (17.5)</u>	<u>D/D</u>
	-Eastbound Approach		D (52.9)	D (53.3)	D/D
	-Westbound Approach		D (40.4)	D (54.3)	D/D
	-Northbound Approach		B (15.9)	A (9.8)	D/D
	-Southbound Approach		C (25.9)	B (10.4)	D/D

The results of existing traffic operations analysis indicate that all the signalized study intersections and all approaches at the roundabout and all stop-controlled side street approaches at un-signalized intersections are operating at an overall level-of-service “D” or better in both the AM and PM peak hours.

PROJECT DESCRIPTION

The proposed mixed use development will be located to the northwest of GA 400 and SR 306 (Keith Bridge Road) and extends on both sides of State Barn Road in Forsyth County. The development will consist of:

- Warehousing: 200,000 sf
- Mini-Warehouse: 55,000 sf
- Single-Family Attached Housing: 172 homes
- Multifamily Housing (Low-Rise): 216 dwelling units
- Multifamily Housing (Mid-Rise): 240 dwelling units
- Senior Adult Housing - Multifamily: 200 dwelling units
- General Office Building: 400,000 sf
- Shopping Plaza (40-150k): 106,700 sf
- Strip Retail Plaza (<40k): 33,600 sf
- Drive-In Bank: 4,000 sf
- High-Turnover (Sit-Down) Restaurant: 8,000 sf
- Fast-Food Restaurant with Drive-Through Window: 8,000 sf
- Convenience Store/Gas Station - GFA (5.5-10k): 5,900 sf and 18 vehicle fueling stations

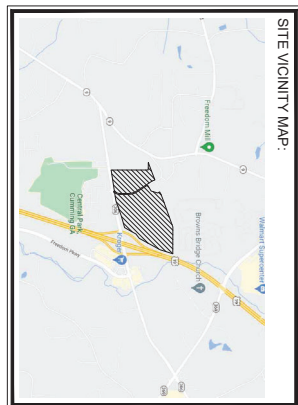
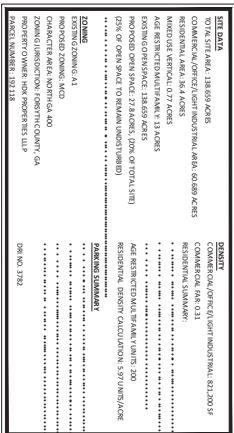


The development proposes access at the following locations:

- Site Driveway 1: Full access driveway on SR 306 (Keith Bridge Road)
- Site Driveway 2: Full access driveway on State Barn Road (aligned with Site Driveway 3)
- Site Driveway 3: Full access driveway on State Barn Road (aligned with Site Driveway 2)
- Site Driveway 4: Full access driveway on State Barn Road (aligned with Site Driveway 5)
- Site Driveway 5: Full access driveway on State Barn Road (aligned with Site Driveway 4)

Site Plan

A site plan is shown in Figure 4.



DATE	11/09/2007	CR
REVIEWED BY		CR
DESIGNED BY		VA
DRAWN BY		
(SHEET COUNT 1 OF 1)	00000782	

SHEET NUMBER
C1-95

DRI SITE PLAN

TITLE

No.	REVISION DESCRIPTIONS	DATE	BY

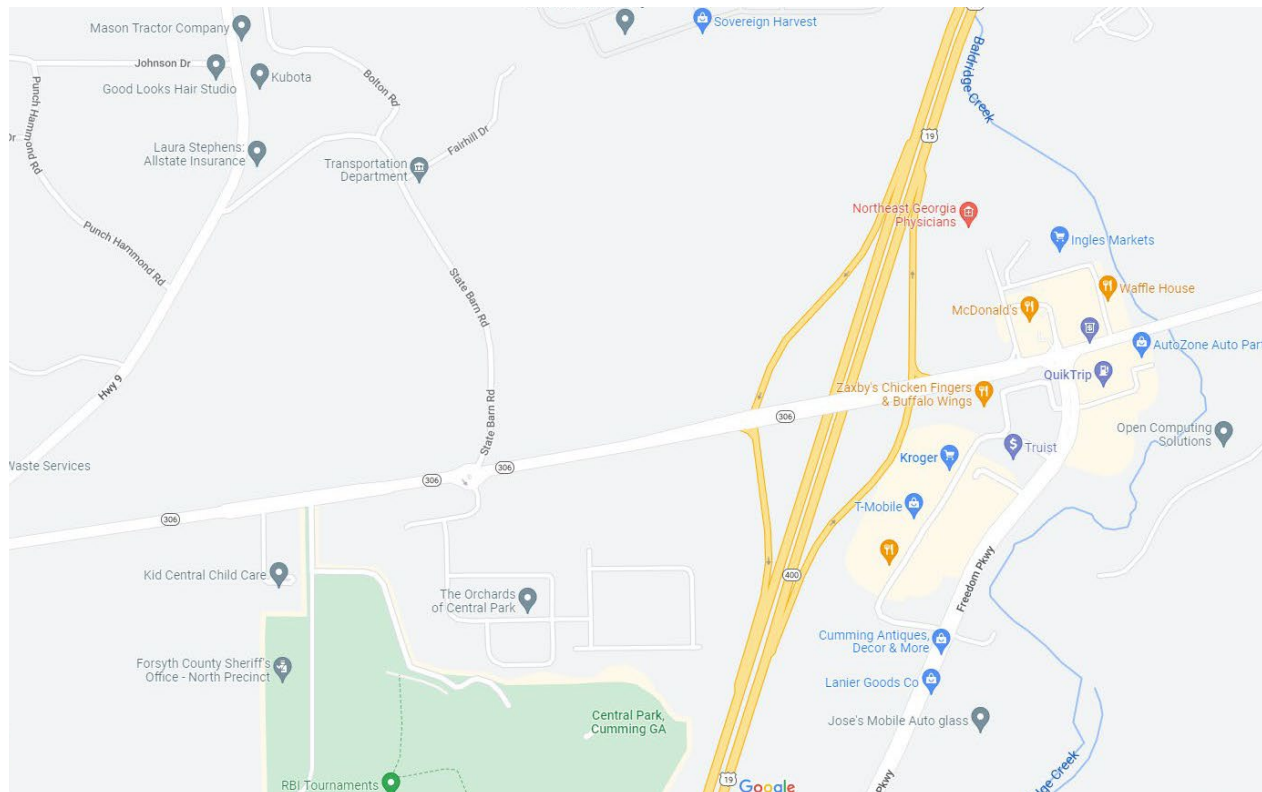
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 THE BILTMORE, SUITE 601
 ATLANTA, GEORGIA 30308
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 WWW.KIMLEY-HORN.COM

Planned Bicycle and Pedestrian Facilities

Sidewalks will be provided along the internal street network and along street frontage of the proposed development to promote external connectivity via pedestrian facilities. Trails will be considered where possible internal to the development.

Potential Pedestrian and Bicycle Destinations

Potential pedestrian and bicycle destinations in the vicinity of the proposed development include the following:



- Food: McDonald's, Waffle House, Zaxby's, Wendy's, Taco Bell, Lake Burrito
- Grocery: Ingles Markets, Kroger
- Banks: Truist Bank
- Retail: Terry's Equipment Sales and Rental, Forsyth Family Auto, Good Looks Hair Studio, Mason Tractor Company, T-Mobile, AutoZone Auto Parts, Package Place, TNT Fireworks
- Services: All State Insurance, Kid Central Child Care, Cumming Central Park,
- Others: Transportation Department, Forsyth County Sheriff's Office

Planned Transit Facilities

There is no existing or planned public transit service near the proposed development.

Consistency with Adopted Comprehensive Plan

The site is currently zoned as Agricultural (AG-1) and is requesting a rezoning to Mixed-Use Center District (MCD). According to the Unified Growth Policy Map the proposed development falls under the Developing Suburb land use area. The future land use map zoning for the site will be Mixed-Use Center District (MCD). The land use vision and goals of Forsyth County are to create a mixed-use node with a focus on employment at the crossroads of GA 400 and Highways 369 and 306, and to leverage GA 400 for business and industry growth.

The proposed North Park mixed-use development is consistent with the land use vision and goals mentioned below.

Future Land Use Map

Future Land Use Map Zoning	Mixed-Use Center District (MCD)
Land Use Vision and Goals for Forsyth County	Forsyth County's character area goals are to create a mixed-use node with a focus on employment at the crossroads of GA 400 and Highways 369 and 306, and to leverage GA 400 for business and industry growth.
Relation to Existing Land Use Plans	The proposed mixed-use development is consistent with the land use vision and goals included by the Forsyth County since it will provide a balanced mix of commercial, office, and residential uses.

Project Phasing

This project has been evaluated for the complete build-out of the development in 2027.

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: *Land Use 150 – Warehousing, Land Use 151 – Mini-Warehouse, Land Use 215 – Single-Family Attached Housing, Land Use 220 – Multifamily Housing (Low-Rise), Land Use 221 – Multifamily Housing (Mid-Rise), Land Use 252 – Senior Adult Housing – Multifamily, Land Use 710 – General Office Building, Land Use 821 – Shopping Plaza (40-150k), Land Use 822 – Strip Retail Plaza (<40k), Land Use 912 – Drive-In Bank, Land Use 932 – High-Turnover (Sit-Down) Restaurant, Land Use 934 – Fast-Food Restaurant with Drive-Through Window and Land Use 945 – Convenience Store/Gas Station - GFA (5.5-10k)*. The calculated total trip generation for the proposed development is shown in Table 4 and 5.

An alternate mode reduction of 6% is considered in the analysis to compensate for other means of transportation.

TABLE 4 – TRIP GENERATION (EAST SITE)								
Land Use	Size	AM Peak Hour			PM Peak Hour			24 Hour
		Enter	Exit	Total	Enter	Exit	Total	Two-way
ITE 150 - Warehousing	200,000 sf	37	11	48	14	36	50	354
ITE 151 - Mini-Warehouse	55000 sf	3	2	5	4	4	8	80
ITE 215 – Single Family Attached Housing	99 units	14	32	46	31	24	55	704
ITE 252 – Senior Adult Housing - Multifamily	200 units	13	26	39	28	22	50	603
ITE 710 – General Office Building	400,000 sf	485	67	552	89	436	525	3,876
ITE 821 – Shopping Plaza (40-150k) - Supermarket - No	106,700 sf	114	71	185	271	283	554	7,204
ITE 912 – Drive-In Bank	4,000 sf	23	17	40	42	42	84	401
ITE 932 – High-Turnover (Sit-Down) Restaurant	8,000 sf	42	35	77	44	28	72	858
ITE 934 – Fast-Food Restaurant with Drive-Through Window	8,000 sf	182	175	357	137	127	264	3,740
ITE 945 – Convenience Store/Gas Station - GFA (5.5-10k)	18 VFP	284	285	569	242	242	484	6,224
Total Trips (without Reductions)		1,197	721	1918	902	1,244	2,146	24,044
Alternate Mode Reduction (6%)		-72	-43	-115	-54	-75	-129	-1,443
Total Mixed-Use Reduction		-70	-70	-140	-80	-80	-160	-2,258
Pass-by Trips		-150	-150	-300	-150	-150	-300	-1,885
New External Trips (with Reductions)		905	458	1,363	618	939	1,557	18,458

TABLE 5— TRIP GENERATION (WEST SITE)								
Land Use	Size	AM Peak Hour			PM Peak Hour			24 Hour
		Enter	Exit	Total	Enter	Exit	Total	Two-way
ITE 215 – Single Family Attached Housing	73 units	10	22	32	23	17	40	506
ITE 220 – Multifamily Housing (Low-Rise) - Not Close to Rail Transit	216 units	22	68	90	71	42	113	1,460
ITE 221 – Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	240 units	22	72	94	57	37	94	1,098
ITE 822 – Strip Retail Plaza (>40k)	33,600 sf	38	26	64	92	92	184	1,648
Total Trips (without Reductions)		92	188	280	243	188	431	4,712
Alternate Mode Reduction (6%)		-6	-11	-17	-15	-11	-26	-283
Total Mixed-Use Reduction		-6	-6	-12	-19	-19	-38	-330
New External Trips (with Reductions)		80	171	251	209	158	367	4,099

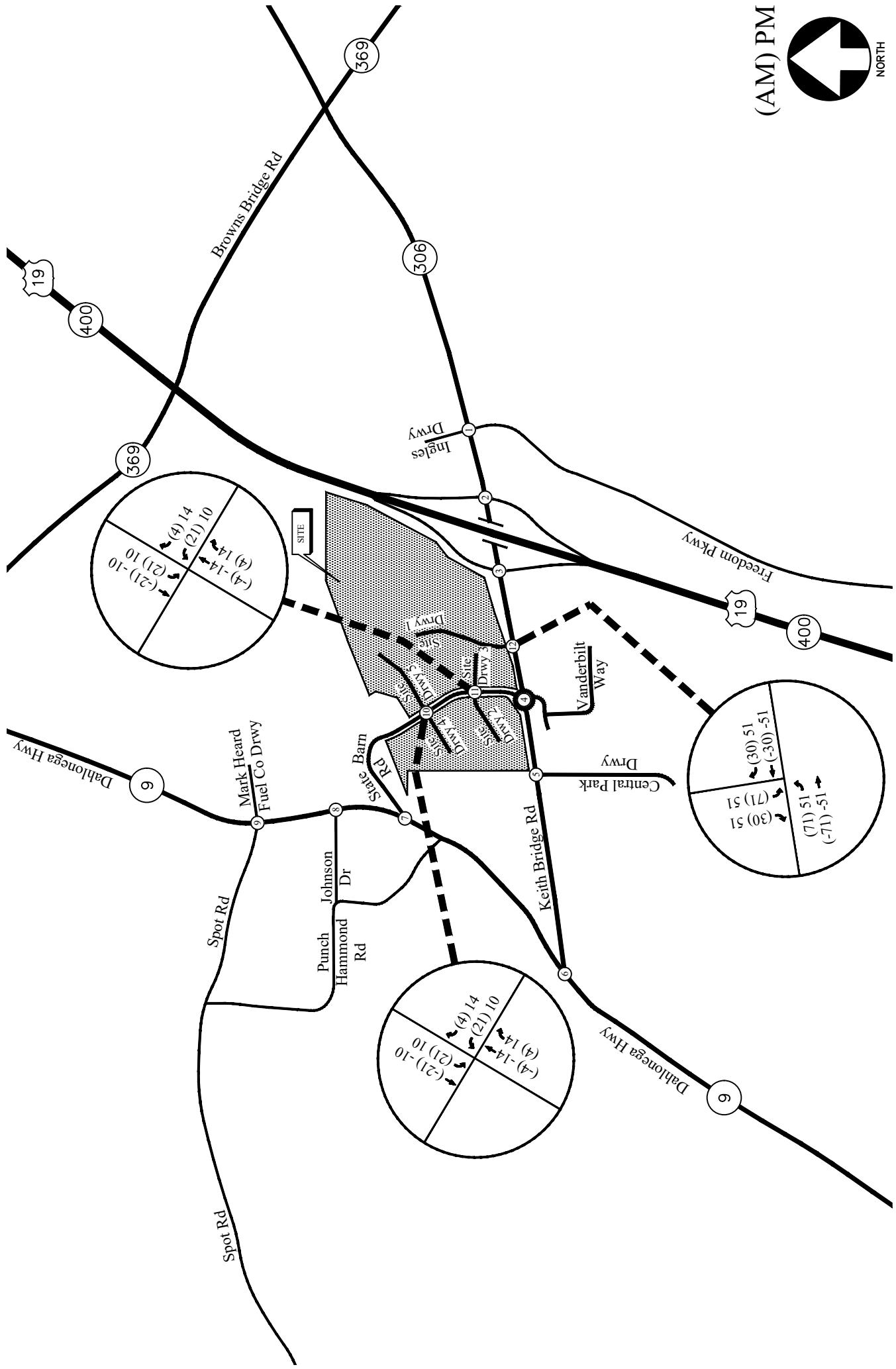
Total combined new external trips for developments on both sides of State Barn Road are shown below in Table 5 A.

TABLE 5 A— TOTAL NEW EXTERNAL TRIPS (COMBINED)							
	AM Peak Hour			PM Peak Hour			24 Hour
	Enter	Exit	Total	Enter	Exit	Total	Two-way
Development on East Side of State Barn Rd	905	458	1,363	618	939	1,557	18,458
Development on West Side of State Barn Rd	80	171	251	209	158	367	4,099
Total New External Trips (with Reductions)	985	629	1,614	827	1,097	1924	22,557

Trip Distribution

The trip distribution describes how traffic arrives and departs from the site. An individual trip distribution was developed for the East and West sites 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 and 5, 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 East and West site are shown in Figure 5 and 6.

The development will generate approximately 7,320 pass-by trips. The pass-by volumes are capped to 1,885 trips, being 15% of the ADT on the roadways at the driveways. Pass-by volumes have also been distributed based on existing travel patterns and are shown in Figure 7.



SITE PEAK HOUR PASS BY VOLUMES (EAST SITE)

FIGURE 7

FUTURE 2027 TRAFFIC ANALYSIS

The future 2027 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 1.2 % 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 8.

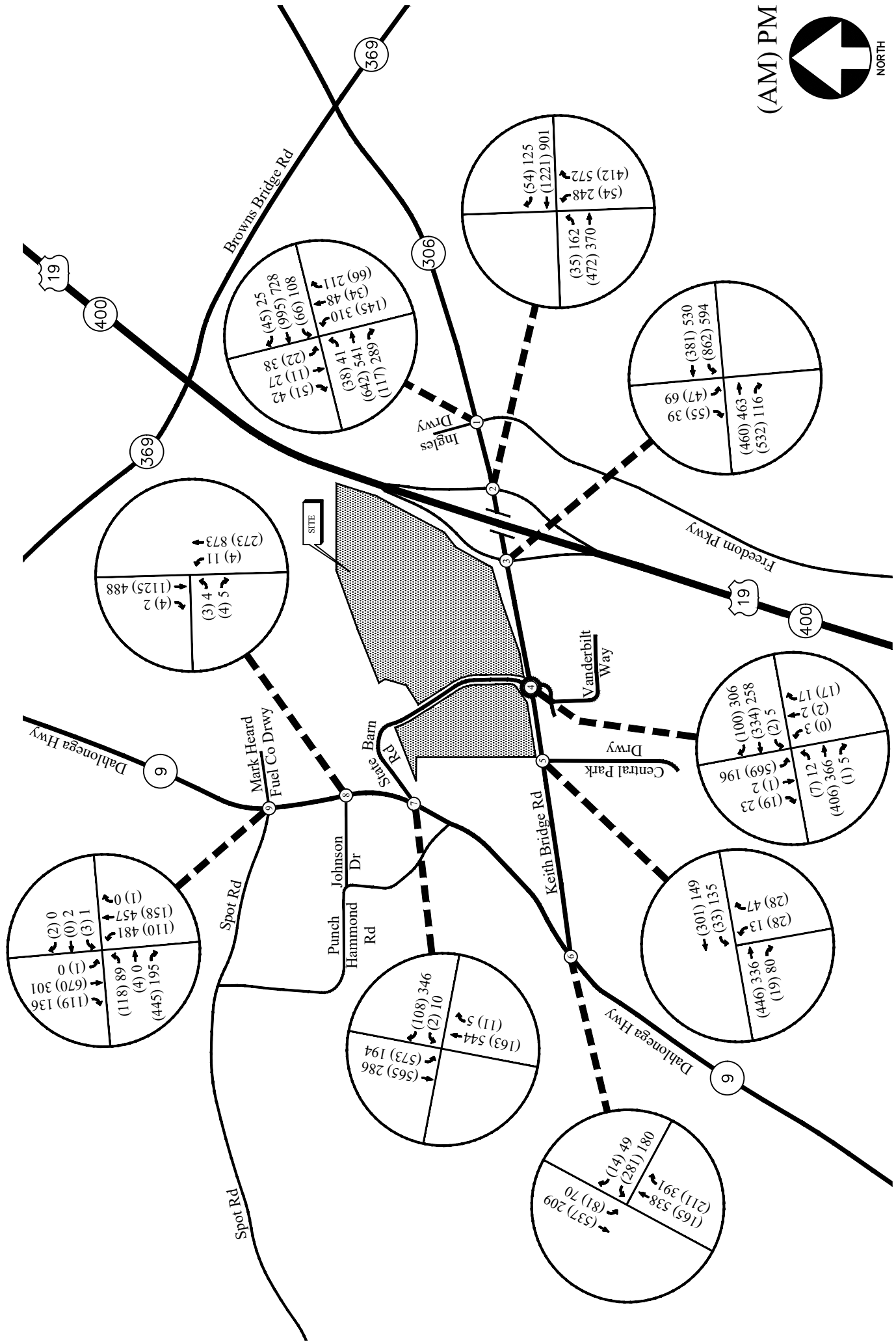


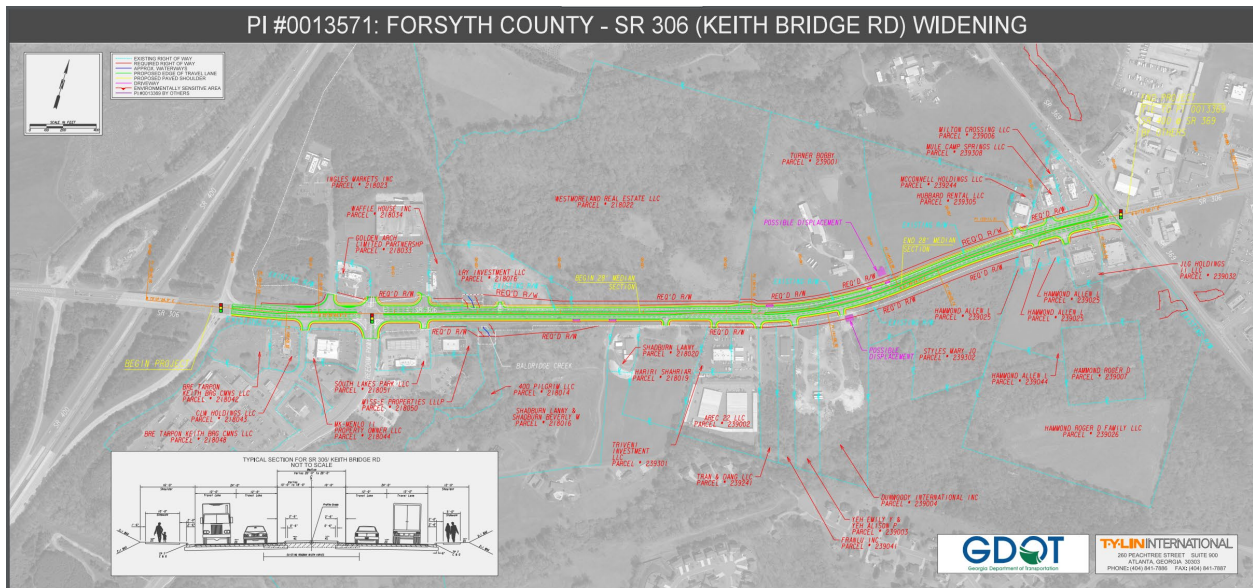
FIGURE 8
FUTURE (NO-BUILD) WEEKDAY PEAK HOUR VOLUMES
A&R Engineering Inc.

Planned and Programmed Improvements in Study Area

TABLE 6 — PLANNED AND PROGRAMMED IMPROVEMENTS							
Project Name	From / To Points	Sponsor	GDOT PI #	ARC ID #	Design FY	ROW / UTL FY	CST FY
SR 306 (Keith Bridge Road): Segment 2 – Widening from 2 lanes to 4 lanes	From SR 400 to Parks Road	GDOT	0013571	FT-306B	N/A	N/A	2040
SR 369 (Browns Bridge Road): Segment 2 – Widening from 2 lanes to 4 lanes	From SR 306 to Hall County line	GDOT	0013989	FT-062B	N/A	N/A	2050
Spot Road Connector: New 4-lane roadway	From intersection of SR 306 and SR 9 to intersection of Spot Road and McCoy Circle	Forsyth County	-	FT-046	2021	-	2040
SR 9 (Atlanta Road / Pilgrim Mill Road): Segment 5 – Widening from 2 lanes to 4 lanes	From SR 20 (Buford Highway) to SR 306 (Keith Bridge Road)	GDOT	141890-	FT-001E	N/A	N/A	2030

GeoPI # 0013571:

The project consists of widening of SR 306 (Keith Bridge Road) from SR 400 to SR 369 (Browns Bridge Road) from two-lane to a four-lane roadway with a 20-foot raised median.



Since the North Park mixed-use project is projected to be completed in 2027 and the programmed projects later than 2027, the programmed projects will not be considered in the traffic analysis.

Future “No-Build” Traffic Operations

The future “No-Build” traffic operations were analyzed using the volumes in Figure 8 and the results are shown in Table 7.

TABLE 7 — FUTURE “NO-BUILD” INTERSECTION OPERATIONS			
Intersection		No Build Condition: LOS (Delay)	
		AM Peak	PM Peak
1	<u>SR 306 (Keith Bridge Rd) @ Freedom Pkwy/ Ingles Drwy</u>	<u>C (20.0)</u>	<u>C (21.9)</u>
	-Eastbound Approach	A (2.9)	A (2.9)
	-Westbound Approach	C (25.0)	C (21.7)
	-Northbound Approach	D (47.9)	D (47.3)
	-Southbound Approach	D (54.1)	D (54.4)
2	<u>SR 306 (Keith Bridge Rd) @ GA 400 NB Ramps</u>	<u>B (11.0)</u>	<u>B (17.5)</u>
	-Eastbound Approach	A (0.5)	A (2.9)
	-Westbound Approach	A (0.4)	A (0.5)
	-Northbound Approach	D (50.3)	D (45.8)
3	<u>SR 306 (Keith Bridge Rd) @ GA 400 SB Ramps</u>	<u>C (27.6)</u>	<u>C (22.2)</u>
	-Eastbound Approach	B (15.2)	B (11.9)
	-Westbound Approach	C (29.3)	C (22.6)
	-Southbound Approach	E (62.9)	E (61.8)
4	<u>SR 306 @ Vanderbilt way/ State Barn Rd</u>	<u>B (11.0)</u>	<u>A (5.8)</u>
	-Eastbound Approach	B (14.4)	A (7.4)
	-Westbound Approach	A (4.5)	A (4.7)
	-Northbound Approach	A (8.0)	A (5.3)
	-Southbound Approach	B (13.4)	A (5.8)
5	<u>SR 306 (Keith Bridge Rd) @ Central Park Drwy</u>		
	-Westbound Left	A (8.6)	A (9.0)
	-Northbound Approach	C (15.7)	B (13.0)
6	<u>SR 306 (Keith Bridge Rd) @ SR 9 (Dahlonega Hwy)</u>	<u>C (20.3)</u>	<u>B (17.3)</u>
	-Westbound Approach	D (52.9)	D (52.9)
	-Northbound Approach	A (9.3)	A (9.1)
	-Southbound Approach	A (7.7)	A (3.9)
7	<u>SR 9 (Dahlonega Hwy) @ State Barn Rd</u>		
	-Westbound Approach	B (11.9)	E (41.3)
	-Southbound Left	A (9.4)	A (9.7)
8	<u>SR 9 (Dahlonega Hwy) @ Johnson Dr</u>		
	-Eastbound Approach	D (25.6)	C (21.6)
	-Northbound Left	B (11.1)	A (8.5)
9	<u>SR 9 @ Spot Rd/ Mark Heard Fuel Co. Drwy</u>	<u>C (36.2)</u>	<u>B (19.1)</u>
	-Eastbound Approach	D (53.3)	D (54.0)
	-Westbound Approach	C (39.5)	D (54.3)
	-Northbound Approach	B (17.8)	B (12.2)
	-Southbound Approach	C (30.1)	B (10.8)

The results of future “No-Build” traffic operations show that the stop-controlled westbound approach of State Barn Road at SR 9 (Dahlonega Highway) will be operating at a level of service “E” in PM peak hour. The intersection is at an acute angle and almost all of its westbound 346 right-turning traffic is cut-through traffic.

Recommended System Improvements

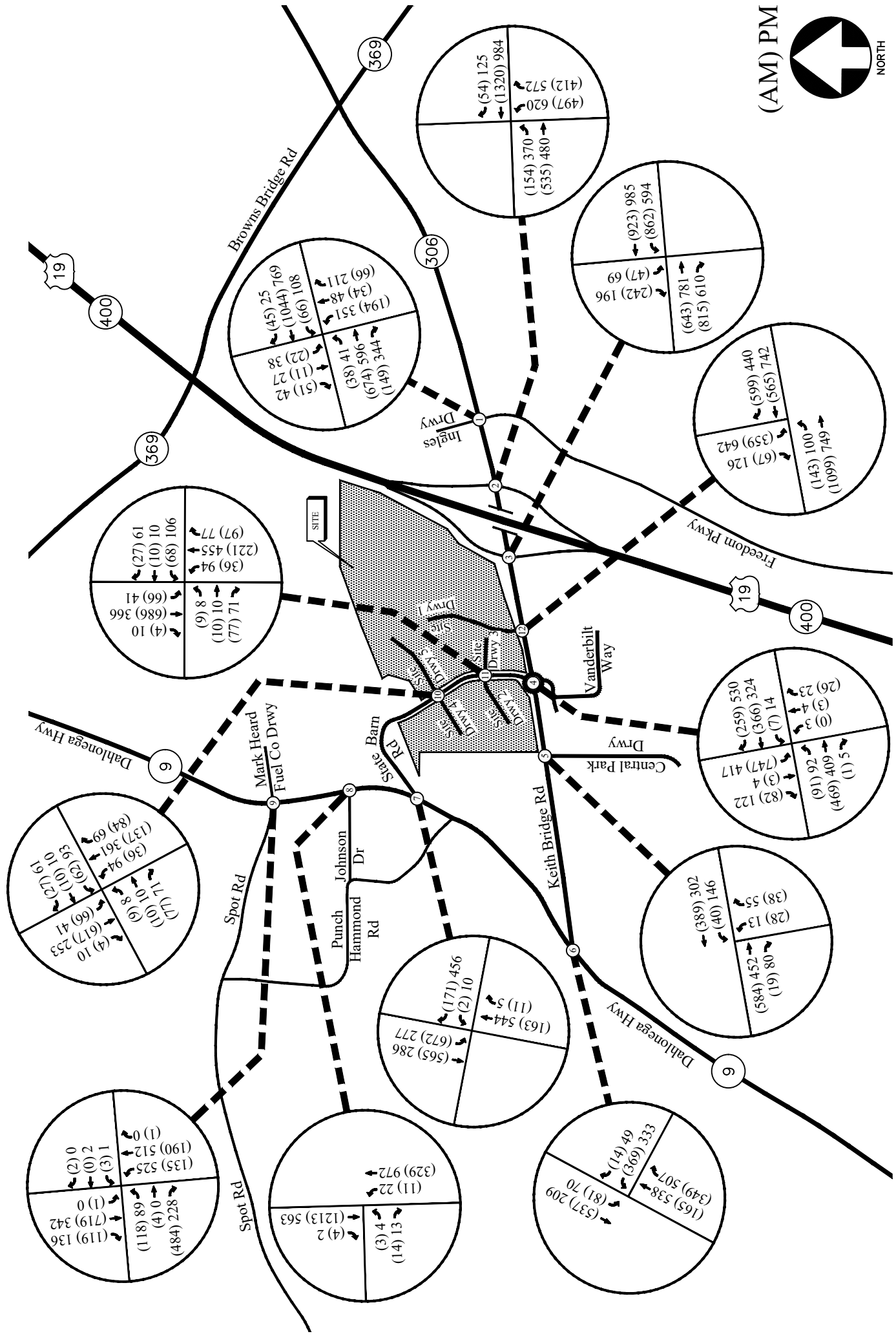
The following are system improvements that were identified from the “No-Build” condition analysis.

Intersection 7: SR 9 (Dahlonega Highway) at State Barn Road

The existing right-of-way doesn't seem to be adequate to accommodate any improvements at the intersection. The county may consider re-aligning State Barn Road to form a right-angle intersection provided the adjacent property owner is willing to co-operate.

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 and 6) were added to base traffic volumes (Figure 8) to calculate the future traffic volumes after the construction of the development. These total future traffic volumes are shown in Figure 9.



FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES

FIGURE 9
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 East site is 20,343 vehicles and West site is 4,099 vehicles. The AADT on State Barn Road is assumed to be less than 6,000 vehicles based on the GDOT volumes on the surrounding roadways.

Left Turn Lane Analysis

For two lane roadways with AADT’s less than 6,000 vehicles and a posted speed limit of 30 mph, the daily site generated traffic left-turn movements threshold to warrant a left-turn lane is 300 left-turning vehicles a day. For two lane roadways with AADT’s greater than 6,000 vehicles and a posted speed limit of 55 mph, the daily site generated traffic left-turn movements threshold to warrant a left-turn lane is 150 left-turning vehicles a day. The projected left-turn volumes per day for each driveway is included in Table 8 and 9.

Intersection	Left turn traffic (% total entering)	Left-turn Volume (vehicles/day)	Roadway Speed/ # lanes / ADT	GDOT Threshold (vehicles/day)	Warrant s met?
SR 306 @ Site Drwy 1	0%	0 (total trips) ÷ 2 × 0 = (20,343) ÷ 2 × 0 = 0	55 mph / 2- Lane / ≥ 6,000	150	No
State Barn Rd @ Site Drwy 3	5.0%	509 (total trips) ÷ 2 × 0.05 = (20,343) ÷ 2 × 0.05 = 509	30 mph / 2- Lane / < 6,000	300	Yes
State Barn Rd @ Site Drwy 5	5.0%	509 (total trips) ÷ 2 × 0.05 = (20,343) ÷ 2 × 0.05 = 509	30 mph / 2- Lane / < 6,000	300	Yes

A left turn lane is warranted at Site Driveway 3 and 5 on State Barn Road, per GDOT standards.

Intersection	Left turn traffic (% total entering)	Left-turn Volume (vehicles/day)	Roadway Speed/ # lanes / ADT	GDOT Threshold (vehicles/day)	Warrants met?
State Barn Rd @ Site Drwy 2	45.0%	922 (total trips) ÷ 2 × 0.45 = (4,099) ÷ 2 × 0.45 = 922	30 mph / 2- Lane / < 6,000	300	Yes
State Barn Rd @ Site Drwy 4	45.0%	922 (total trips) ÷ 2 × 0.45 = (4,099) ÷ 2 × 0.45 = 922	30 mph / 2- Lane / < 6,000	300	Yes

A left turn lane is warranted at Site Driveway 2 and 4 on State Barn Road, per GDOT standards.

Deceleration Turn Lane Analysis

The daily site generated traffic right-turn movements threshold to warrant a deceleration lane is 200 right turning vehicles a day for two lane roadways with AADT's less than 6,000 vehicles and a posted speed limit of 30 mph. For two lane roadways with AADT's greater than 6,000 vehicles and a posted speed limit of 55 mph, the threshold to warrant a deceleration lane is 50 right turning vehicles a day. The projected right-turn volumes per day for each driveway is included in Table 10 and 11.

Intersection	Right-turn traffic (% total entering)	Right-turn Volume (vehicles/day)	Roadway Speed/ # lanes / ADT	GDOT Threshold (vehicles/day)	Warrants met?
SR 306 @ Site Drwy 1	62.9%	6,398 (total trips) ÷ 2 × 0.629 = (20,343) ÷ 2 × 0.629 = 6,398	55 mph / 2- Lane / ≥ 6,000	50	Yes
State Barn Rd @ Site Drwy 3	13.55%	1,378 (total trips) ÷ 2 × 0.1355 = (20,343) ÷ 2 × 0.1355 = 1,378	30 mph / 2- Lane / < 6,000	200	Yes
State Barn Rd @ Site Drwy 5	13.55%	1,378 (total trips) ÷ 2 × 0.1355 = (20,343) ÷ 2 × 0.1355 = 1,378	30 mph / 2- Lane / < 6,000	200	Yes

A deceleration lane is warranted at Site Driveway 1, 3 and 5 on State Barn Road, per GDOT standards.

Intersection	Right-turn traffic (% total entering)	Right-turn Volume (vehicles/day)	Roadway Speed/ # lanes / ADT	GDOT Threshold (vehicles/day)	Warrants met?
State Barn Rd @ Site Drwy 2	5.0%	102 (total trips) ÷ 2 × 0.05 = (4,099) ÷ 2 × 0.05 = 102	30 mph / 2- Lane / < 6,000	200	No
State Barn Rd @ Site Drwy 4	5.0%	102 (total trips) ÷ 2 × 0.05 = (4,099) ÷ 2 × 0.05 = 102	30 mph / 2- Lane / < 6,000	200	No

A deceleration lane is not warranted at Site Driveway 2 and 4 on State Barn Road.

Future “Build” Traffic Operations

The future “Build” traffic operations were analyzed using the volumes in Figure 9. The results of the future “Build” traffic operations analysis are shown in Table 12.

TABLE 12— FUTURE “BUILD” INTERSECTION OPERATIONS					
Intersection		Build Condition: LOS (Delay)			
		NO IMPROVEMENTS		SYSTEM IMPROVEMENTS	
		AM Peak	PM Peak	AM Peak	PM Peak
1	<u>SR 306 @ Freedom Pkwy/ Ingles Drwy</u>	<u>C (27.8)</u>	<u>C (24.2)</u>	<u>C (30.7)</u>	<u>C (24.7)</u>
	-Eastbound Approach	A (3.9)	A (3.3)	A (4.2)	A (3.6)
	-Westbound Approach	D (38.1)	C (23.2)	D (43.2)	C (24.1)
	-Northbound Approach	D (46.3)	D (54.8)	D (46.3)	D (54.8)
	-Southbound Approach	D (54.1)	D (54.4)	D (54.1)	D (54.4)
2	<u>SR 306 @ GA 400 NB Ramps</u>	<u>B (16.2)</u>	<u>D (37.6)</u>	<u>B (16.2)</u>	<u>D (38.5)</u>
	-Eastbound Approach	A (3.5)	D (46.4)	A (3.6)	D (49.2)
	-Westbound Approach	A (3.1)	B (16.6)	A (3.0)	B (17.0)
	-Northbound Approach	D (44.9)	D (48.7)	D (44.9)	D (48.7)
3	<u>SR 306 @ GA 400 SB Ramps</u>	<u>C (28.7)</u>	<u>C (22.2)</u>	<u>C (20.7)</u>	<u>B (15.7)</u>
	-Eastbound Approach	C (23.8)	B (19.6)	B (12.0)	A (0.6)
	-Westbound Approach	C (25.2)	B (18.0)	B (18.4)	B (16.6)
	-Southbound Approach	D (61.3)	D (55.2)	D (54.8)	D (55.0)
4	<u>SR 306 @ Vanderbilt Way/ State Barn Rd</u>	<u>D (31.9)</u>	<u>B (11.1)</u>	<u>D (29.9)</u>	<u>B (10.5)</u>
	-Eastbound Approach	F (53.8)	C (15.8)	E (49.9)	C (14.5)
	-Westbound Approach	A (5.4)	A (7.0)	A (5.4)	A (6.8)
	-Northbound Approach	B (12.5)	A (8.5)	B (12.3)	A (7.9)
	-Southbound Approach	E (37.9)	B (13.5)	E (35.7)	B (12.6)
5	<u>SR 306 @ Central Park Driveway</u>				
	-Westbound Left	A (9.2)	A (9.7)	A (9.2)	A (9.7)
6	-Northbound Approach	C (19.9)	C (16.2)	C (19.9)	C (16.2)
	<u>SR 306 @ SR 9 (Dahlonega Hwy)</u>	<u>C (24.5)</u>	<u>C (23.6)</u>	<u>C (25.3)</u>	<u>C (25.0)</u>
	-Westbound Approach	D (52.2)	D (47.1)	D (54.2)	D (51.6)
	-Northbound Approach	B (12.1)	B (15.2)	B (12.2)	B (15.1)
7	-Southbound Approach	B (10.6)	A (7.5)	B (10.9)	A (7.6)
	<u>SR 9 (Dahlonega Hwy) @ State Barn Rd</u>				
	-Westbound Approach	B (12.8)	F (83.6)	B (12.8)	F (83.6)
8	-Southbound Left	B (10.0)	B (10.1)	B (10.0)	B (10.1)
	<u>SR 9 (Dahlonega Hwy) @ Johnson Dr</u>				
9	-Eastbound Approach	D (27.4)	C (20.9)	D (27.4)	C (20.9)
	-Northbound Left	B (11.7)	A (8.8)	B (11.7)	A (8.8)
	<u>SR 9 @ Spot Rd/ Mark Heard Fuel Co. Drwy</u>	<u>D (43.1)</u>	<u>C (26.4)</u>	<u>D (43.1)</u>	<u>C (26.4)</u>
	-Eastbound Approach	D (54.9)	D (52.7)	D (54.9)	D (52.7)
	-Westbound Approach	C (37.8)	D (51.6)	C (37.8)	D (51.6)
10	-Northbound Approach	C (23.6)	C (24.7)	C (23.6)	C (24.7)
	-Southbound Approach	D (42.1)	B (12.5)	D (42.1)	B (12.5)
Continued on Next Page					

10	<u>State Barn Road @ Site Drwy 4/ Drwy 5</u>				
	-Eastbound Approach	C (17.4)	B (13.5)	C (17.4)	B (13.5)
	-Westbound Approach	E (41.6)	E (38.7)	E (41.6)	E (38.7)
	-Northbound Left	A (9.1)	A (8.0)	A (9.1)	A (8.0)
	-Southbound Left	A (7.8)	A (8.4)	A (7.8)	A (8.4)
11	<u>State Barn Road @ Site Drwy 2/ Drwy 3</u>				
	-Eastbound Approach	C (20.1)	C (16.8)	C (20.1)	C (16.8)
	-Westbound Approach	F (81.7)	F (115.2)	F (81.7)	F (115.2)
	-Northbound Left	A (9.3)	A (8.4)	A (9.3)	A (8.4)
	-Southbound Left	A (8.1)	A (8.7)	A (8.1)	A (8.7)
12	<u>SR 306 @ Site Drwy 1</u>	<u>C (23.2)</u>	<u>D (44.2)</u>	<u>B (13.5)</u>	<u>B (17.6)</u>
	-Eastbound Approach	C (32.1)	D (38.1)	B (13.2)	B (12.8)
	-Westbound Approach	A (3.9)	D (43.7)	A (1.3)	A (1.9)
	-Southbound Approach	D (54.9)	D (53.2)	D (54.1)	D (52.8)

The results of future “Build” traffic operations indicate that all signalized intersections will operate at overall levels-of-service “D” or better along with all approaches also performing at similar levels. Following approaches at the un-signalized intersection and the roundabout will be operating at “E” or “F” in the AM or PM peak hour or both:

- Intersection 4: SR 306 (Keith Bridge Road) at State Barn Road/Vanderbilt Way (Roundabout)
Although the roundabout operates at overall LOS “D” in AM peak, the eastbound approach will operate at LOS “F” and southbound approach will operate at LOS “E”.
The design of the existing roundabout is not consistent with GDOT’s current standards.
- Intersection 7: SR 9 (Dahlongega Highway) at State Barn Road
The westbound stop-controlled acute-angled approach of State Barn Road will experience longer delays in the “Build” conditions and will operate at LOS “F” in the PM peak hour. The delay increases by approximately 40 seconds from “No-Build” conditions.
The intersection does not seem to warrant a traffic signal and does not seem to have adequate right-of-way to make any improvements. It is not uncommon for the stop-controlled approaches at un-signalized intersections to experience longer delays turning onto major roadways.
- Intersection 10: State Barn Road at Site Driveway 4/ Driveway 5 &
- Intersection 11: State Barn Road at Site Driveway 2/ Driveway 3
The stop-controlled site driveways will experience some delays and will operate at levels-of-service “E” and “F” in both AM and PM peak hours. It is not uncommon for side street stop-controlled approaches to experience longer delays turning onto major roadways. The volumes at the driveways do not warrant installation of traffic signals.

Recommendations for Site Improvements

Intersection 12: SR 306 (Keith Bridge Road) at Site Driveway 1 (Full Access)

Although the signalized intersection operates at satisfactory level-of-service “C” in both AM and PM peak hours, we recommend following improvements to SR 306 (Keith Bridge Road) to accommodate the site generated traffic and provide efficient flow of traffic at the adjacent signalized intersection of SR 306 and GA 400 SB ramp.

- Provide an additional westbound lane from SR 400 SB Ramp to Site Driveway 1. This second westbound lane will start as a free flow right-turn lane for southbound off-ramp and terminate as a right-turn lane at Site Driveway 1.
- Provide an additional eastbound lane on SR 306 from Site Driveway 1 to GA 400 SB on-ramp deceleration lane. This additional lane will serve as a receiving lane for the second southbound left-turn lane from Site Driveway 1 and will terminate as a right-turn lane at GA 400 SB on-ramp. The existing configuration of two through lanes and one right-turn lane will remain as the eastbound approach of SR 306 at GA 400 SB Ramp.

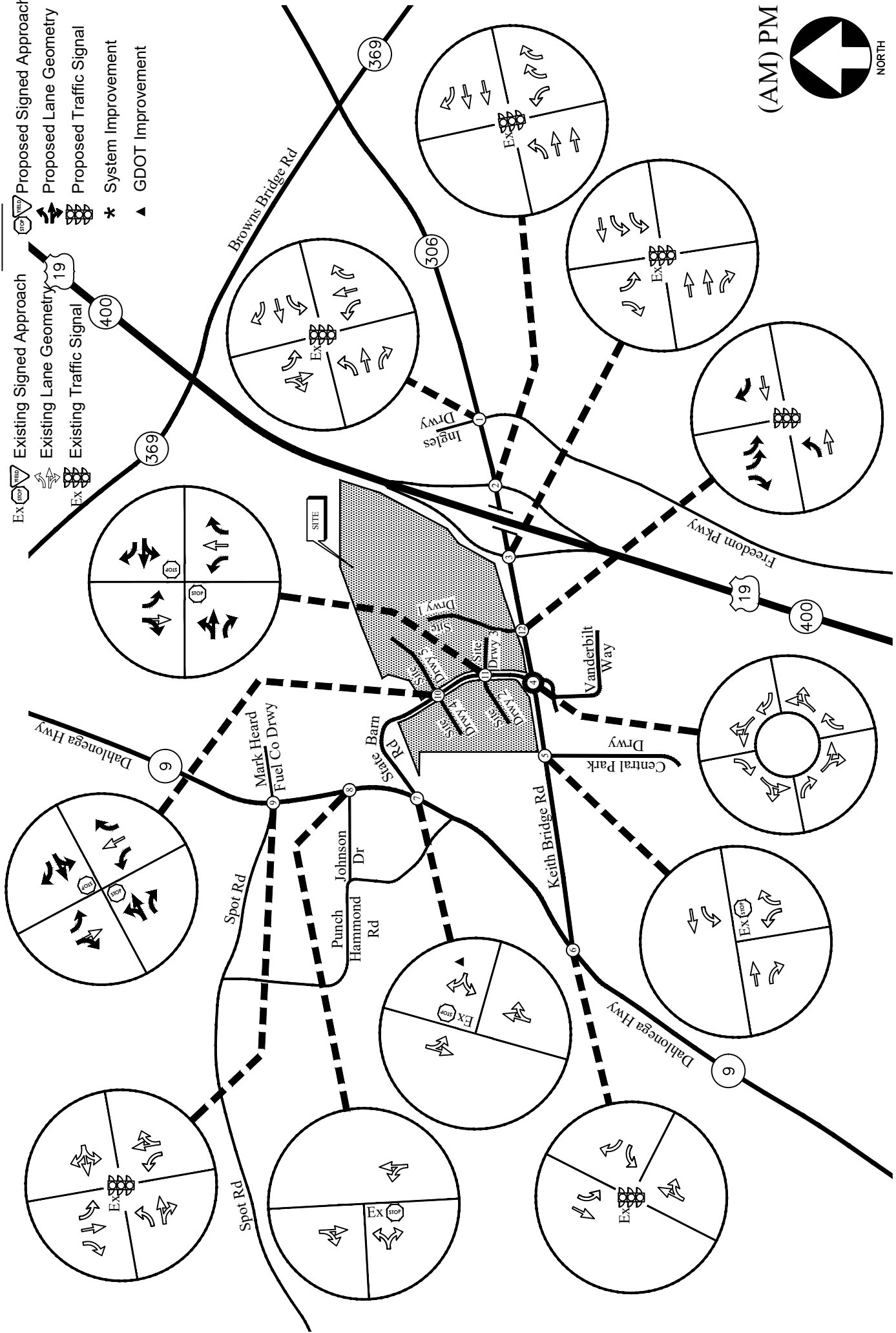
Intersection 4: SR 306 (Keith Bridge Road) @ State Barn Road

- Improve the existing roundabout to GDOT’s standards
- Re-align State Barn Road approach to approach the roundabout at right-angle.

Recommendations for future traffic control and lane geometry are shown in Figure 10.

LEGEND

- Existing Signed Approach
- Existing Lane Geometry
- Existing Traffic Signal
- Proposed Signed Approach
- Proposed Lane Geometry
- Proposed Traffic Signal
- System Improvement
- GDOT Improvement



(AM) PM



FUTURE TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 10

A&R Engineering Inc.

CONCLUSIONS AND RECOMMENDATIONS

Traffic impacts were evaluated for the proposed mixed use development that will be located to the northwest of GA 400 and SR 306 (Keith Bridge Road) and on both sides of State Barn Road in Forsyth County, Georgia.

The development proposes accesses at the following locations:

- Site Driveway 1: Full access driveway on SR 306 (Keith Bridge Road)
- Site Driveway 2: Full access driveway on State Barn Road (aligned with Site Driveway 3)
- Site Driveway 3: Full access driveway on State Barn Road (aligned with Site Driveway 2)
- Site Driveway 4: Full access driveway on State Barn Road (aligned with Site Driveway 5)
- Site Driveway 5: Full access driveway on State Barn Road (aligned with Site Driveway 4)

The AM and PM peak hours have been analyzed in this study. This study includes the evaluation of traffic operations at the intersections of:

13. SR 306 (Keith Bridge Road) and Freedom Parkway
14. SR 306 (Keith Bridge Road) and GA 400 Northbound Ramps
15. SR 306 (Keith Bridge Road) and GA 400 Southbound Ramps
16. SR 306 (Keith Bridge Road) and State Barn Road
17. SR 306 (Keith Bridge Road) and Central Park Driveway
18. SR 306 (Keith Bridge Road) and SR 9 (Dahlonega Highway)
19. SR 9 (Dahlonega Highway) and State Barn Road
20. SR 9 (Dahlonega Highway) and Johnson Drive
21. SR 9 (Dahlonega Highway) and Spot Road
22. State Barn Road and Site Driveway 4/ Driveway 5
23. State Barn Road and Site Driveway 2/ Driveway 3
24. SR 306 (Keith Bridge Road) and Site Driveway 1

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 “Build” traffic operations indicate that all signalized intersections will operate at overall levels-of-service “D” or better along with all approaches also performing at similar levels. Following approaches at the un-signalized intersections and the roundabout will be operating at “E” or “F” in the AM or PM peak hour or both:

- Intersection 4: SR 306 (Keith Bridge Road) at State Barn Road/Vanderbilt Way (Roundabout)
Although the roundabout operates at overall LOS “D” in AM peak, the eastbound approach will operate at LOS “F” and southbound approach will operate at LOS “E”.
The design of the existing roundabout is not consistent with GDOT’s current standards.

- Intersection 7: SR 9 (Dahlonega Highway) at State Barn Road
The westbound stop-controlled acute-angled approach of State Barn Road will experience longer delays in the “Build” conditions and will operate at LOS “F” in the PM peak hour. The delay increases by approximately 40 seconds from “No-Build” conditions.
The intersection does not seem to warrant a traffic signal and does not seem to have adequate right-of-way to make any improvements. It is not uncommon for the stop-controlled approaches at un-signalized intersections to experience longer delays turning onto major roadways.
- Intersection 10: State Barn Road at Site Driveway 4/ Driveway 5 &
- Intersection 11: State Barn Road at Site Driveway 2/ Driveway 3
The stop-controlled site driveways will experience some delays and will operate at levels-of-service “E” and “F” in both AM and PM peak hours. It is not uncommon for side street stop-controlled approaches to experience longer delays turning onto major roadways. The volumes at the driveways do not warrant installation of traffic signals.

Recommendations for Site Improvements

Intersection 12: SR 306 (Keith Bridge Road) at Site Driveway 1 (Full Access)

Although the signalized intersection operates at satisfactory level-of-service “C” in both AM and PM peak hours, we recommend following improvements to SR 306 (Keith Bridge Road) to accommodate the site generated traffic and provide efficient flow of traffic at the adjacent signalized intersection of SR 306 and GA 400 SB ramp.

- Provide an additional westbound lane from SR 400 SB Ramp to Site Driveway 1. This second westbound lane will start as a free flow right-turn lane for southbound off-ramp and terminate as a right-turn lane at Site Driveway 1.
- Provide an additional eastbound lane on SR 306 from Site Driveway 1 to GA 400 SB on-ramp deceleration lane. This additional lane will serve as a receiving lane for the second southbound left-turn lane from Site Driveway 1 and will terminate as a right-turn lane at GA 400 SB on-ramp. The existing configuration of two through lanes and one right-turn lane will remain as the eastbound approach of SR 306 at GA 400 SB Ramp.

Intersection 4: SR 306 (Keith Bridge Road) @ State Barn Road

- Improve the existing roundabout to GDOT’s standards
- Re-align State Barn Road approach to approach the roundabout at right-angle.

Recommendations for Site Access Configuration

Intersection 10: State Barn Road at Site Driveway 4 (Eastbound) & Driveway 5 (Westbound)

- One entering and two exiting lanes (one right-turn lane and one shared thru and left-turn lane)
- Stop sign controlled on both the driveway approaches
- Northbound and southbound Left-turn lanes on State Barn Road for entering traffic for both driveways
- Northbound right-turn-lane on State Barn Road for entering traffic for Site Driveway 5

Intersection 11: State Barn Road at Site Driveway 2 (Eastbound) & Driveway 3 (Westbound)

- One entering and two exiting lanes (one right-turn lane and one shared thru and left-turn lane)
- Stop sign controlled on both the driveway approaches
- Northbound and southbound Left-turn lanes on State Barn Road for entering traffic for both driveways
- Northbound right-turn-lane on State Barn Road for entering traffic for Site Driveway 3

Intersection 12: SR 306 (Keith Bridge Road) at Site Driveway 1 (Full Access)

- One entering and three exiting lanes (one channelized right-turn lane and dual left-turn lanes) on Site Driveway 1
- Intersection to be signalized with a “protected-permissive” phase for eastbound left-turns
- Left-turn Lane on SR 306 for entering traffic
- Right-turn Lane on SR 306 for entering traffic extended up to GA 400 SB off-ramp
- A second receiving lane on eastbound SR 306 up to GA 400 SB on-ramp

Appendix

Existing Intersection Traffic Counts	
Character Areas.....	
GRTA Letter of Understanding.....	
Linear Regression of Daily Traffic.....	
Fact Sheets for Planned and Programmed Improvements.....	
Existing Intersection Analysis.....	
Future “No-Build” Intersection Analysis	
Future “No-Build” Intersection Analysis with Improvements	
Future “Build” Intersections Analysis	
Future “Build” Intersections Analysis with Improvements.....	
Traffic Volume Worksheets	

Existing Intersection Traffic Counts

A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 9 @ Spot Rd
7-9 am | 4-6 pm

File Name : 20220460
Site Code : 20220460
Start Date : 10/19/2022
Page No : 1

Groups Printed- Cars,Buses & Trucks

Start Time	SR 9 Northbound				SR 9 Southbound				Spot Rd Eastbound				Mark Heard Fuel Co Drwy Westbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	19	23	1	43	0	129	34	163	23	0	74	97	0	1	1	2	305
07:15 AM	21	29	0	50	0	136	32	168	27	0	91	118	0	0	0	0	336
07:30 AM	25	36	0	61	0	144	31	175	35	1	129	165	1	0	0	1	402
07:45 AM	27	40	0	67	1	161	31	193	31	3	118	152	1	0	0	1	413
Total	92	128	1	221	1	570	128	699	116	4	412	532	2	1	1	4	1456
08:00 AM	25	35	1	61	0	171	29	200	23	0	76	99	1	0	1	2	362
08:15 AM	27	38	0	65	0	156	21	177	22	0	97	119	0	0	1	1	362
08:30 AM	22	63	0	85	0	134	23	157	38	0	79	117	1	0	0	1	360
08:45 AM	25	53	0	78	1	134	38	173	28	0	69	97	0	0	0	0	348
Total	99	189	1	289	1	595	111	707	111	0	321	432	2	0	2	4	1432
*** BREAK ***																	
04:00 PM	61	99	0	160	0	75	26	101	23	0	49	72	2	1	0	3	336
04:15 PM	81	92	0	173	0	78	32	110	23	0	35	58	0	1	0	1	342
04:30 PM	102	91	0	193	0	83	29	112	24	0	47	71	1	0	0	1	377
04:45 PM	99	99	0	198	0	74	24	98	20	0	54	74	0	1	0	1	371
Total	343	381	0	724	0	310	111	421	90	0	185	275	3	3	0	6	1426
05:00 PM	127	118	0	245	0	57	28	85	16	0	32	48	0	0	0	0	378
05:15 PM	126	123	0	249	0	70	47	117	24	0	51	75	0	1	0	1	442
05:30 PM	84	95	0	179	0	66	35	101	14	0	41	55	0	0	0	0	335
05:45 PM	110	79	0	189	0	72	36	108	18	0	49	67	1	0	0	1	365
Total	447	415	0	862	0	265	146	411	72	0	173	245	1	1	0	2	1520
Grand Total	981	1113	2	2096	2	1740	496	2238	389	4	1091	1484	8	5	3	16	5834
Apprch %	46.8	53.1	0.1		0.1	77.7	22.2		26.2	0.3	73.5		50	31.2	18.8		
Total %	16.8	19.1	0	35.9	0	29.8	8.5	38.4	6.7	0.1	18.7	25.4	0.1	0.1	0.1	0.3	

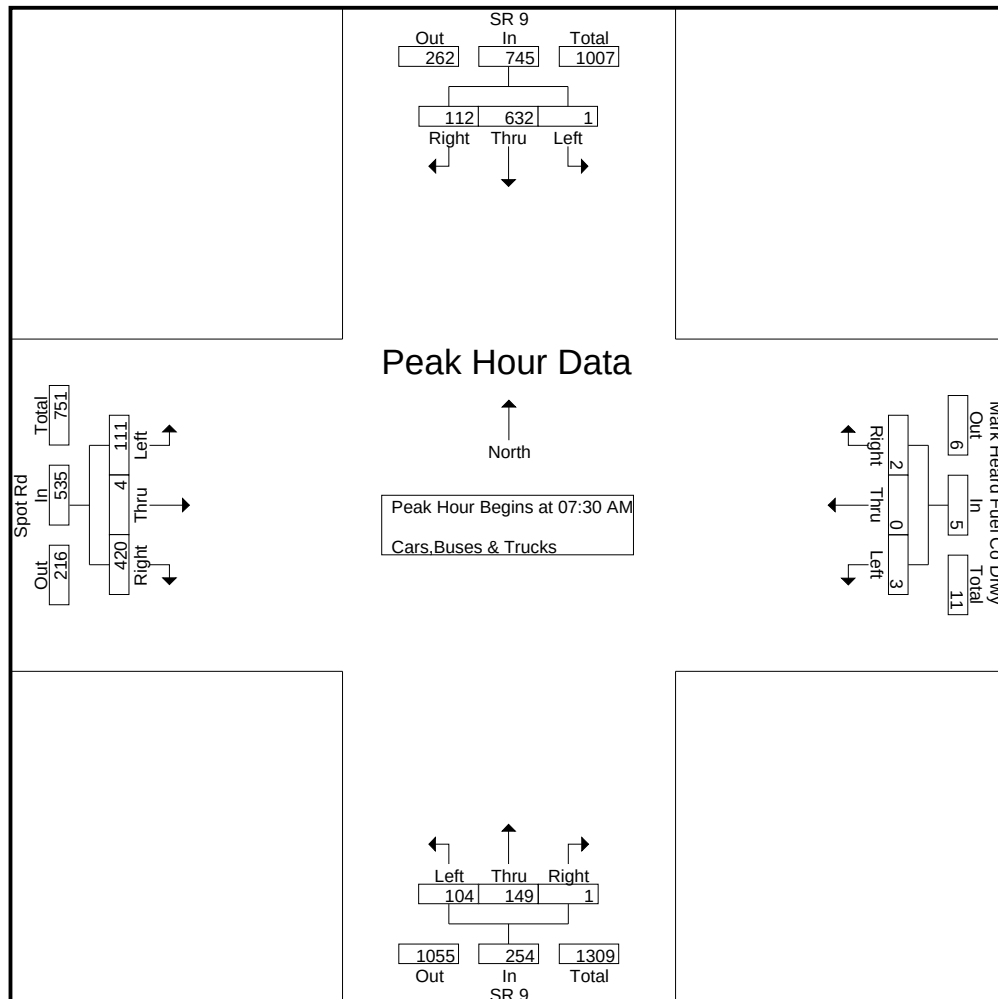
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2160 Kinston Court Suite 'O'
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TMC DATA
SR 9 @ Spot Rd
7-9 am | 4-6 pm

File Name : 20220460
Site Code : 20220460
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Page No : 2

	SR 9 Northbound				SR 9 Southbound				Spot Rd Eastbound				Mark Heard Fuel Co Drwy 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	25	36	0	61	0	144	31	175	35	1	129	165	1	0	0	1	402
07:45 AM	27	40	0	67	1	161	31	193	31	3	118	152	1	0	0	1	413
08:00 AM	25	35	1	61	0	171	29	200	23	0	76	99	1	0	1	2	362
08:15 AM	27	38	0	65	0	156	21	177	22	0	97	119	0	0	1	1	362
Total Volume	104	149	1	254	1	632	112	745	111	4	420	535	3	0	2	5	1539
% App. Total	40.9	58.7	0.4		0.1	84.8	15		20.7	0.7	78.5		60	0	40		
PHF	.963	.931	.250	.948	.250	.924	.903	.931	.793	.333	.814	.811	.750	.000	.500	.625	.932



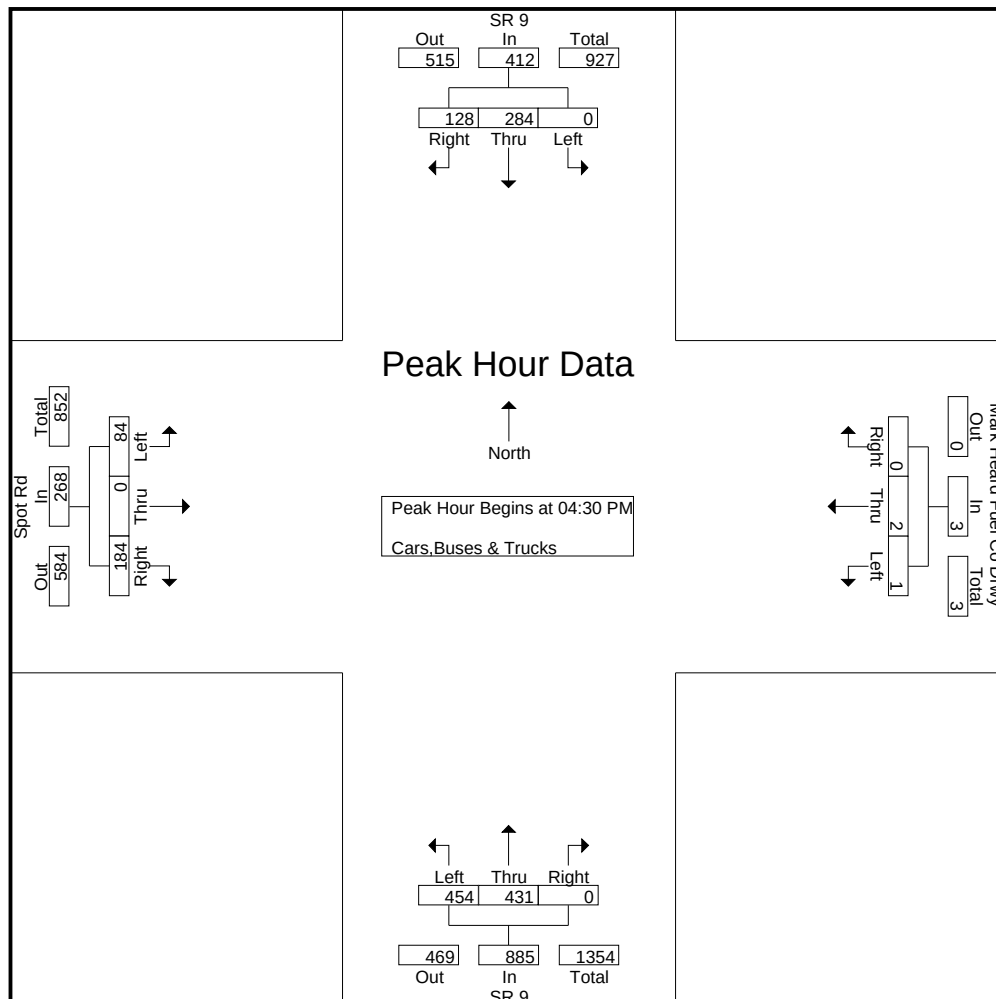
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SR 9 @ Spot Rd
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	SR 9 Northbound				SR 9 Southbound				Spot Rd Eastbound				Mark Heard Fuel Co Drwy Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. 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	102	91	0	193	0	83	29	112	24	0	47	71	1	0	0	1	377
04:45 PM	99	99	0	198	0	74	24	98	20	0	54	74	0	1	0	1	371
05:00 PM	127	118	0	245	0	57	28	85	16	0	32	48	0	0	0	0	378
05:15 PM	126	123	0	249	0	70	47	117	24	0	51	75	0	1	0	1	442
Total Volume	454	431	0	885	0	284	128	412	84	0	184	268	1	2	0	3	1568
% App. Total	51.3	48.7	0		0	68.9	31.1		31.3	0	68.7		33.3	66.7	0		
PHF	.894	.876	.000	.889	.000	.855	.681	.880	.875	.000	.852	.893	.250	.500	.000	.750	.887



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Groups Printed- Cars,Buses & Trucks

Start Time	SR 9 Northbound				SR 9 Southbound				Johnson Dr Eastbound				Westbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	43	0	43	0	194	2	196	1	0	0	1	0	0	0	0	240
07:15 AM	1	45	0	46	0	222	0	222	1	0	0	1	0	0	0	0	269
07:30 AM	1	56	0	57	0	253	1	254	1	0	2	3	0	0	0	0	314
07:45 AM	0	68	0	68	0	261	0	261	0	0	1	1	0	0	0	0	330
Total	2	212	0	214	0	930	3	933	3	0	3	6	0	0	0	0	1153
08:00 AM	1	71	0	72	0	276	1	277	0	0	0	0	0	0	0	0	349
08:15 AM	1	54	0	55	0	276	2	278	1	0	1	2	0	0	0	0	335
08:30 AM	2	65	0	67	0	248	1	249	2	0	2	4	0	0	0	0	320
08:45 AM	0	88	0	88	0	216	0	216	1	0	3	4	0	0	0	0	308
Total	4	278	0	282	0	1016	4	1020	4	0	6	10	0	0	0	0	1312
*** BREAK ***																	
04:00 PM	3	158	0	161	0	133	0	133	2	0	0	2	0	0	0	0	296
04:15 PM	0	176	0	176	0	123	2	125	1	0	3	4	0	0	0	0	305
04:30 PM	4	189	0	193	0	123	0	123	2	0	0	2	0	0	0	0	318
04:45 PM	2	197	0	199	0	111	1	112	0	0	1	1	0	0	0	0	312
Total	9	720	0	729	0	490	3	493	5	0	4	9	0	0	0	0	1231
05:00 PM	2	210	0	212	0	104	1	105	2	0	2	4	0	0	0	0	321
05:15 PM	2	228	0	230	0	122	0	122	0	0	2	2	0	0	0	0	354
05:30 PM	1	201	0	202	0	106	3	109	0	0	2	2	0	0	0	0	313
05:45 PM	3	192	0	195	0	103	2	105	0	0	1	1	0	0	0	0	301
Total	8	831	0	839	0	435	6	441	2	0	7	9	0	0	0	0	1289
Grand Total	23	2041	0	2064	0	2871	16	2887	14	0	20	34	0	0	0	0	4985
Apprch %	1.1	98.9	0		0	99.4	0.6		41.2	0	58.8		0	0	0		
Total %	0.5	40.9	0	41.4	0	57.6	0.3	57.9	0.3	0	0.4	0.7	0	0	0	0	

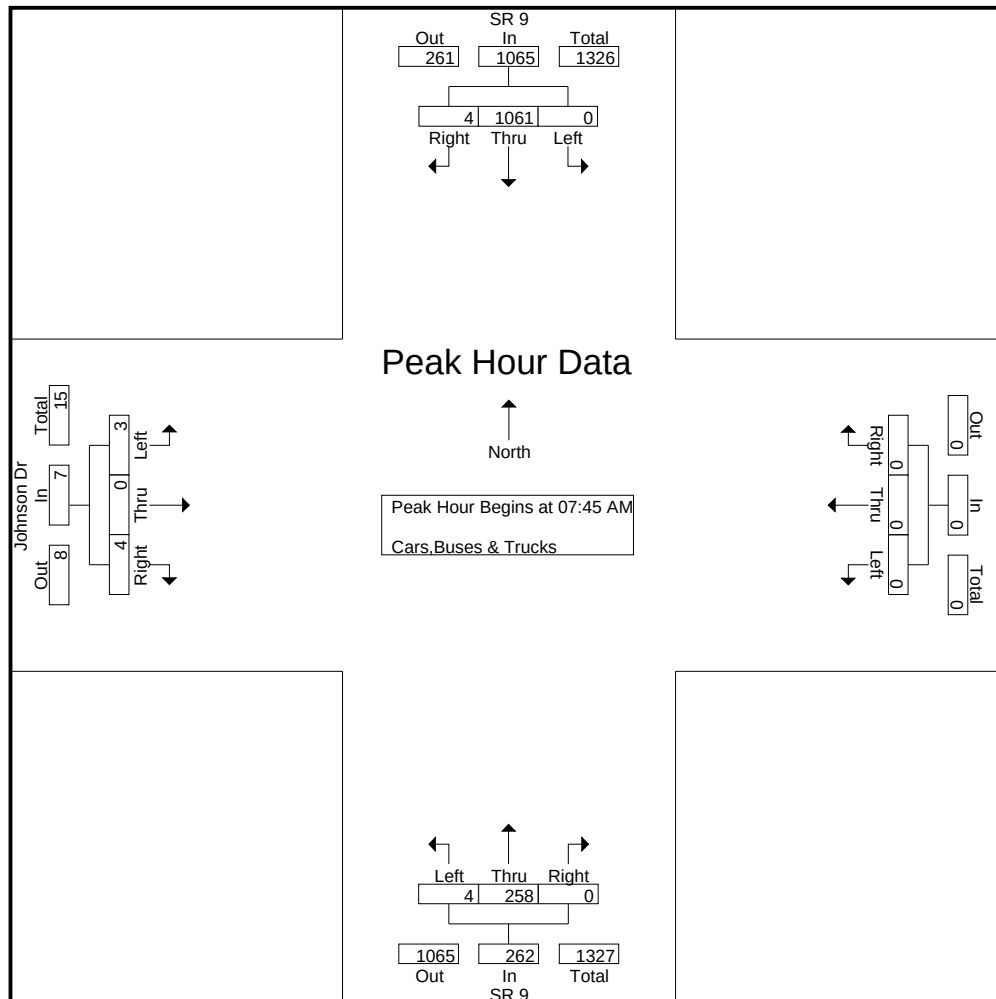
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	68	0	68	0	261	0	261	0	0	1	1	0	0	0	0	330
08:00 AM	1	71	0	72	0	276	1	277	0	0	0	0	0	0	0	0	349
08:15 AM	1	54	0	55	0	276	2	278	1	0	1	2	0	0	0	0	335
08:30 AM	2	65	0	67	0	248	1	249	2	0	2	4	0	0	0	0	320
Total Volume	4	258	0	262	0	1061	4	1065	3	0	4	7	0	0	0	0	1334
% App. Total	1.5	98.5	0		0	99.6	0.4		42.9	0	57.1		0	0	0		
PHF	.500	.908	.000	.910	.000	.961	.500	.958	.375	.000	.500	.438	.000	.000	.000	.000	.956



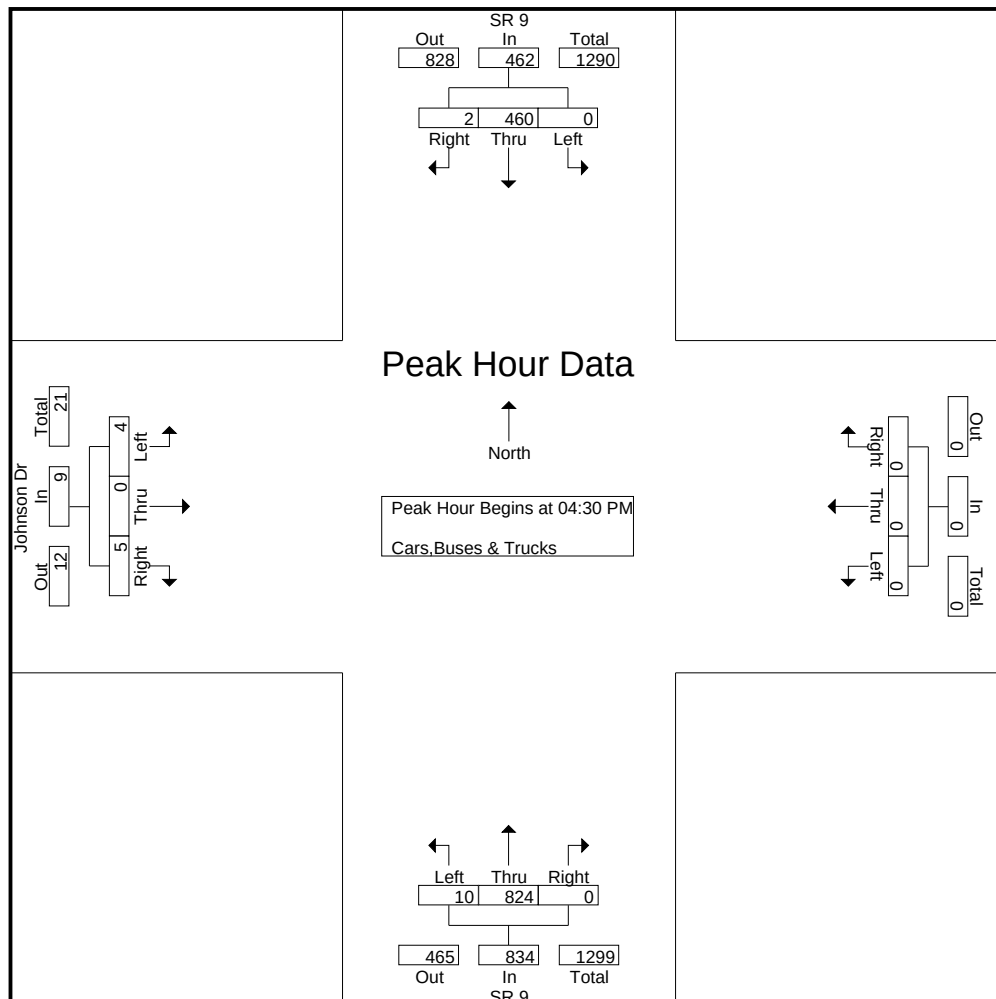
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7-9 am | 4-6 pm

File Name : 20220459
Site Code : 20220459
Start Date : 10/19/2022
Page No : 3

	SR 9 Northbound				SR 9 Southbound				Johnson Dr Eastbound				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	4	189	0	193	0	123	0	123	2	0	0	2	0	0	0	0	318
04:45 PM	2	197	0	199	0	111	1	112	0	0	1	1	0	0	0	0	312
05:00 PM	2	210	0	212	0	104	1	105	2	0	2	4	0	0	0	0	321
05:15 PM	2	228	0	230	0	122	0	122	0	0	2	2	0	0	0	0	354
Total Volume	10	824	0	834	0	460	2	462	4	0	5	9	0	0	0	0	1305
% App. Total	1.2	98.8	0		0	99.6	0.4		44.4	0	55.6		0	0	0		
PHF	.625	.904	.000	.907	.000	.935	.500	.939	.500	.000	.625	.563	.000	.000	.000	.000	.922



A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 9 @ State Barn Rd
7-9 am | 4-6 pm

File Name : 20220458
Site Code : 20220458
Start Date : 10/19/2022
Page No : 1

Groups Printed- Cars,Buses & Trucks

Start Time	SR 9 Northbound				SR 9 Southbound				Eastbound				State Barn Rd Westbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	19	1	20	74	111	0	185	0	0	0	0	1	0	23	24	229
07:15 AM	0	36	3	39	131	104	0	235	0	0	0	0	0	0	15	15	289
07:30 AM	0	34	1	35	141	131	0	272	0	0	0	0	0	0	22	22	329
07:45 AM	0	45	3	48	143	128	0	271	0	0	0	0	1	0	30	31	350
Total	0	134	8	142	489	474	0	963	0	0	0	0	2	0	90	92	1197
08:00 AM	0	37	2	39	127	140	0	267	0	0	0	0	0	0	26	26	332
08:15 AM	0	38	4	42	130	134	0	264	0	0	0	0	1	0	24	25	331
08:30 AM	0	44	3	47	117	125	0	242	0	0	0	0	1	0	28	29	318
08:45 AM	0	61	3	64	89	111	0	200	0	0	0	0	0	0	25	25	289
Total	0	180	12	192	463	510	0	973	0	0	0	0	2	0	103	105	1270
*** BREAK ***																	
04:00 PM	0	107	3	110	49	67	0	116	0	0	0	0	1	0	45	46	272
04:15 PM	0	110	1	111	45	78	0	123	0	0	0	0	1	0	57	58	292
04:30 PM	0	114	1	115	37	71	0	108	0	0	0	0	4	0	76	80	303
04:45 PM	0	116	2	118	48	81	0	129	0	0	0	0	2	0	75	77	324
Total	0	447	7	454	179	297	0	476	0	0	0	0	8	0	253	261	1191
05:00 PM	0	139	0	139	40	59	0	99	0	0	0	0	3	0	80	83	321
05:15 PM	0	144	2	146	58	59	0	117	0	0	0	0	0	0	95	95	358
05:30 PM	0	123	0	123	47	58	0	105	0	0	0	0	2	0	67	69	297
05:45 PM	0	110	2	112	48	60	0	108	0	0	0	0	2	0	79	81	301
Total	0	516	4	520	193	236	0	429	0	0	0	0	7	0	321	328	1277
Grand Total	0	1277	31	1308	1324	1517	0	2841	0	0	0	0	19	0	767	786	4935
Apprch %	0	97.6	2.4		46.6	53.4	0		0	0	0		2.4	0	97.6		
Total %	0	25.9	0.6	26.5	26.8	30.7	0	57.6	0	0	0	0	0.4	0	15.5	15.9	

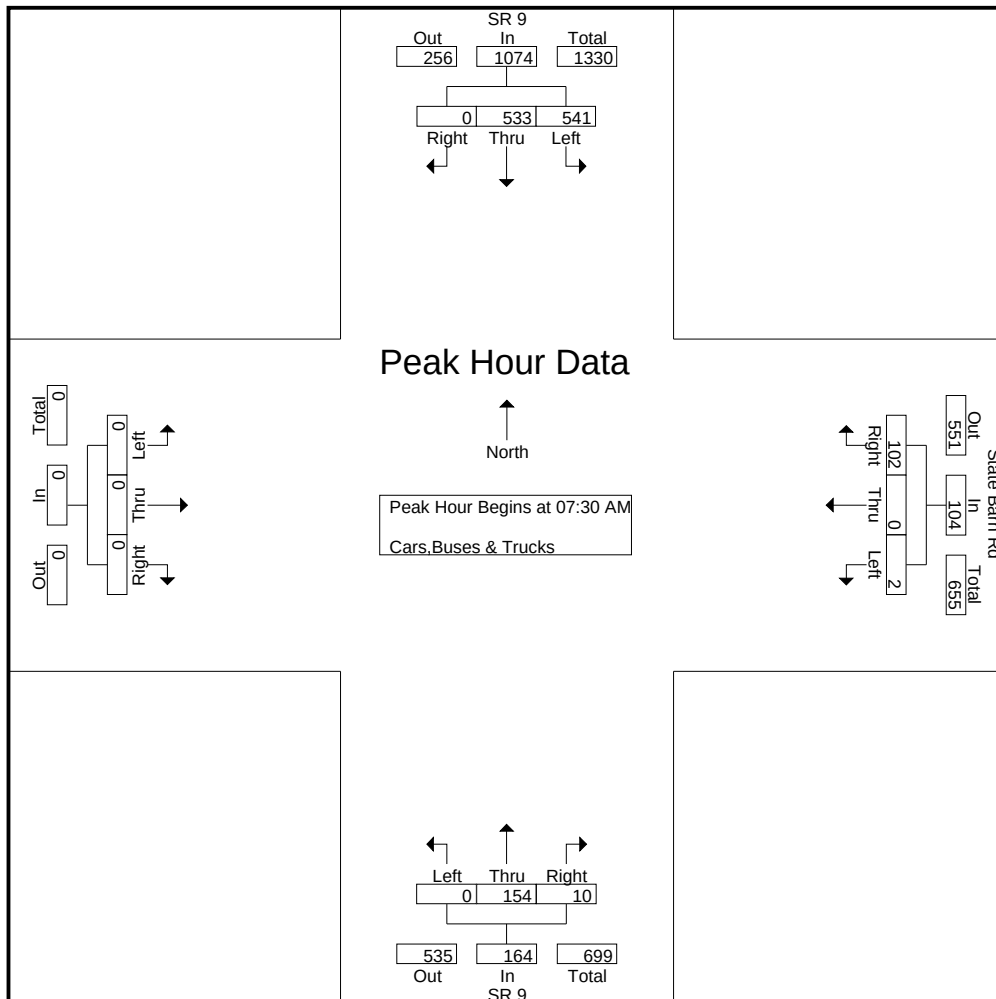
A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 9 @ State Barn Rd
7-9 am | 4-6 pm

File Name : 20220458
Site Code : 20220458
Start Date : 10/19/2022
Page No : 2

	SR 9 Northbound				SR 9 Southbound				Eastbound				State Barn 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	0	34	1	35	141	131	0	272	0	0	0	0	0	0	22	22	329
07:45 AM	0	45	3	48	143	128	0	271	0	0	0	0	1	0	30	31	350
08:00 AM	0	37	2	39	127	140	0	267	0	0	0	0	0	0	26	26	332
08:15 AM	0	38	4	42	130	134	0	264	0	0	0	0	1	0	24	25	331
Total Volume	0	154	10	164	541	533	0	1074	0	0	0	0	2	0	102	104	1342
% App. Total	0	93.9	6.1		50.4	49.6	0		0	0	0		1.9	0	98.1		
PHF	.000	.856	.625	.854	.946	.952	.000	.987	.000	.000	.000	.000	.500	.000	.850	.839	.959



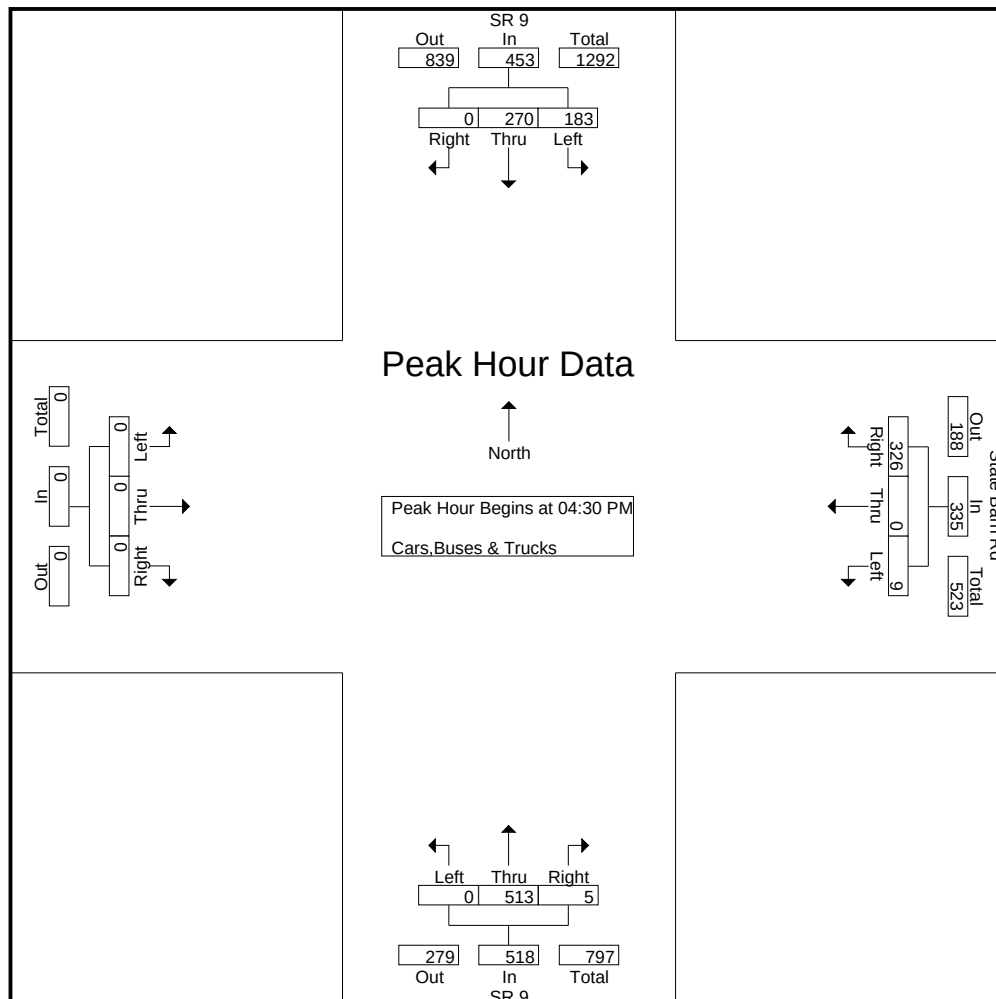
A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 9 @ State Barn Rd
7-9 am | 4-6 pm

File Name : 20220458
Site Code : 20220458
Start Date : 10/19/2022
Page No : 3

	SR 9 Northbound				SR 9 Southbound				Eastbound				State Barn 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 04:30 PM																	
04:30 PM	0	114	1	115	37	71	0	108	0	0	0	0	4	0	76	80	303
04:45 PM	0	116	2	118	48	81	0	129	0	0	0	0	2	0	75	77	324
05:00 PM	0	139	0	139	40	59	0	99	0	0	0	0	3	0	80	83	321
05:15 PM	0	144	2	146	58	59	0	117	0	0	0	0	0	0	95	95	358
Total Volume	0	513	5	518	183	270	0	453	0	0	0	0	9	0	326	335	1306
% App. Total	0	99	1		40.4	59.6	0		0	0	0		2.7	0	97.3		
PHF	.000	.891	.625	.887	.789	.833	.000	.878	.000	.000	.000	.000	.563	.000	.858	.882	.912



A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 306 @ SR 9
7-9 am | 4-6 pm

File Name : 20220457
Site Code : 20220457
Start Date : 10/19/2022
Page No : 1

Groups Printed- Cars,Buses & Trucks

Start Time	SR 9 Northbound				SR 9 Southbound				Eastbound				SR 306 Westbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	25	15	40	20	97	0	117	0	0	0	0	39	0	2	41	198
07:15 AM	0	42	48	90	27	93	0	120	0	0	0	0	62	0	4	66	276
07:30 AM	0	41	37	78	25	109	0	134	0	0	0	0	72	0	4	76	288
07:45 AM	0	40	55	95	18	144	0	162	0	0	0	0	71	0	3	74	331
Total	0	148	155	303	90	443	0	533	0	0	0	0	244	0	13	257	1093
08:00 AM	0	38	55	93	17	131	0	148	0	0	0	0	60	0	3	63	304
08:15 AM	0	37	52	89	16	123	0	139	0	0	0	0	62	0	3	65	293
08:30 AM	0	64	41	105	18	103	0	121	0	0	0	0	45	0	7	52	278
08:45 AM	0	47	49	96	19	111	0	130	0	0	0	0	43	0	4	47	273
Total	0	186	197	383	70	468	0	538	0	0	0	0	210	0	17	227	1148
*** BREAK ***																	
04:00 PM	0	130	70	200	11	61	0	72	0	0	0	0	43	0	8	51	323
04:15 PM	0	118	72	190	19	61	0	80	0	0	0	0	49	0	8	57	327
04:30 PM	0	118	69	187	17	69	0	86	0	0	0	0	35	0	11	46	319
04:45 PM	0	127	79	206	15	61	0	76	0	0	0	0	31	0	10	41	323
Total	0	493	290	783	62	252	0	314	0	0	0	0	158	0	37	195	1292
05:00 PM	0	138	91	229	14	46	0	60	0	0	0	0	40	0	7	47	336
05:15 PM	0	131	109	240	16	45	0	61	0	0	0	0	45	0	14	59	360
05:30 PM	0	112	90	202	21	45	0	66	0	0	0	0	54	0	15	69	337
05:45 PM	0	98	87	185	26	46	0	72	0	0	0	0	44	0	13	57	314
Total	0	479	377	856	77	182	0	259	0	0	0	0	183	0	49	232	1347
Grand Total	0	1306	1019	2325	299	1345	0	1644	0	0	0	0	795	0	116	911	4880
Apprch %	0	56.2	43.8		18.2	81.8	0		0	0	0		87.3	0	12.7		
Total %	0	26.8	20.9	47.6	6.1	27.6	0	33.7	0	0	0	0	16.3	0	2.4	18.7	

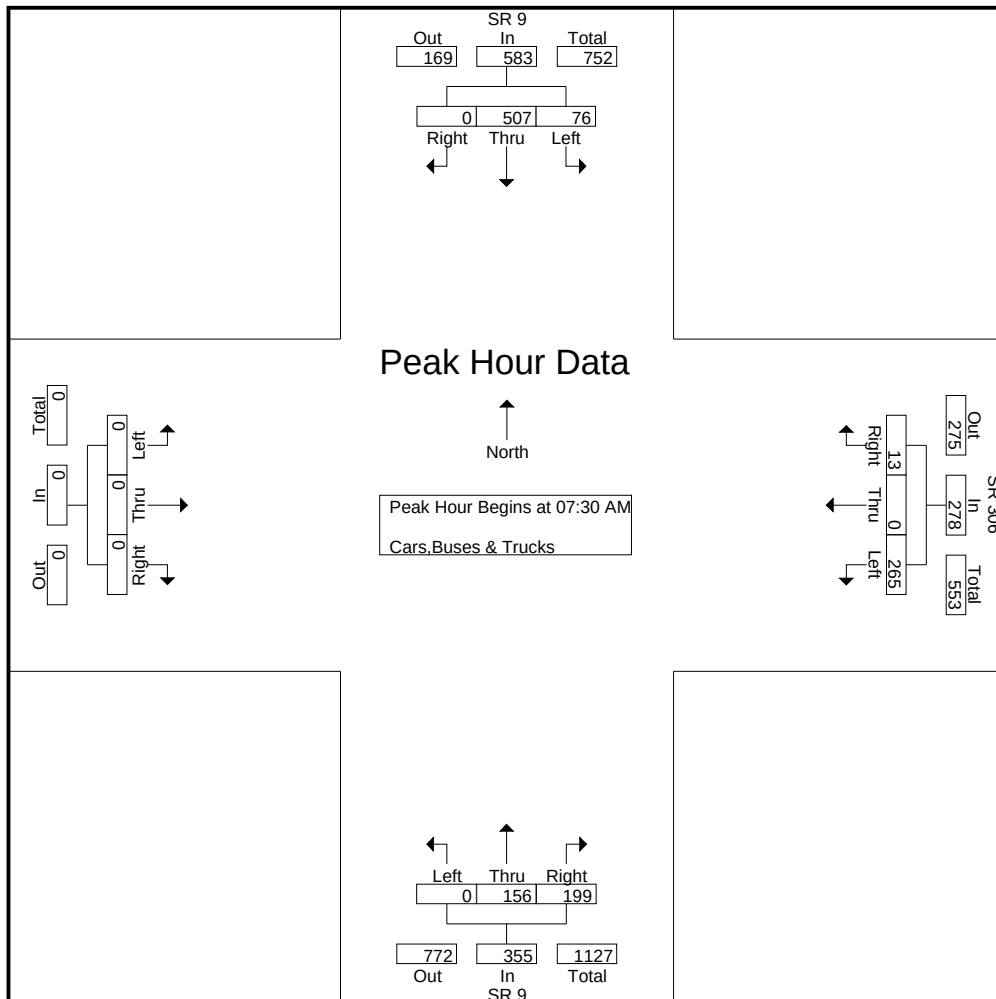
A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 306 @ SR 9
7-9 am | 4-6 pm

File Name : 20220457
Site Code : 20220457
Start Date : 10/19/2022
Page No : 2

	SR 9 Northbound				SR 9 Southbound				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	41	37	78	25	109	0	134	0	0	0	0	72	0	4	76	288
07:45 AM	0	40	55	95	18	144	0	162	0	0	0	0	71	0	3	74	331
08:00 AM	0	38	55	93	17	131	0	148	0	0	0	0	60	0	3	63	304
08:15 AM	0	37	52	89	16	123	0	139	0	0	0	0	62	0	3	65	293
Total Volume	0	156	199	355	76	507	0	583	0	0	0	0	265	0	13	278	1216
% App. Total	0	43.9	56.1		13	87	0		0	0	0		95.3	0	4.7		
PHF	.000	.951	.905	.934	.760	.880	.000	.900	.000	.000	.000	.000	.920	.000	.813	.914	.918



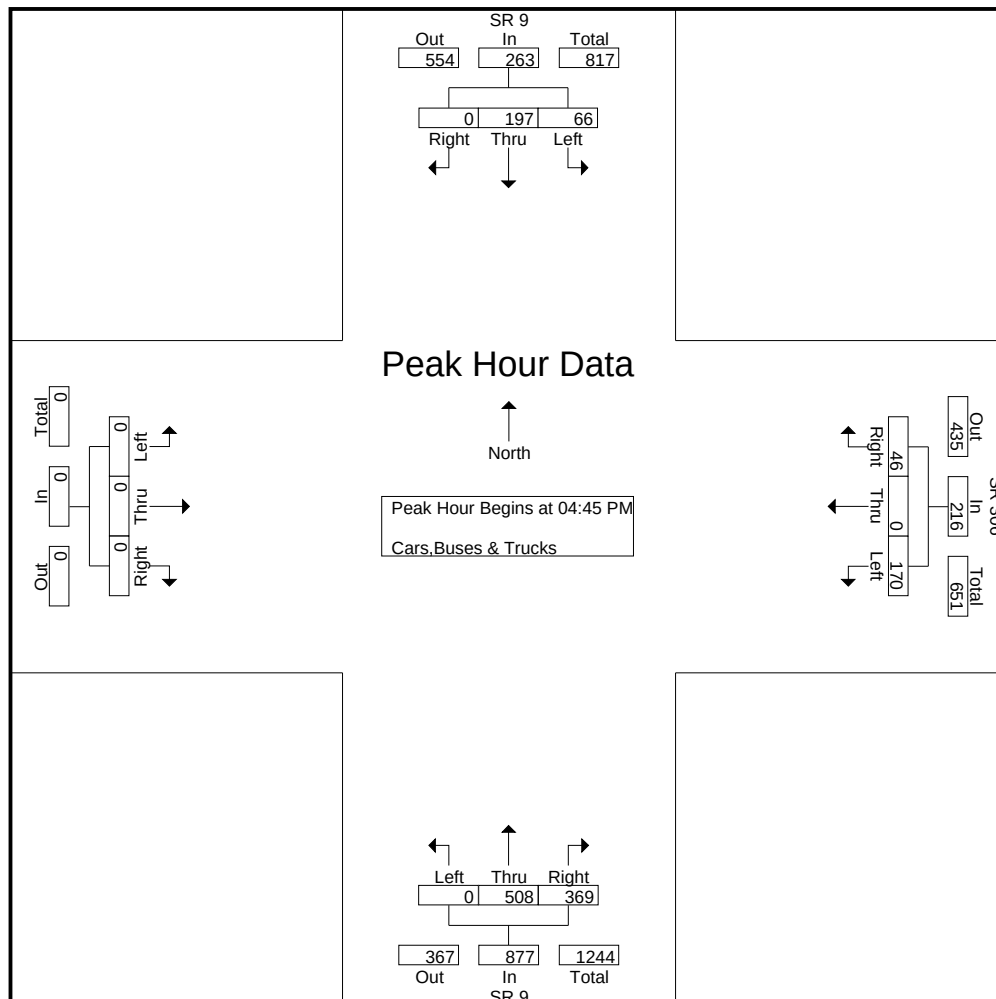
A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 306 @ SR 9
7-9 am | 4-6 pm

File Name : 20220457
Site Code : 20220457
Start Date : 10/19/2022
Page No : 3

	SR 9 Northbound				SR 9 Southbound				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	127	79	206	15	61	0	76	0	0	0	0	31	0	10	41	323
05:00 PM	0	138	91	229	14	46	0	60	0	0	0	0	40	0	7	47	336
05:15 PM	0	131	109	240	16	45	0	61	0	0	0	0	45	0	14	59	360
05:30 PM	0	112	90	202	21	45	0	66	0	0	0	0	54	0	15	69	337
Total Volume	0	508	369	877	66	197	0	263	0	0	0	0	170	0	46	216	1356
% App. Total	0	57.9	42.1		25.1	74.9	0		0	0	0		78.7	0	21.3		
PHF	.000	.920	.846	.914	.786	.807	.000	.865	.000	.000	.000	.000	.787	.000	.767	.783	.942



A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA

SR 306 @ State Barn Rd (Roundabout)

7-9 am | 4-6 pm

File Name : 20220456

Site Code : 20220456

Start Date : 10/18/2022

Page No : 1

Groups Printed- Cars,Buses & Trucks

Start Time	Vanderbilt Way Northbound				State Barn Rd Southbound				SR 306 Eastbound				SR 306 Westbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	1	1	2	99	0	2	101	1	21	0	22	3	65	22	90	215
07:15 AM	0	0	1	1	129	1	1	131	1	57	0	58	1	100	20	121	311
07:30 AM	0	0	1	1	151	0	8	159	4	92	0	96	1	84	16	101	357
07:45 AM	0	0	6	6	137	0	4	141	1	85	0	86	0	94	25	119	352
Total	0	1	9	10	516	1	15	532	7	255	0	262	5	343	83	431	1235
08:00 AM	0	1	4	5	127	0	2	129	0	114	0	114	0	77	25	102	350
08:15 AM	0	1	5	6	122	1	4	127	2	92	1	95	1	60	28	89	317
08:30 AM	2	0	4	6	112	1	3	116	1	112	1	114	1	66	27	94	330
08:45 AM	0	0	6	6	97	0	1	98	1	123	0	124	0	100	19	119	347
Total	2	2	19	23	458	2	10	470	4	441	2	447	2	303	99	404	1344
*** BREAK ***																	
04:00 PM	0	0	1	1	42	0	1	43	2	77	4	83	1	51	57	109	236
04:15 PM	2	1	4	7	46	2	1	49	1	81	1	83	1	44	50	95	234
04:30 PM	0	0	5	5	27	0	2	29	3	99	2	104	1	63	57	121	259
04:45 PM	1	0	5	6	49	0	2	51	4	100	1	105	1	83	64	148	310
Total	3	1	15	19	164	2	6	172	10	357	8	375	4	241	228	473	1039
05:00 PM	2	1	3	6	45	0	7	52	3	70	0	73	1	36	76	113	244
05:15 PM	0	0	5	5	45	1	0	46	1	95	2	98	3	53	83	139	288
05:30 PM	0	1	3	4	46	1	13	60	3	80	2	85	0	71	66	137	286
05:45 PM	1	0	6	7	50	2	3	55	2	62	1	65	0	94	45	139	266
Total	3	2	17	22	186	4	23	213	9	307	5	321	4	254	270	528	1084
Grand Total	8	6	60	74	1324	9	54	1387	30	1360	15	1405	15	1141	680	1836	4702
Apprch %	10.8	8.1	81.1		95.5	0.6	3.9		2.1	96.8	1.1		0.8	62.1	37		
Total %	0.2	0.1	1.3	1.6	28.2	0.2	1.1	29.5	0.6	28.9	0.3	29.9	0.3	24.3	14.5	39	

A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA

SR 306 @ State Barn Rd (Roundabout)

7-9 am | 4-6 pm

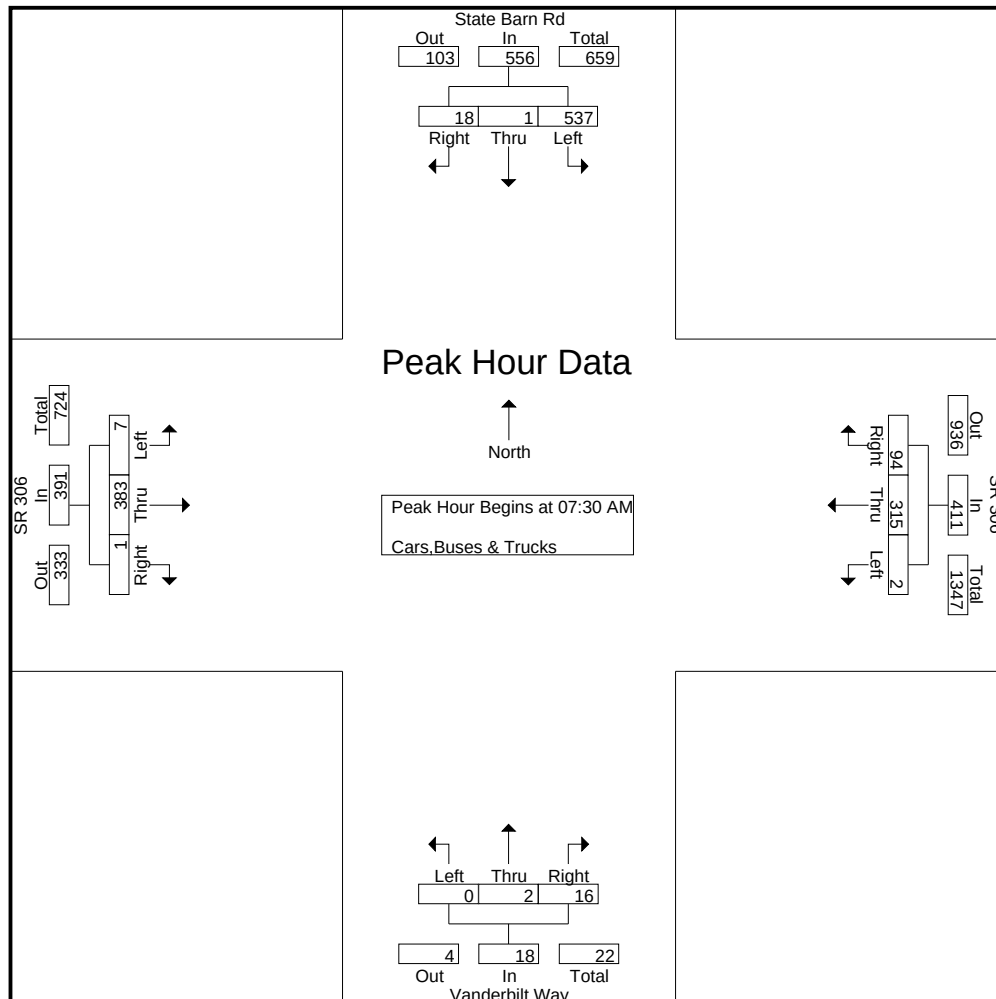
File Name : 20220456

Site Code : 20220456

Start Date : 10/18/2022

Page No : 2

	Vanderbilt Way Northbound				State Barn Rd 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	1	1	151	0	8	159	4	92	0	96	1	84	16	101	357
07:45 AM	0	0	6	6	137	0	4	141	1	85	0	86	0	94	25	119	352
08:00 AM	0	1	4	5	127	0	2	129	0	114	0	114	0	77	25	102	350
08:15 AM	0	1	5	6	122	1	4	127	2	92	1	95	1	60	28	89	317
Total Volume	0	2	16	18	537	1	18	556	7	383	1	391	2	315	94	411	1376
% App. Total	0	11.1	88.9		96.6	0.2	3.2		1.8	98	0.3		0.5	76.6	22.9		
PHF	.000	.500	.667	.750	.889	.250	.563	.874	.438	.840	.250	.857	.500	.838	.839	.863	.964



A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA

SR 306 @ State Barn Rd (Roundabout)

7-9 am | 4-6 pm

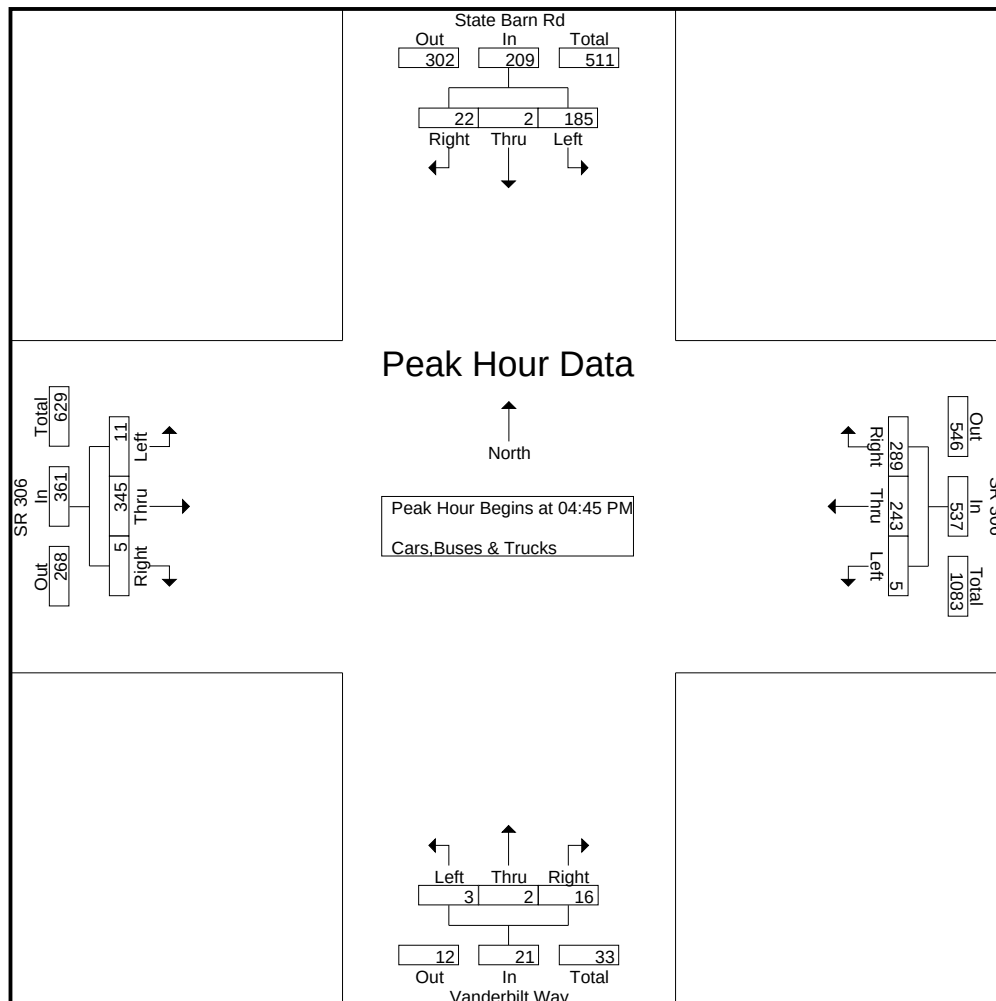
File Name : 20220456

Site Code : 20220456

Start Date : 10/18/2022

Page No : 3

	Vanderbilt Way Northbound				State Barn Rd 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	1	0	5	6	49	0	2	51	4	100	1	105	1	83	64	148	310
05:00 PM	2	1	3	6	45	0	7	52	3	70	0	73	1	36	76	113	244
05:15 PM	0	0	5	5	45	1	0	46	1	95	2	98	3	53	83	139	288
05:30 PM	0	1	3	4	46	1	13	60	3	80	2	85	0	71	66	137	286
Total Volume	3	2	16	21	185	2	22	209	11	345	5	361	5	243	289	537	1128
% App. Total	14.3	9.5	76.2		88.5	1	10.5		3	95.6	1.4		0.9	45.3	53.8		
PHF	.375	.500	.800	.875	.944	.500	.423	.871	.688	.863	.625	.860	.417	.732	.870	.907	.910



A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 306 @ Central Park Drwy
7-9 am | 4-6 pm

File Name : 20220454
Site Code : 20220454
Start Date : 10/18/2022
Page No : 1

Groups Printed- Cars,Buses & Trucks

Start Time	Central Park Drwy Northbound				Southbound				SR 306 Eastbound				SR 306 Westbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	0	2	2	0	0	0	0	0	20	8	28	16	51	0	67	97
07:15 AM	1	0	2	3	0	0	0	0	0	56	9	65	9	92	0	101	169
07:30 AM	3	0	1	4	0	0	0	0	0	95	4	99	3	89	0	92	195
07:45 AM	0	0	3	3	0	0	0	0	0	83	3	86	6	92	0	98	187
Total	4	0	8	12	0	0	0	0	0	254	24	278	34	324	0	358	648
08:00 AM	9	0	10	19	0	0	0	0	0	104	2	106	5	74	0	79	204
08:15 AM	10	0	6	16	0	0	0	0	0	89	8	97	4	60	0	64	177
08:30 AM	3	0	8	11	0	0	0	0	0	106	2	108	9	62	0	71	190
08:45 AM	4	0	2	6	0	0	0	0	0	122	6	128	13	88	0	101	235
Total	26	0	26	52	0	0	0	0	0	421	18	439	31	284	0	315	806
*** BREAK ***																	
04:00 PM	6	0	6	12	0	0	0	0	0	77	6	83	6	46	0	52	147
04:15 PM	2	0	14	16	0	0	0	0	0	69	4	73	5	42	0	47	136
04:30 PM	4	0	9	13	0	0	0	0	0	95	1	96	16	49	0	65	174
04:45 PM	2	0	6	8	0	0	0	0	0	99	9	108	12	74	0	86	202
Total	14	0	35	49	0	0	0	0	0	340	20	360	39	211	0	250	659
05:00 PM	1	0	10	11	0	0	0	0	0	63	13	76	21	24	0	45	132
05:15 PM	3	0	15	18	0	0	0	0	0	83	13	96	32	21	0	53	167
05:30 PM	6	0	13	19	0	0	0	0	0	72	40	112	62	22	0	84	215
05:45 PM	5	0	10	15	0	0	0	0	0	55	26	81	40	58	0	98	194
Total	15	0	48	63	0	0	0	0	0	273	92	365	155	125	0	280	708
Grand Total	59	0	117	176	0	0	0	0	0	1288	154	1442	259	944	0	1203	2821
Apprch %	33.5	0	66.5		0	0	0		0	89.3	10.7		21.5	78.5	0		
Total %	2.1	0	4.1	6.2	0	0	0	0	0	45.7	5.5	51.1	9.2	33.5	0	42.6	

A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA

SR 306 @ Central Park Drwy

7-9 am | 4-6 pm

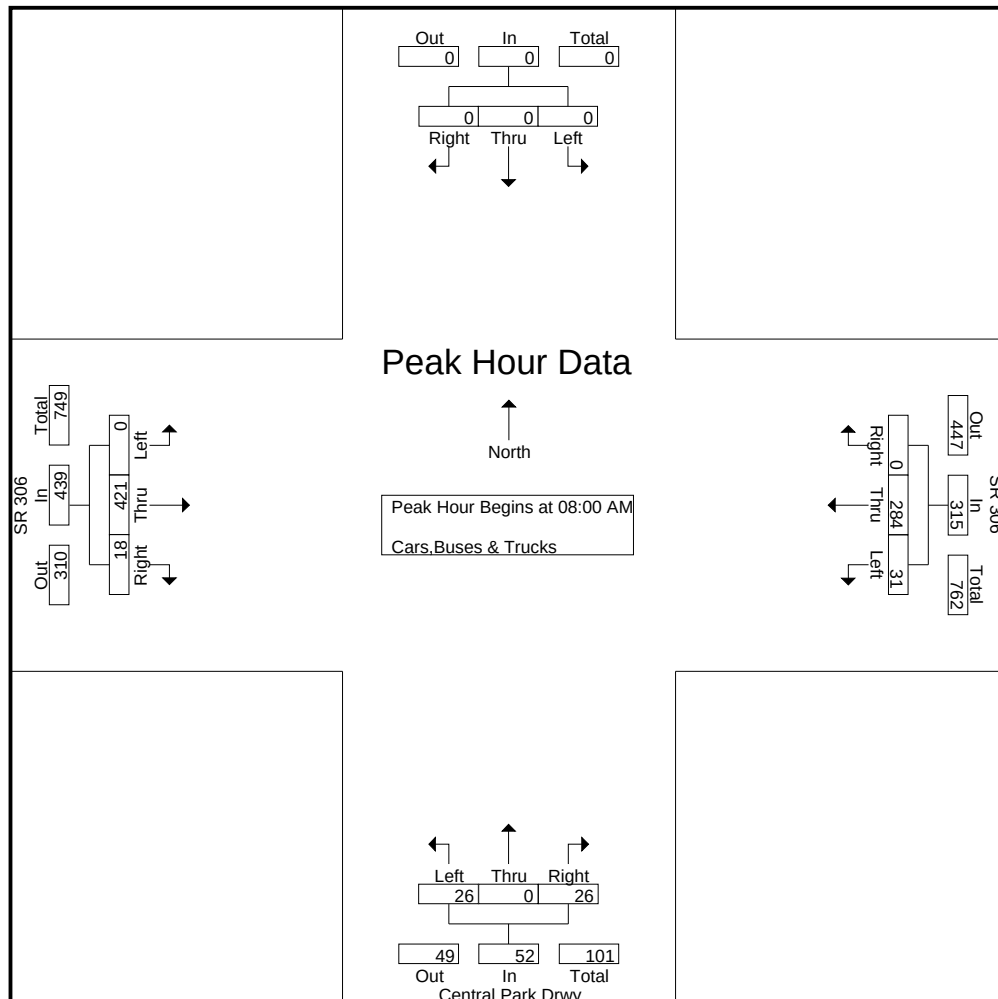
File Name : 20220454

Site Code : 20220454

Start Date : 10/18/2022

Page No : 2

	Central Park Drwy Northbound				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 08:00 AM																	
08:00 AM	9	0	10	19	0	0	0	0	0	104	2	106	5	74	0	79	204
08:15 AM	10	0	6	16	0	0	0	0	0	89	8	97	4	60	0	64	177
08:30 AM	3	0	8	11	0	0	0	0	0	106	2	108	9	62	0	71	190
08:45 AM	4	0	2	6	0	0	0	0	0	122	6	128	13	88	0	101	235
Total Volume	26	0	26	52	0	0	0	0	0	421	18	439	31	284	0	315	806
% App. Total	50	0	50		0	0	0		0	95.9	4.1		9.8	90.2	0		
PHF	.650	.000	.650	.684	.000	.000	.000	.000	.000	.863	.563	.857	.596	.807	.000	.780	.857



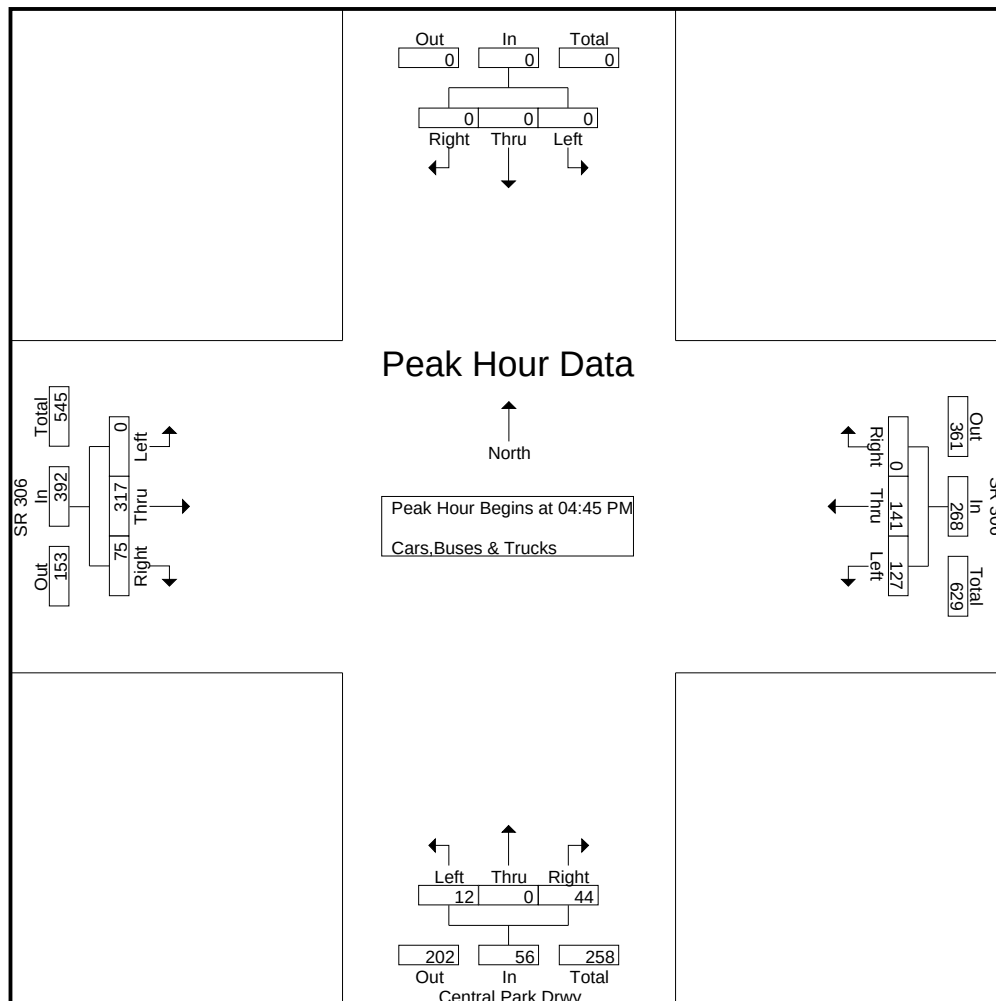
A & R Engineering, Inc.

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Marietta, GA 30067

TMC DATA
SR 306 @ Central Park Drwy
7-9 am | 4-6 pm

File Name : 20220454
Site Code : 20220454
Start Date : 10/18/2022
Page No : 3

	Central Park Drwy Northbound				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	2	0	6	8	0	0	0	0	0	99	9	108	12	74	0	86	202
05:00 PM	1	0	10	11	0	0	0	0	0	63	13	76	21	24	0	45	132
05:15 PM	3	0	15	18	0	0	0	0	0	83	13	96	32	21	0	53	167
05:30 PM	6	0	13	19	0	0	0	0	0	72	40	112	62	22	0	84	215
Total Volume	12	0	44	56	0	0	0	0	0	317	75	392	127	141	0	268	716
% App. Total	21.4	0	78.6		0	0	0		0	80.9	19.1		47.4	52.6	0		
PHF	.500	.000	.733	.737	.000	.000	.000	.000	.000	.801	.469	.875	.512	.476	.000	.779	.833



A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

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

File Name : 20220453
Site Code : 20220453
Start Date : 10/18/2022
Page No : 1

Groups Printed- Cars,Buses & Trucks

Start Time	GA 400 NB Ramps Northbound				Southbound				SR 306 Eastbound				SR 306 Westbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	10	0	68	78	0	0	0	0	2	39	0	41	0	282	6	288	407
07:15 AM	16	0	80	96	0	0	0	0	3	93	0	96	0	301	5	306	498
07:30 AM	7	0	91	98	0	0	0	0	8	112	0	120	0	286	7	293	511
07:45 AM	11	0	104	115	0	0	0	0	8	119	0	127	0	291	15	306	548
Total	44	0	343	387	0	0	0	0	21	363	0	384	0	1160	33	1193	1964
08:00 AM	17	0	114	131	0	0	0	0	14	121	0	135	0	274	24	298	564
08:15 AM	11	0	89	100	0	0	0	0	12	84	0	96	0	275	13	288	484
08:30 AM	15	0	100	115	0	0	0	0	10	106	0	116	0	263	12	275	506
08:45 AM	12	0	127	139	0	0	0	0	14	108	0	122	0	280	16	296	557
Total	55	0	430	485	0	0	0	0	50	419	0	469	0	1092	65	1157	2111
*** BREAK ***																	
04:00 PM	37	0	120	157	0	0	0	0	16	82	0	98	0	167	25	192	447
04:15 PM	23	1	124	148	0	0	0	0	28	89	0	117	0	188	21	209	474
04:30 PM	37	0	125	162	0	0	0	0	32	80	0	112	0	199	27	226	500
04:45 PM	46	2	125	173	0	0	0	0	42	101	0	143	0	229	25	254	570
Total	143	3	494	640	0	0	0	0	118	352	0	470	0	783	98	881	1991
05:00 PM	42	6	151	199	0	0	0	0	28	78	0	106	0	204	25	229	534
05:15 PM	63	9	139	211	0	0	0	0	45	89	0	134	0	216	37	253	598
05:30 PM	59	7	125	191	0	0	0	0	38	81	0	119	0	201	31	232	542
05:45 PM	54	5	117	176	0	0	0	0	34	76	0	110	0	194	28	222	508
Total	218	27	532	777	0	0	0	0	145	324	0	469	0	815	121	936	2182
Grand Total	460	30	1799	2289	0	0	0	0	334	1458	0	1792	0	3850	317	4167	8248
Apprch %	20.1	1.3	78.6		0	0	0		18.6	81.4	0		0	92.4	7.6		
Total %	5.6	0.4	21.8	27.8	0	0	0	0	4	17.7	0	21.7	0	46.7	3.8	50.5	

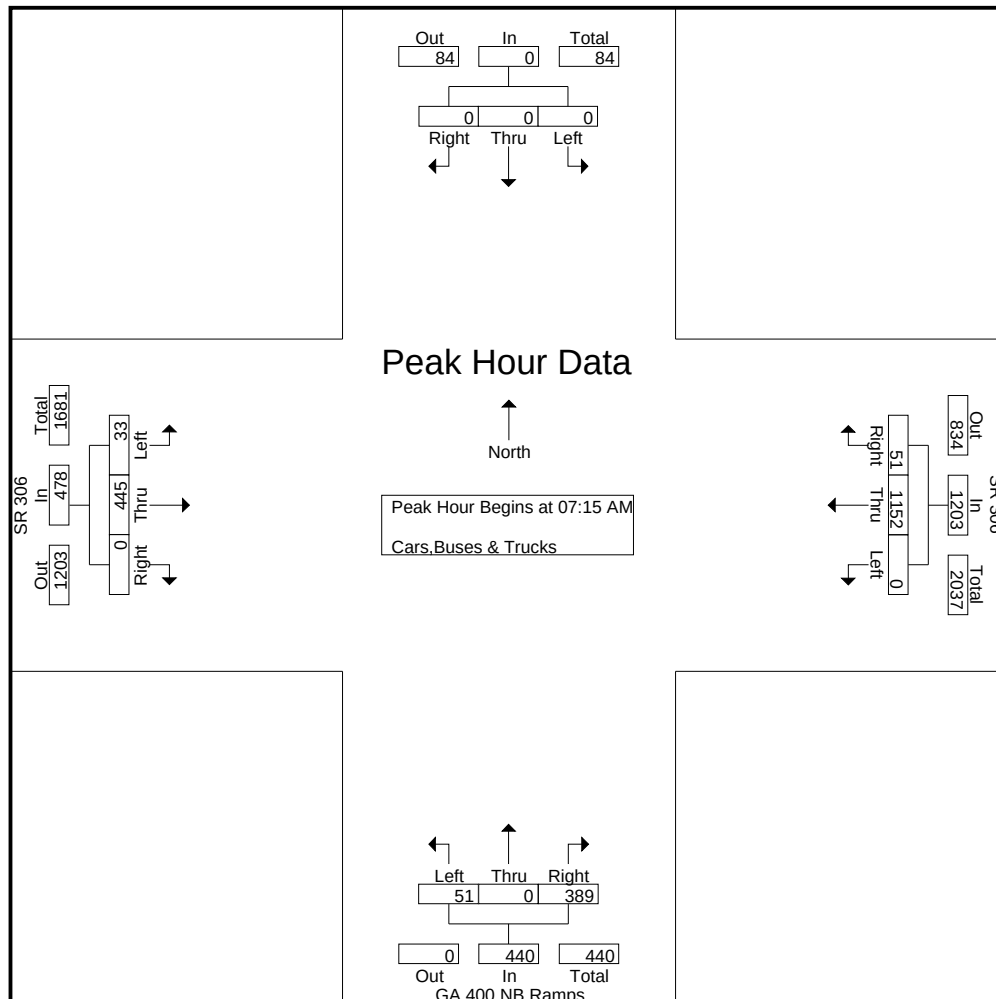
A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

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

File Name : 20220453
Site Code : 20220453
Start Date : 10/18/2022
Page No : 2

	GA 400 NB Ramps Northbound				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 07:15 AM																	
07:15 AM	16	0	80	96	0	0	0	0	3	93	0	96	0	301	5	306	498
07:30 AM	7	0	91	98	0	0	0	0	8	112	0	120	0	286	7	293	511
07:45 AM	11	0	104	115	0	0	0	0	8	119	0	127	0	291	15	306	548
08:00 AM	17	0	114	131	0	0	0	0	14	121	0	135	0	274	24	298	564
Total Volume	51	0	389	440	0	0	0	0	33	445	0	478	0	1152	51	1203	2121
% App. Total	11.6	0	88.4		0	0	0		6.9	93.1	0		0	95.8	4.2		
PHF	.750	.000	.853	.840	.000	.000	.000	.000	.589	.919	.000	.885	.000	.957	.531	.983	.940



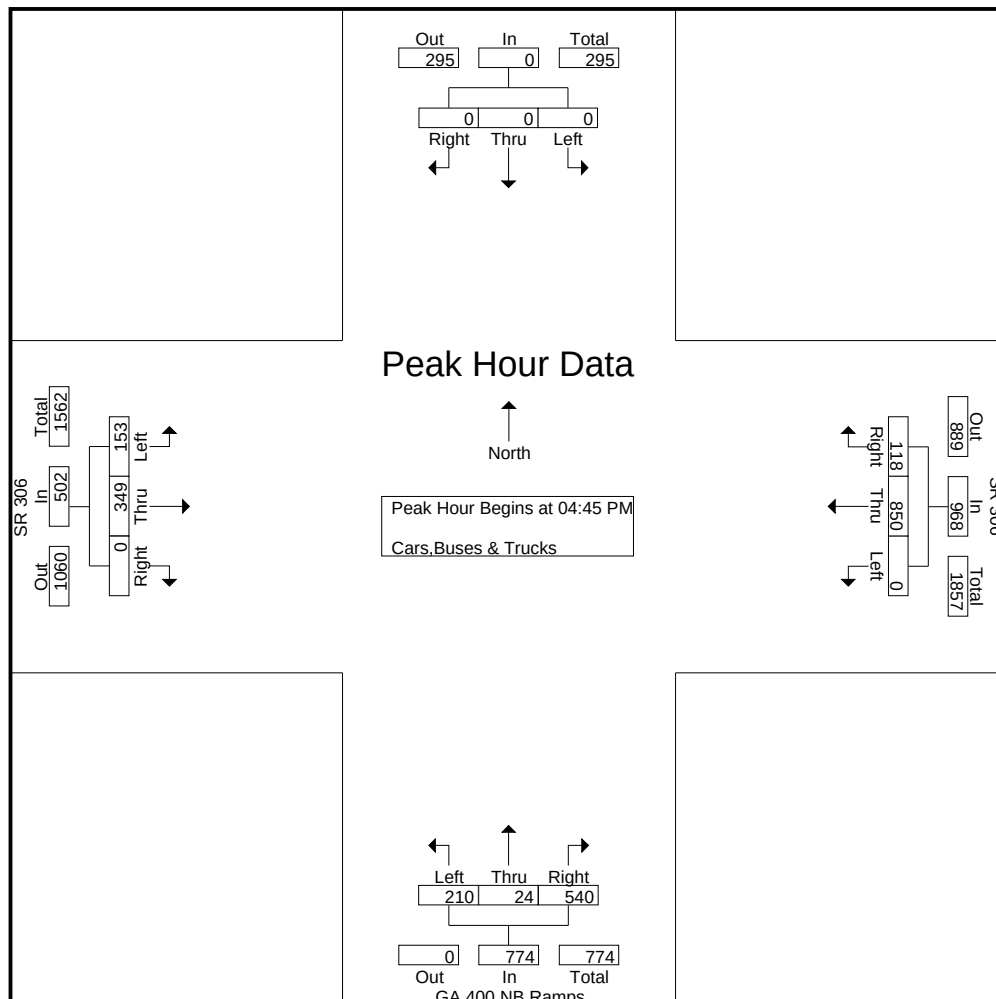
A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

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

File Name : 20220453
Site Code : 20220453
Start Date : 10/18/2022
Page No : 3

	GA 400 NB Ramps Northbound				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	46	2	125	173	0	0	0	0	42	101	0	143	0	229	25	254	570
05:00 PM	42	6	151	199	0	0	0	0	28	78	0	106	0	204	25	229	534
05:15 PM	63	9	139	211	0	0	0	0	45	89	0	134	0	216	37	253	598
05:30 PM	59	7	125	191	0	0	0	0	38	81	0	119	0	201	31	232	542
Total Volume	210	24	540	774	0	0	0	0	153	349	0	502	0	850	118	968	2244
% App. Total	27.1	3.1	69.8		0	0	0		30.5	69.5	0		0	87.8	12.2		
PHF	.833	.667	.894	.917	.000	.000	.000	.000	.850	.864	.000	.878	.000	.928	.797	.953	.938



A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 306 @ GA 400 SB Ramp
7-9 am | 4-6 pm

File Name : 20220452
Site Code : 20220452
Start Date : 10/18/2022
Page No : 1

Groups Printed- Cars,Buses & Trucks

Start Time	Northbound				GA 400 SB Ramp Southbound				SR 306 Eastbound				SR 306 Westbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	0	0	0	10	0	17	27	0	31	90	121	219	73	0	292	440
07:15 AM	0	0	0	0	11	0	15	26	0	85	102	187	211	106	0	317	530
07:30 AM	0	0	0	0	9	0	12	21	0	111	133	244	204	89	0	293	558
07:45 AM	0	0	0	0	11	0	11	22	0	116	112	228	194	108	0	302	552
Total	0	0	0	0	41	0	55	96	0	343	437	780	828	376	0	1204	2080
08:00 AM	0	0	0	0	13	0	13	26	0	122	123	245	202	89	0	291	562
08:15 AM	0	0	0	0	11	0	16	27	0	85	134	219	213	73	0	286	532
08:30 AM	0	0	0	0	9	0	14	23	0	107	121	228	198	80	0	278	529
08:45 AM	0	0	0	0	7	0	11	18	0	115	111	226	184	108	0	292	536
Total	0	0	0	0	40	0	54	94	0	429	489	918	797	350	0	1147	2159
*** BREAK ***																	
04:00 PM	0	0	0	0	13	0	9	22	0	85	35	120	104	100	0	204	346
04:15 PM	0	0	0	0	16	0	13	29	0	101	30	131	129	82	0	211	371
04:30 PM	0	0	0	0	19	0	16	35	0	93	38	131	131	105	0	236	402
04:45 PM	0	0	0	0	23	0	12	35	0	120	34	154	139	136	0	275	464
Total	0	0	0	0	71	0	50	121	0	399	137	536	503	423	0	926	1583
05:00 PM	0	0	0	0	17	0	10	27	0	89	29	118	143	103	0	246	391
05:15 PM	0	0	0	0	14	0	8	22	0	120	25	145	148	131	0	279	446
05:30 PM	0	0	0	0	11	0	7	18	0	108	21	129	130	130	0	260	407
05:45 PM	0	0	0	0	9	0	8	17	0	101	17	118	117	131	0	248	383
Total	0	0	0	0	51	0	33	84	0	418	92	510	538	495	0	1033	1627
Grand Total	0	0	0	0	203	0	192	395	0	1589	1155	2744	2666	1644	0	4310	7449
Apprch %	0	0	0		51.4	0	48.6		0	57.9	42.1		61.9	38.1	0		
Total %	0	0	0	0	2.7	0	2.6	5.3	0	21.3	15.5	36.8	35.8	22.1	0	57.9	

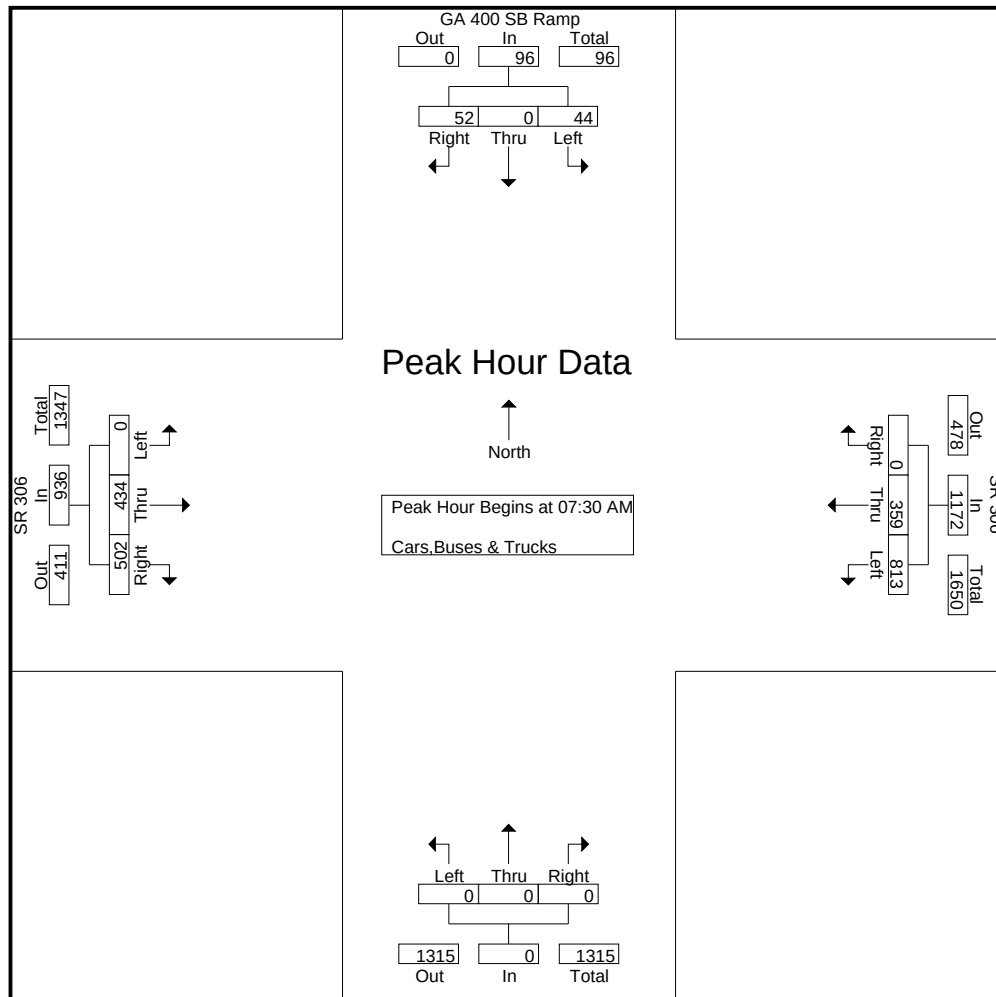
A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 306 @ GA 400 SB Ramp
7-9 am | 4-6 pm

File Name : 20220452
Site Code : 20220452
Start Date : 10/18/2022
Page No : 2

	Northbound				GA 400 SB Ramp 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	9	0	12	21	0	111	133	244	204	89	0	293	558
07:45 AM	0	0	0	0	11	0	11	22	0	116	112	228	194	108	0	302	552
08:00 AM	0	0	0	0	13	0	13	26	0	122	123	245	202	89	0	291	562
08:15 AM	0	0	0	0	11	0	16	27	0	85	134	219	213	73	0	286	532
Total Volume	0	0	0	0	44	0	52	96	0	434	502	936	813	359	0	1172	2204
% App. Total	0	0	0	0	45.8	0	54.2		0	46.4	53.6		69.4	30.6	0		
PHF	.000	.000	.000	.000	.846	.000	.813	.889	.000	.889	.937	.955	.954	.831	.000	.970	.980



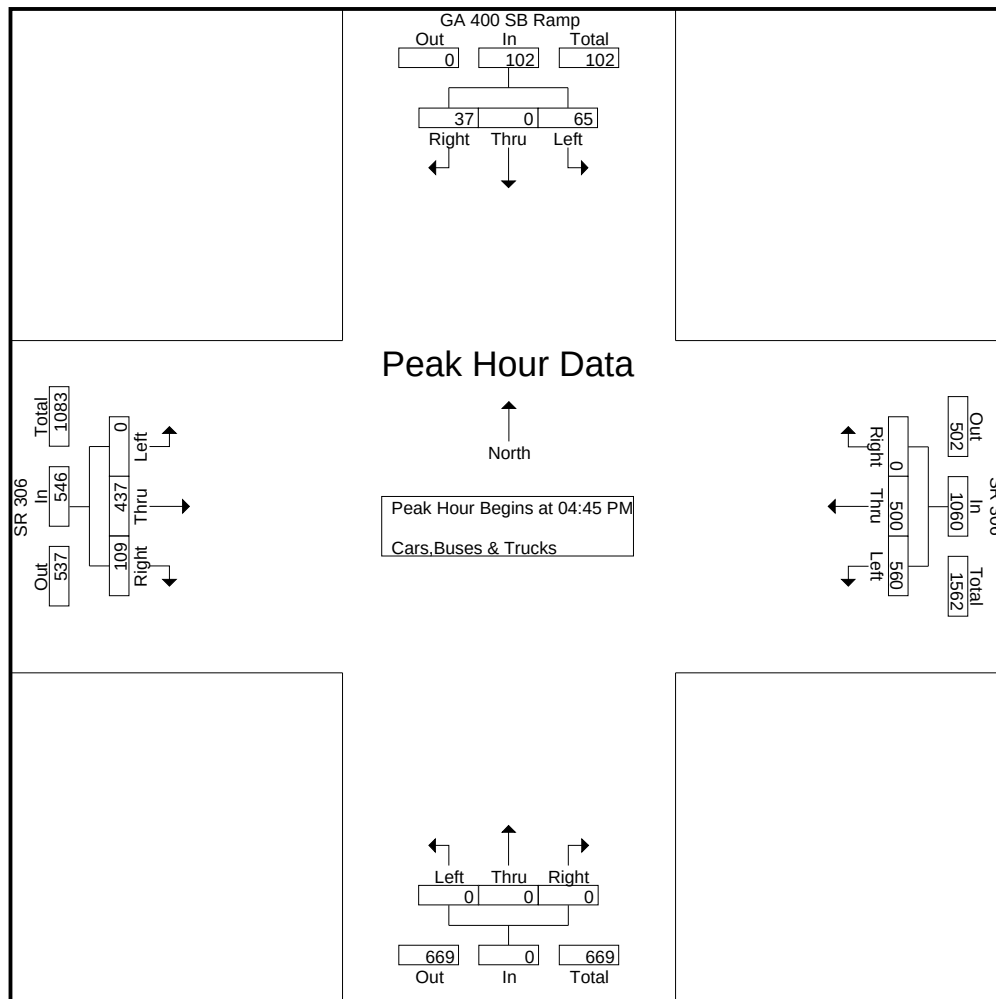
A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 306 @ GA 400 SB Ramp
7-9 am | 4-6 pm

File Name : 20220452
Site Code : 20220452
Start Date : 10/18/2022
Page No : 3

	Northbound				GA 400 SB Ramp 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	23	0	12	35	0	120	34	154	139	136	0	275	464
05:00 PM	0	0	0	0	17	0	10	27	0	89	29	118	143	103	0	246	391
05:15 PM	0	0	0	0	14	0	8	22	0	120	25	145	148	131	0	279	446
05:30 PM	0	0	0	0	11	0	7	18	0	108	21	129	130	130	0	260	407
Total Volume	0	0	0	0	65	0	37	102	0	437	109	546	560	500	0	1060	1708
% App. Total	0	0	0	0	63.7	0	36.3		0	80	20		52.8	47.2	0		
PHF	.000	.000	.000	.000	.707	.000	.771	.729	.000	.910	.801	.886	.946	.919	.000	.950	.920



A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 306 @ Freedom Pkwy
7-9 am | 4-6 pm

File Name : 20220451
Site Code : 20220451
Start Date : 10/18/2022
Page No : 1

Groups Printed- Cars, Buses & Trucks

Start Time	Freedom Pkwy Northbound				Ingles Drwy Southbound				SR 306 Eastbound				SR 306 Westbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	21	6	6	33	3	6	16	25	13	67	13	93	7	238	20	265	416
07:15 AM	27	5	11	43	4	1	12	17	12	115	24	151	20	228	6	254	465
07:30 AM	45	9	13	67	6	2	8	16	15	148	33	196	15	227	8	250	529
07:45 AM	32	5	14	51	6	4	14	24	7	185	27	219	16	239	9	264	558
Total	125	25	44	194	19	13	50	82	47	515	97	659	58	932	43	1033	1968
08:00 AM	28	12	21	61	5	2	15	22	9	148	21	178	14	240	15	269	530
08:15 AM	32	6	14	52	4	2	11	17	5	125	29	159	17	233	10	260	488
08:30 AM	28	11	14	53	7	5	10	22	15	141	24	180	25	210	16	251	506
08:45 AM	19	4	15	38	14	6	10	30	17	139	29	185	17	231	8	256	509
Total	107	33	64	204	30	15	46	91	46	553	103	702	73	914	49	1036	2033
*** BREAK ***																	
04:00 PM	52	5	53	110	7	8	10	25	14	133	24	171	27	155	4	186	492
04:15 PM	59	4	36	99	6	5	9	20	8	126	32	166	29	164	6	199	484
04:30 PM	63	9	35	107	4	8	13	25	7	131	34	172	26	162	4	192	496
04:45 PM	66	11	34	111	5	10	15	30	8	137	31	176	24	157	5	186	503
Total	240	29	158	427	22	31	47	100	37	527	121	685	106	638	19	763	1975
05:00 PM	76	11	41	128	7	7	9	23	7	143	67	217	22	180	5	207	575
05:15 PM	81	17	59	157	9	8	7	24	9	108	81	198	29	153	5	187	566
05:30 PM	60	8	49	117	8	6	9	23	6	127	84	217	26	188	6	220	577
05:45 PM	75	9	50	134	12	4	15	31	17	132	41	190	25	166	8	199	554
Total	292	45	199	536	36	25	40	101	39	510	273	822	102	687	24	813	2272
Grand Total	764	132	465	1361	107	84	183	374	169	2105	594	2868	339	3171	135	3645	8248
Apprch %	56.1	9.7	34.2		28.6	22.5	48.9		5.9	73.4	20.7		9.3	87	3.7		
Total %	9.3	1.6	5.6	16.5	1.3	1	2.2	4.5	2	25.5	7.2	34.8	4.1	38.4	1.6	44.2	

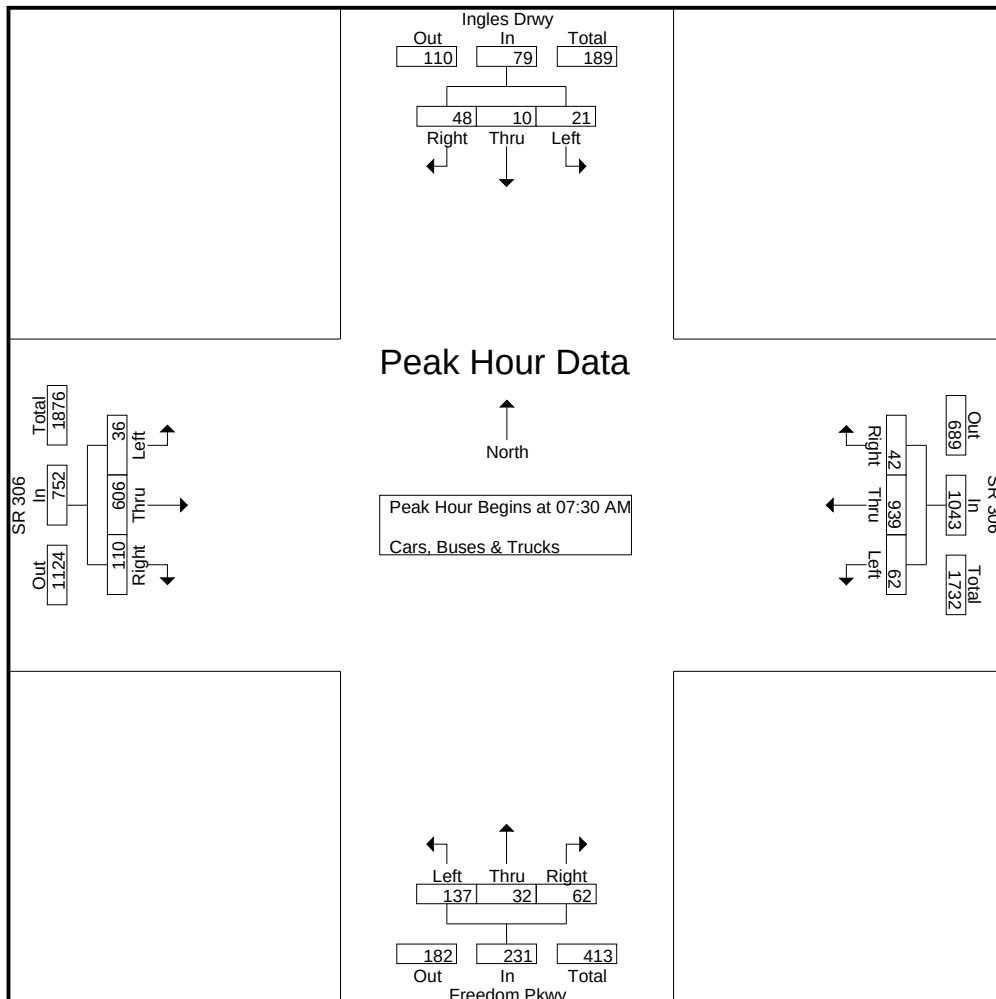
A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 306 @ Freedom Pkwy
7-9 am | 4-6 pm

File Name : 20220451
Site Code : 20220451
Start Date : 10/18/2022
Page No : 2

	Freedom Pkwy Northbound				Ingles Drwy 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	45	9	13	67	6	2	8	16	15	148	33	196	15	227	8	250	529
07:45 AM	32	5	14	51	6	4	14	24	7	185	27	219	16	239	9	264	558
08:00 AM	28	12	21	61	5	2	15	22	9	148	21	178	14	240	15	269	530
08:15 AM	32	6	14	52	4	2	11	17	5	125	29	159	17	233	10	260	488
Total Volume	137	32	62	231	21	10	48	79	36	606	110	752	62	939	42	1043	2105
% App. Total	59.3	13.9	26.8		26.6	12.7	60.8		4.8	80.6	14.6		5.9	90	4		
PHF	.761	.667	.738	.862	.875	.625	.800	.823	.600	.819	.833	.858	.912	.978	.700	.969	.943



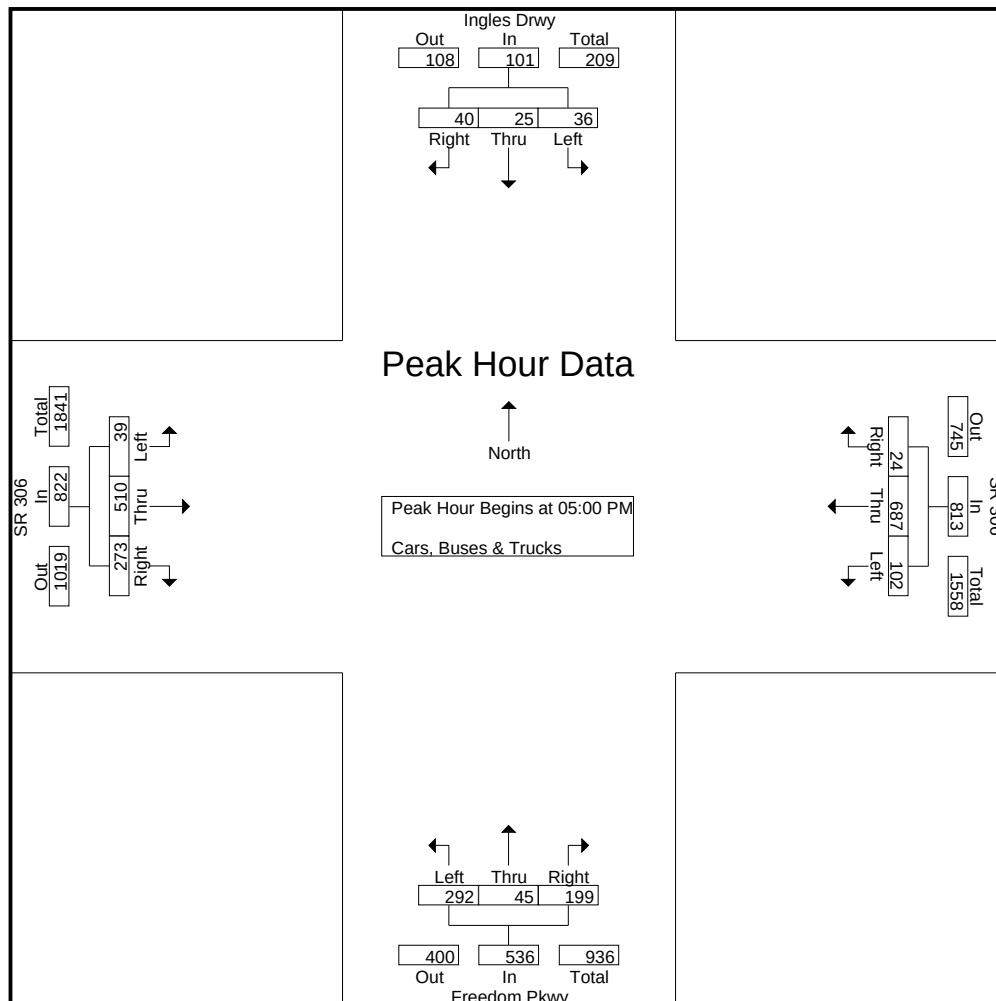
A & R Engineering, Inc.

2160 Kinston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 306 @ Freedom Pkwy
7-9 am | 4-6 pm

File Name : 20220451
Site Code : 20220451
Start Date : 10/18/2022
Page No : 3

	Freedom Pkwy Northbound				Ingles Drwy 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 05:00 PM																	
05:00 PM	76	11	41	128	7	7	9	23	7	143	67	217	22	180	5	207	575
05:15 PM	81	17	59	157	9	8	7	24	9	108	81	198	29	153	5	187	566
05:30 PM	60	8	49	117	8	6	9	23	6	127	84	217	26	188	6	220	577
05:45 PM	75	9	50	134	12	4	15	31	17	132	41	190	25	166	8	199	554
Total Volume	292	45	199	536	36	25	40	101	39	510	273	822	102	687	24	813	2272
% App. Total	54.5	8.4	37.1		35.6	24.8	39.6		4.7	62	33.2		12.5	84.5	3		
PHF	.901	.662	.843	.854	.750	.781	.667	.815	.574	.892	.813	.947	.879	.914	.750	.924	.984



Character Areas

GRTA Letter of Understanding



LETTER OF UNDERSTANDING

October 19, 2022

Charlie Heard
EVP Development
35 Johnson Ferry Road
Marietta, GA 30068

RE: **North Park (DRI#: 3782)**

Dear Charlie Heard:

The purpose of this Letter of Understanding is to document the discussions during the Methodology Meeting held virtually on October 4, 2022 regarding **North Park DRI #3782** Development of Regional Impact (DRI). The *GRTA DRI Review Procedures*, as well as the inputs and parameters documented in this Letter of Understanding and the revised Methodology Meeting Packet, shall be adhered to in preparing the GRTA required Transportation Study.

PROJECT OVERVIEW

- The proposed site is located to the northwest of GA 400 and SR 306 and on either side of state barn road.
- The proposed development includes 172 townhomes units, 456 multifamily housing units, 200 senior living units, 400,000 square feet of office space, 200,000 square feet of warehouse space, 55,000 square feet of climate controlled self storage, 140,300 square feet of retail space, 8,000 square feet of fast food restaurant space, 8,000 square feet of high turn over (sit down) restaurant space, 4,000 square feet of drive in bank space and 5,900 square feet of convenience store space and an 18 pump gas station.
- The projected build-out is one phase to be completed by 2027.
- The proposed development includes one full site access along State Road 306 (Keith Bridge Road) and four full site accesses along State Barn Road.
- The DRI trigger for this development is a rezoning.
- The vehicular trip generation is estimated to be 24,283 net daily trips based on the *ITE Trip Generation Manual 11th edition*.
- The applicant is applying for approval under GRTA's non-expedited Traffic Impact Study/Limited Trip Generation/Alternative Study Option review process.

STUDY NETWORK

1. SR 306 (Keith Bridge Road) @ SR 9 (Dahlonega Highway)
2. SR 306 (Keith Bridge Road) @ Cumming Central Parkway Driveway
3. SR 306 (Keith Bridge Road) @ State Barn Road / Vanderbilt Way

4. SR 306 (Keith Bridge Road) @ GA 400 Southbound Ramps
5. SR 306 (Keith Bridge Road) @ GA 400 Northbound Ramps
6. SR 306 (Keith Bridge Road) @ Freedom Parkway
7. SR 9 (Dahlonega Highway) @ Spot Road
8. SR 9 (Dahlonega Highway) @ Johnson Drive
9. SR 9 (Dahlonega Highway) @ State Barn Road

METHODOLOGY MEETING PACKET INPUTS & PARAMETERS

- The Site Plan shall meet all the applicable requirements in Section 7.1 of the *GRTA DRI Review Procedures*.
- All Study Network intersections shall be analyzed during the AM and PM peak hours for (1) existing conditions, (2) future “no-build” conditions, and (3) future “build” conditions as specified in the *GRTA DRI Review Procedures*.
- This DRI shall be modeled and reviewed in one phase to be completed by 2027.
- The Level of Service (LOS) standard for all analysis shall be LOS D unless specified otherwise in Section 3.2.2.1. For example, a LOS E standard is allowed if the existing LOS for the intersection or approach is a LOS F.
- Default values should not be assumed in the traffic modeling. Existing conditions shall be taken into account as required in Section 3.2.2.
- The trip generation calculations in the revised Methodology Meeting Packet shall be used in the Transportation Study. Mixed-use, alt. mode and pass-by reductions are allowed for this site. Pass-by reductions shall not exceed 15% of a roadway’s traffic volume standard established in Appendix 7.2.
- The trip assignment approach in the revised Methodology Meeting Packet shall be utilized for all Study Network intersection movements.
- The applicant shall research TIP, STIP, RTP and GDOT’s construction work program, as well as any local government and transit operator plans (SPLOST, CIP, etc.), to determine the open date, sponsor, cost of the project, funding source(s), for future roadway projects in the project vicinity. Programmed transportation projects anticipated to open on or before the Build Out year of the DRI Project shall be modeled as completed in the No-Build and Build conditions unless approved otherwise.
- A 1.2% annual traffic Background Growth Rate shall be used for all roadways.
- Capacity analysis shall be based on turning movement counts collected not more than 12-months prior to the date of the actual DRI submittal to GRTA, unless specified otherwise. As specified in Section 2.3, turning movement counts shall be collected while local schools are in session, on a Tuesday, Wednesday or Thursday (unless approved otherwise) and not during holiday periods (weeks of July 4th, Thanksgiving and +/- 5 days of Christmas).
- If the *GRTA DRI Review Procedures* requires an Enhanced Focus Area for Heavy Vehicles or an Enhanced Focus Area for Dense Urban Environments, the Transportation Study shall incorporate the inputs and parameters agreed to at the Methodology Meeting and documented in the revised Methodology Meeting Packet. These inputs may include a Heavy Vehicle modeling percentages, a

Heavy Vehicle route map, a pedestrian crosswalk delay adjustment and a bus blockage adjustment factor.

ADDITIONAL REQUIREMENTS

All applicable requirements of the *GRTA DRI Review Procedures* must be met for the Transportation Study to be considered complete. The *GRTA DRI Review Procedures* are located on GRTA's DRI website: <https://www.srta.ga.gov/programs-projects/dev-of-regional-impact/> Contact GRTA staff if you have any questions on these requirements.

The Transportation Study shall also include as attachments the native LOS modeling file (i.e., Synchro modeling files) as well as the modeling reports (PDFs) for all Study Network intersections for the Existing, No-Build and Build conditions for all phases. The PDF reports shall be numbered (in page headers) and organized in order according to the Study Network numbering sequence in this Letter of Understanding. The reports shall also be organized in the following sequence: *Existing condition AM, Existing condition PM, No-build condition AM, No-Build condition PM, Build condition AM, Build condition PM*. If improvements are modeled, those PDFs shall be labeled as such and follow the appropriate condition's applicable peak period.

The Transportation Study appendices shall also include all turning movement count data, regardless of if using historic data or newly collected turning movement counts.

When documenting any Queue Length impacts required in Section 3.2.3.6, the TIS Executive Summary shall also note any individual *movements* not meeting the LOS standard where the DRI Project adds trips in the Build condition and exceeds available storage capacity for that movement.

When identifying mitigations in the existing, no-build and build conditions, the mitigations identified in preceding conditions shall not be modeled as complete when conducting the LOS analysis. The same mitigation may still be proposed as mitigation in the subsequent condition but it shall not be included as completed in the default analysis. For example, a turn lane may be identified as a needed improvement in the no-build condition. The turn lane should not be modeled as completed in the build condition. The turn lane should only be modeled as complete in the no-build with improvements condition and the build with improvements condition.

DRI REVIEW PACKAGE SUBMITTAL

GRTA will begin reviewing the DRI once the DRI Review Package is submitted and deemed complete. The DRI Review Package includes: the permitting Local Government inputting both Department of Community Affairs (DCA) forms into the DCA DRI website; and the **Traffic Engineer submittal of the GRTA Transportation Study (including LOS appendices, traffic count data and any other required attachments) and Site Plan to GRTA staff and ALL stakeholders included in the CC list of this Letter of Understanding.**

All DRI Review Packages shall be submitted electronically via email to all stakeholders in the CC list of the Letter of Understanding. If the DRI Review Package total file size is greater than 10 MB, the DRI Review Package shall be submitted via email with a FTP link provided for downloading the files.

Please contact me if you have any questions about the Letter of Understanding or the *GRTA DRI Review Procedures*.

Sincerely,

Elizabeth Davis
Transit Planner

Cc:

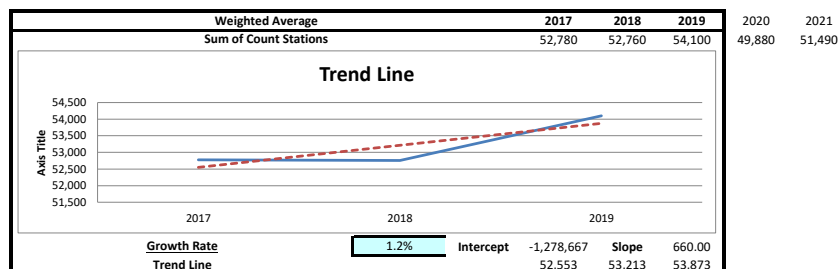
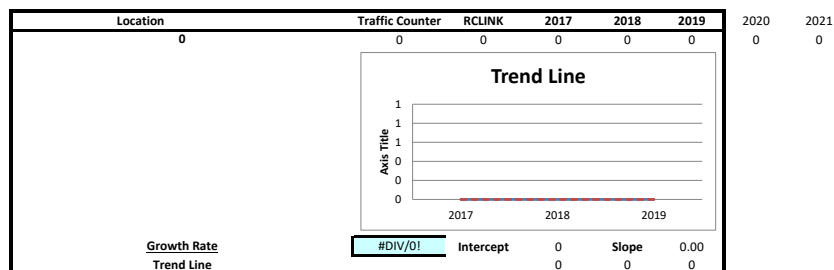
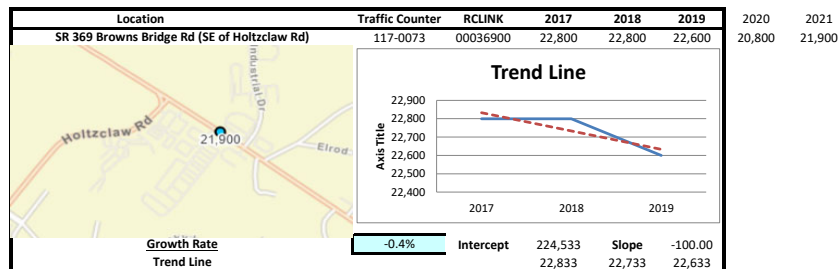
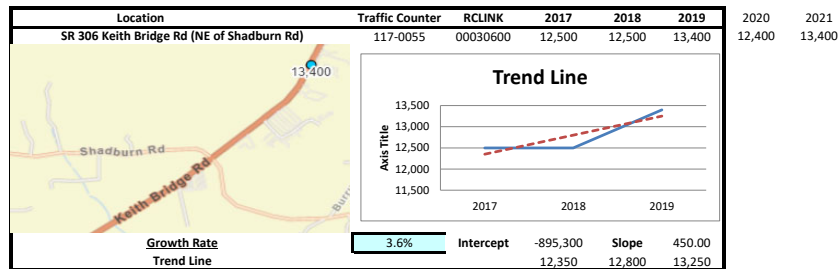
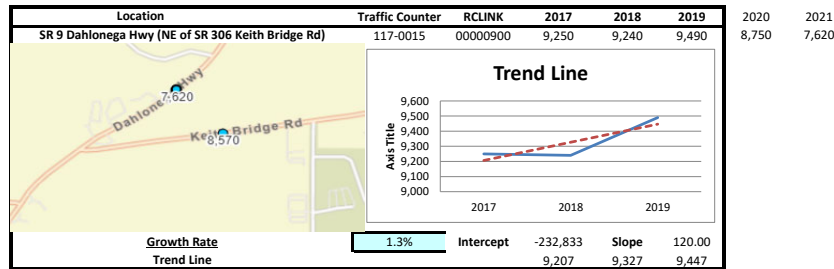
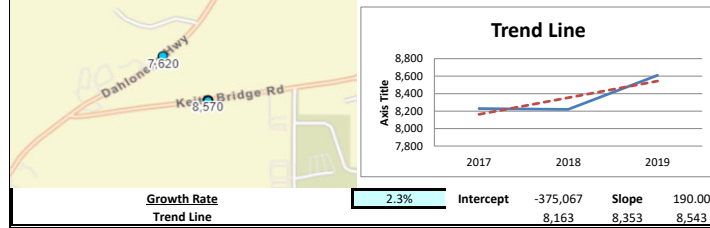
Donald Shockey, ARC
Reginald James, ARC
December Weir, ATL
Leslie D. Silas, Forsyth County
Vanessa Bernstein-Goldman, Forsyth County
Tim L. Allen, Forsyth County

Naser Omer, A&R Engineering
Abdul Amer, A&R Engineering
Jennifer Hathaway, Retail Planning Corp
Owen Brown, Retail Planning Corp

Linear Regression of Daily Traffic

Location	Growth Rate	R Squared	Station ID	Route	2017	2018	2019	2020	2021
SR 306 Keith Bridge Rd (E of SR 306)	2.3%	0.73	117-0051	00030600	8,230	8,220	8,610	7,930	8,570
SR 9 Dahlonga Hwy (NE of SR 306)	1.3%	0.72	117-0015	00009000	9,250	9,240	9,490	8,750	7,620
SR 306 Keith Bridge Rd (NE of Shadburn Rd)	3.6%	0.75	117-0055	00030600	12,500	12,500	13,400	12,400	13,400
SR 369 Browns Bridge Rd (SE of Holtzclaw Rd)	-0.4%	0.75	117-0073	00036900	22,800	22,800	22,600	20,800	21,900

Weighted Average	1.2%	0.74	Sum of Count Stations =	52,780	52,760	54,100	49,880	51,490
Location	Traffic Counter	RCLINK	2017	2018	2019	2020	2021	
SR 306 Keith Bridge Rd (E of SR 9 Dahlonga Hwy)	117-0051	00030600	8,230	8,220	8,610	7,930	8,570	



**Fact Sheets for Planned and Programmed
Improvements**

Short Title

SR 9 (ATLANTA ROAD / PILGRIM MILL ROAD):
SEGMENT 5 - WIDENING FROM SR 20 (BUFORD
HIGHWAY) TO SR 306 (KEITH BRIDGE ROAD)

GDOT Project No.

141890-

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

☐

Planned Thru Lane

4

Flex

☐

Network Year

2030

Corridor Length

2.9 miles



Detailed Description and Justification

This project involves the widening of SR 9 from SR 20 to SR 306. The project is proposed to meet projected travel demand resulting from increased residential development and other travel.

Phase Status & Funding Information		Status	FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
					FEDERAL	STATE	BONDS	LOCAL/PRIVATE
PE	STP - Statewide Flexible (GDOT)	AUTH	2008	\$0,000	\$0,000	\$0,000	\$0,000	\$0,000
ROW	Transportation Funding Act (HB 170)		2024	\$2,921,000	\$0,000	\$2,921,000	\$0,000	\$0,000
CST	Transportation Funding Act (HB 170)		LR 2026-2030	\$8,836,000	\$0,000	\$8,836,000	\$0,000	\$0,000
				\$11,757,000	\$0,000	\$11,757,000	\$0,000	\$0,000

SCP: Scoping PE: Preliminary engineering / engineering / design / planning PE-OV: GDOT oversight services for engineering ROW: Right-of-way Acquisition
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.



Short Title

SPOT ROAD CONNECTOR (NEW ALIGNMENT) FROM
INTERSECTION OF SR 306 AND SR 9 TO
INTERSECTION OF SPOT ROAD AND MCCOY CIRCLE

GDOT Project No.

N/A

Federal ID No.

N/A

Status

Long Range

Service Type

Roadway / General Purpose Capacity

Sponsor

Forsyth County

Jurisdiction

Forsyth County

Analysis Level

In the Region's Air Quality Conformity Analysis

Existing Thru Lane

0

LCI

☐

Planned Thru Lane

4

Flex

☐

Network Year

2040

Corridor Length

2 miles



Detailed Description and Justification

This project would connect Spot Road and SR 9 by way of a new 4 lane road extending from the intersection of Spot Road and McCoy Circle to the intersection of SR 306 and SR 9.

Phase Status & Funding Information		Status	FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
					FEDERAL	STATE	BONDS	LOCAL/PRIVATE
ALL	Local Jurisdiction/Municipality Funds		LR 2031-2040	\$1,056,700	\$0,000	\$0,000	\$0,000	\$1,056,700
				\$1,056,700	\$0,000	\$0,000	\$0,000	\$1,056,700

SCP: Scoping PE: Preliminary engineering / engineering / design / planning PE-OV: GDOT oversight services for engineering ROW: Right-of-way Acquisition
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.



Short Title

SR 369 (BROWNS BRIDGE ROAD) WIDENING: SEGMENT 2 FROM SR 306 (KEITH BRIDGE ROAD) TO HALL COUNTY LINE

GDOT Project No.

0013989

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

☐

Planned Thru Lane

4

Flex

☐

Network Year

2050

Corridor Length

8 miles



Detailed Description and Justification

This project will widen SR 369 (Browns Bridge Road) to 4 lanes from SR 306 to the Hall County line.

Phase Status & Funding Information		Status	FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
					FEDERAL	STATE	BONDS	LOCAL/PRIVATE
ALL	Transportation Funding Act (HB 170)		LR 2041-2050	\$103,009,000	\$0,000	\$103,009,000	\$0,000	\$0,000
				\$103,009,000	\$0,000	\$103,009,000	\$0,000	\$0,000

SCP: Scoping PE: Preliminary engineering / engineering / design / planning PE-OV: GDOT oversight services for engineering ROW: Right-of-way Acquisition
 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.



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

☐

Planned Thru Lane

4

Flex

☐

Network Year

2040

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 originally approved in 1997 as part of the reconstruction 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 Acquisition
 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.



Existing Intersection Analysis

Timings

1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

11/14/2022

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	36	606	110	62	939	42	137	32	62	21	10
Future Volume (vph)	36	606	110	62	939	42	137	32	62	21	10
Lane Group Flow (vph)	38	645	117	66	999	45	146	34	66	22	62
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
v/c Ratio	0.20	0.60	0.12	0.16	0.89	0.04	0.62	0.13	0.19	0.11	0.38
Control Delay	8.8	18.3	1.5	7.0	31.4	0.1	46.2	39.5	1.2	31.5	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	18.3	1.5	7.0	31.4	0.1	46.2	39.5	1.2	31.5	23.1
Queue Length 50th (ft)	7	267	0	12	586	0	81	18	0	11	7
Queue Length 95th (ft)	20	440	17	29	#955	0	133	50	0	30	46
Internal Link Dist (ft)		837			1303			833			239
Turn Bay Length (ft)	165			215		160	140				
Base Capacity (vph)	245	1073	998	451	1123	1038	239	503	534	249	478
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.60	0.12	0.15	0.89	0.04	0.61	0.07	0.12	0.09	0.13

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

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

			
Ø1	Ø2 (R)	Ø3	Ø4
15 s	37.5 s	15 s	32.5 s
			
Ø5	Ø6 (R)	Ø7	Ø8
15 s	37.5 s	15 s	32.5 s

HCM 6th Signalized Intersection Summary

1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

11/14/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	606	110	62	939	42	137	32	62	21	10	48
Future Volume (veh/h)	36	606	110	62	939	42	137	32	62	21	10	48
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	38	645	0	66	999	45	146	34	0	22	11	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	198	1085		439	1102	957	301	226		182	95	
Arrive On Green	0.03	0.59	0.00	0.04	0.60	0.60	0.09	0.12	0.00	0.02	0.05	0.00
Sat Flow, veh/h	1781	1826	1585	1781	1826	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	38	645	0	66	999	45	146	34	0	22	11	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	0.8	22.2	0.0	1.4	47.9	1.2	7.5	1.6	0.0	1.2	0.6	0.0
Cycle Q Clear(g_c), s	0.8	22.2	0.0	1.4	47.9	1.2	7.5	1.6	0.0	1.2	0.6	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	198	1085		439	1102	957	301	226		182	95	
V/C Ratio(X)	0.19	0.59		0.15	0.91	0.05	0.49	0.15		0.12	0.12	
Avail Cap(c_a), veh/h	309	1085		534	1102	957	304	505		311	505	
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)	0.91	0.91	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.0	12.7	0.0	9.5	17.3	8.1	38.1	39.4	0.0	43.5	45.3	0.0
Incr Delay (d2), s/veh	0.4	2.2	0.0	0.2	12.2	0.1	1.2	0.3	0.0	0.3	0.5	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(50%),veh/ln	0.4	8.1	0.0	0.4	19.7	0.4	3.2	0.7	0.0	0.5	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.4	14.9	0.0	9.7	29.6	8.2	39.3	39.7	0.0	43.7	45.9	0.0
LnGrp LOS	B	B		A	C	A	D	D		D	D	
Approach Vol, veh/h		683			1110			180			33	
Approach Delay, s/veh		15.2			27.5			39.4			44.5	
Approach LOS		B			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	65.9	14.8	10.6	9.7	64.9	7.8	17.6				
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	2.8	49.9	9.5	2.6	3.4	24.2	3.2	3.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.1				

Intersection Summary

HCM 6th Ctrl Delay	24.7
HCM 6th LOS	C

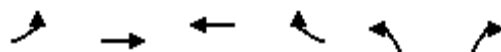
Notes

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

Timings

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

11/14/2022



Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	33	445	1152	51	51	389
Future Volume (vph)	33	445	1152	51	51	389
Lane Group Flow (vph)	35	473	1226	54	54	414
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	87.0	72.0	72.0	33.0	33.0
Total Split (%)	12.5%	72.5%	60.0%	60.0%	27.5%	27.5%
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
v/c Ratio	0.10	0.17	0.46	0.04	0.41	0.70
Control Delay	2.6	2.2	6.5	0.8	61.1	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.6	2.2	6.5	0.8	61.1	11.6
Queue Length 50th (ft)	4	27	180	0	41	0
Queue Length 95th (ft)	10	46	255	7	81	51
Internal Link Dist (ft)		863	837			
Turn Bay Length (ft)	200			280		
Base Capacity (vph)	405	2861	2652	1238	405	957
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.17	0.46	0.04	0.13	0.43

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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)



HCM 6th Signalized Intersection Summary

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

11/14/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 				 			
Traffic Volume (veh/h)	33	445	0	0	1152	51	51	0	389	0	0	0
Future Volume (veh/h)	33	445	0	0	1152	51	51	0	389	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	35	473	0	0	1226	0	54	0	414			
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	329	2558	0	0	2299		305	0	477			
Arrive On Green	0.03	0.74	0.00	0.00	0.66	0.00	0.17	0.00	0.17			
Sat Flow, veh/h	1781	3561	0	0	3561	1585	1781	0	2790			
Grp Volume(v), veh/h	35	473	0	0	1226	0	54	0	414			
Grp Sat Flow(s),veh/h/ln	1781	1735	0	0	1735	1585	1781	0	1395			
Q Serve(g_s), s	0.7	5.0	0.0	0.0	22.1	0.0	3.1	0.0	17.3			
Cycle Q Clear(g_c), s	0.7	5.0	0.0	0.0	22.1	0.0	3.1	0.0	17.3			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	329	2558	0	0	2299		305	0	477			
V/C Ratio(X)	0.11	0.18	0.00	0.00	0.53		0.18	0.00	0.87			
Avail Cap(c_a), veh/h	419	2558	0	0	2299		408	0	639			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	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	7.8	4.8	0.0	0.0	10.6	0.0	42.5	0.0	48.4			
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.0	0.4	0.0	0.3	0.0	9.5			
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(50%),veh/ln	0.2	1.4	0.0	0.0	7.2	0.0	1.4	0.0	6.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.0	4.9	0.0	0.0	10.9	0.0	42.8	0.0	58.0			
LnGrp LOS	A	A	A	A	B		D	A	E			
Approach Vol, veh/h	508			1226			468					
Approach Delay, s/veh	5.2			10.9			56.2					
Approach LOS	A			B			E					
Timer - Assigned Phs	1	2					6	8				
Phs Duration (G+Y+Rc), s	8.9	85.0					94.0	26.0				
Change Period (Y+Rc), s	5.5	5.5					5.5	5.5				
Max Green Setting (Gmax), s	9.5	66.5					81.5	27.5				
Max Q Clear Time (g_c+I1), s	2.7	24.1					7.0	19.3				
Green Ext Time (p_c), s	0.0	20.9					6.4	1.2				
Intersection Summary												
HCM 6th Ctrl Delay	19.2											
HCM 6th LOS	B											

Timings

3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

11/14/2022



Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations	↑↑	↑	↵	↑	↵	↵
Traffic Volume (vph)	434	502	813	359	44	52
Future Volume (vph)	434	502	813	359	44	52
Lane Group Flow (vph)	443	512	830	366	45	53
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)	30.5	30.5	34.0	64.5	35.5	35.5
Total Split (%)	30.5%	30.5%	34.0%	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
v/c Ratio	0.27	0.50	0.82	0.24	0.32	0.26
Control Delay	17.9	3.8	39.8	2.6	48.6	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.9	3.8	39.8	2.6	48.6	6.3
Queue Length 50th (ft)	90	0	251	41	28	0
Queue Length 95th (ft)	145	65	299	76	61	15
Internal Link Dist (ft)	919			863		
Turn Bay Length (ft)		220	260			
Base Capacity (vph)	1661	1029	1058	1528	531	535
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.50	0.78	0.24	0.08	0.10

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: 3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary

3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

11/14/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑					↑		↑
Traffic Volume (veh/h)	0	434	502	813	359	0	0	0	0	44	0	52
Future Volume (veh/h)	0	434	502	813	359	0	0	0	0	44	0	52
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	443	0	830	366	0				45	0	53
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	5	2	2	5	0				2	0	2
Cap, veh/h	0	1803		912	1531	0				92	0	82
Arrive On Green	0.00	0.52	0.00	0.26	0.84	0.00				0.05	0.00	0.05
Sat Flow, veh/h	0	3561	1585	3456	1826	0				1781	0	1585
Grp Volume(v), veh/h	0	443	0	830	366	0				45	0	53
Grp Sat Flow(s),veh/h/ln	0	1735	1585	1728	1826	0				1781	0	1585
Q Serve(g_s), s	0.0	7.0	0.0	23.3	4.1	0.0				2.5	0.0	3.3
Cycle Q Clear(g_c), s	0.0	7.0	0.0	23.3	4.1	0.0				2.5	0.0	3.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1803		912	1531	0				92	0	82
V/C Ratio(X)	0.00	0.25		0.91	0.24	0.00				0.49	0.00	0.65
Avail Cap(c_a), veh/h	0	1803		985	1531	0				534	0	476
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.89	0.89	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.2	0.0	35.7	1.6	0.0				46.1	0.0	46.5
Incr Delay (d2), s/veh	0.0	0.3	0.0	10.6	0.3	0.0				4.0	0.0	8.3
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(50%),veh/ln	0.0	2.5	0.0	10.5	0.5	0.0				1.2	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	13.6	0.0	46.3	2.0	0.0				50.1	0.0	54.9
LnGrp LOS	A	B		D	A	A				D	A	D
Approach Vol, veh/h		443			1196						98	
Approach Delay, s/veh		13.6			32.7						52.7	
Approach LOS		B			C						D	
Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		89.3		10.7	31.9	57.5						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		59.0		30.0	28.5	25.0						
Max Q Clear Time (g_c+I1), s		6.1		5.3	25.3	9.0						
Green Ext Time (p_c), s		4.5		0.2	1.1	4.0						
Intersection Summary												
HCM 6th Ctrl Delay			29.0									
HCM 6th LOS			C									
Notes												
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.												

HCM 6th Roundabout

4: Vanderbilt Way/State Barn Rd & SR 306 (Keith Bridge Rd)

11/14/2022

Intersection					
Intersection Delay, s/veh10.1					
Intersection LOS B					
Approach	EB	WB	NB	SB	
Entry Lanes	1	1	1	1	
Conflicting Circle Lanes	1	1	1	1	
Adj Approach Flow, veh/h	407	428	19	579	
Demand Flow Rate, veh/h	415	437	19	590	
Vehicles Circulating, veh/h	573	9	984	337	
Vehicles Exiting, veh/h	354	994	4	9	
Ped Vol Crossing Leg, #/h	0	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	1.000	
Approach Delay, s/veh	12.9	4.4	7.6	12.3	
Approach LOS	B	A	A	B	
Lane	Left	Left	Bypass	Left	Left
Designated Moves	LTR	LT	R	LTR	LTR
Assumed Moves	LTR	LT	R	LTR	LTR
RT Channelized			Yield		
Lane Util	1.000	1.000		1.000	1.000
Follow-Up Headway, s	2.609	2.609		2.609	2.609
Critical Headway, s	4.976	4.976	100	4.976	4.976
Entry Flow, veh/h	415	337	1367	19	590
Cap Entry Lane, veh/h	769	1367	0.980	506	979
Entry HV Adj Factor	0.981	0.981	98	0.998	0.981
Flow Entry, veh/h	407	330	1340	19	579
Cap Entry, veh/h	754	1341	0.073	505	960
V/C Ratio	0.540	0.246	3.3	0.038	0.603
Control Delay, s/veh	12.9	4.8	A	7.6	12.3
LOS	B	A	0	A	B
95th %tile Queue, veh	3	1		0	4

HCM 6th TWSC
5: Central Park Drwy & SR 306 (Keith Bridge Rd)

11/14/2022

Intersection

Int Delay, s/veh 1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	421	18	31	284	26	26
Future Vol, veh/h	421	18	31	284	26	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	135	110	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	490	21	36	330	30	30

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	511
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1054
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1054
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	15
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	301	578	-	-	1054	-
HCM Lane V/C Ratio	0.1	0.052	-	-	0.034	-
HCM Control Delay (s)	18.3	11.6	-	-	8.5	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0.2	-	-	0.1	-

Timings

6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)

11/14/2022

	WBL	WBR	NBT	SBL	SBT
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	265	13	156	76	507
Future Volume (vph)	265	13	156	76	507
Lane Group Flow (vph)	288	14	386	83	551
Turn Type	Prot	Perm	NA	pm+pt	NA
Protected Phases	8		6	5	2
Permitted Phases		8		2	
Detector Phase	8	8	6	5	2
Switch Phase					
Minimum Initial (s)	6.0	6.0	15.0	5.0	15.0
Minimum Split (s)	23.5	23.5	21.5	15.0	21.5
Total Split (s)	33.0	33.0	42.0	15.0	57.0
Total Split (%)	36.7%	36.7%	46.7%	16.7%	63.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Min	None	C-Min
v/c Ratio	0.74	0.04	0.40	0.14	0.45
Control Delay	43.8	18.8	12.7	7.3	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	43.8	18.8	12.7	7.3	9.9
Queue Length 50th (ft)	153	4	96	15	135
Queue Length 95th (ft)	219	17	202	39	255
Internal Link Dist (ft)	1938		406		484
Turn Bay Length (ft)		25		80	
Base Capacity (vph)	540	487	970	616	1224
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.53	0.03	0.40	0.13	0.45

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Splits and Phases: 6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary 6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)

11/14/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	265	13	156	199	76	507
Future Volume (veh/h)	265	13	156	199	76	507
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	288	14	170	0	83	551
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	332	295	1088		823	1294
Arrive On Green	0.19	0.19	0.58	0.00	0.05	0.69
Sat Flow, veh/h	1781	1585	1870	0	1781	1870
Grp Volume(v), veh/h	288	14	170	0	83	551
Grp Sat Flow(s),veh/h/ln	1781	1585	1870	0	1781	1870
Q Serve(g_s), s	14.1	0.7	3.8	0.0	1.5	11.6
Cycle Q Clear(g_c), s	14.1	0.7	3.8	0.0	1.5	11.6
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	332	295	1088		823	1294
V/C Ratio(X)	0.87	0.05	0.16		0.10	0.43
Avail Cap(c_a), veh/h	544	484	1088		924	1294
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	35.6	30.1	8.7	0.0	5.9	6.1
Incr Delay (d2), s/veh	8.2	0.1	0.3	0.0	0.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.2	1.3	0.0	0.4	3.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.8	30.1	9.0	0.0	5.9	7.1
LnGrp LOS	D	C	A		A	A
Approach Vol, veh/h	302		170			634
Approach Delay, s/veh	43.2		9.0			6.9
Approach LOS	D		A			A
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	67.7		9.9		57.9	22.3
Change Period (Y+Rc), s	5.5		5.5		5.5	5.5
Max Green Setting (Gmax), s	51.5		9.5		36.5	27.5
Max Q Clear Time (g_c+I1), s	13.6		3.5		5.8	16.1
Green Ext Time (p_c), s	7.1		0.1		1.6	0.6

Intersection Summary

HCM 6th Ctrl Delay	17.1
HCM 6th LOS	B

Notes

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

HCM 6th TWSC
7: SR 9 (Dahlonega Hwy) & State Barn Rd

11/14/2022

Intersection

Int Delay, s/veh 4.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	102	154	10	541	533
Future Vol, veh/h	2	102	154	10	541	533
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	106	160	10	564	555

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1848	165	0
Stage 1	165	-	-
Stage 2	1683	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	82	879	-
Stage 1	864	-	-
Stage 2	166	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	49	879	-
Mov Cap-2 Maneuver	49	-	-
Stage 1	864	-	-
Stage 2	99	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	4.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	663	1407
HCM Lane V/C Ratio	-	-	0.163	0.401
HCM Control Delay (s)	-	-	11.5	9.3
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.6	2

HCM 6th TWSC
8: SR 9 (Dahlonega Hwy) & Johnson Dr

11/14/2022

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	4	4	258	1061	4
Future Vol, veh/h	3	4	4	258	1061	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	4	4	269	1105	4
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1384	1107	1109	0	-	0
Stage 1	1107	-	-	-	-	-
Stage 2	277	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	158	256	630	-	-	-
Stage 1	316	-	-	-	-	-
Stage 2	770	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	157	256	630	-	-	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	314	-	-	-	-	-
Stage 2	770	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	23.5	0.2		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	630	-	202	-	-	
HCM Lane V/C Ratio	0.007	-	0.036	-	-	
HCM Control Delay (s)	10.8	0	23.5	-	-	
HCM Lane LOS	B	A	C	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

Timings

9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy

11/14/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	111	4	3	0	104	149	1	632	112
Future Volume (vph)	111	4	3	0	104	149	1	632	112
Lane Group Flow (vph)	119	456	0	5	112	161	1	680	120
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4		8	1	6	5	2	
Permitted Phases	4		8		6		2		2
Detector Phase	7	4	8	8	1	6	5	2	2
Switch Phase									
Minimum Initial (s)	5.0	6.0	6.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	24.5	26.5	26.5	15.0	26.5	15.0	25.5	25.5
Total Split (s)	15.0	41.5	26.5	26.5	15.0	43.5	15.0	43.5	43.5
Total Split (%)	15.0%	41.5%	26.5%	26.5%	15.0%	43.5%	15.0%	43.5%	43.5%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	None	C-Min	C-Min
v/c Ratio	0.39	0.86		0.02	0.29	0.13	0.00	0.64	0.12
Control Delay	36.9	28.2		0.2	8.3	8.6	8.0	21.4	2.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.9	28.2		0.2	8.3	8.6	8.0	21.4	2.2
Queue Length 50th (ft)	68	99		0	19	28	0	265	0
Queue Length 95th (ft)	101	192		0	54	98	3	#619	22
Internal Link Dist (ft)		526		91		941		548	
Turn Bay Length (ft)	250				130		150		130
Base Capacity (vph)	310	761		486	408	1274	863	1061	965
Starvation Cap Reductn	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.60		0.01	0.27	0.13	0.00	0.64	0.12

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

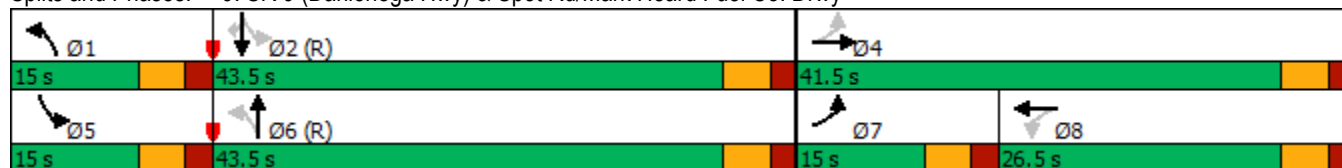
Natural Cycle: 95

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

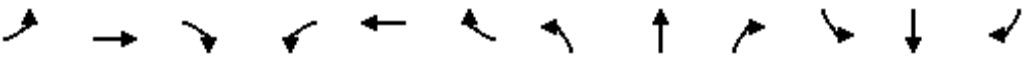
Splits and Phases: 9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy



HCM 6th Signalized Intersection Summary

9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy

11/14/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	4	420	3	0	2	104	149	1	1	632	112
Future Volume (veh/h)	111	4	420	3	0	2	104	149	1	1	632	112
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	119	4	452	3	0	2	112	160	1	1	680	120
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	441	4	491	81	14	25	278	969	6	655	886	751
Arrive On Green	0.07	0.31	0.31	0.19	0.00	0.19	0.05	0.52	0.52	0.00	0.47	0.47
Sat Flow, veh/h	1781	14	1573	124	75	132	1781	1857	12	1781	1870	1585
Grp Volume(v), veh/h	119	0	456	5	0	0	112	0	161	1	680	120
Grp Sat Flow(s),veh/h/ln	1781	0	1587	330	0	0	1781	0	1868	1781	1870	1585
Q Serve(g_s), s	5.2	0.0	27.7	0.1	0.0	0.0	3.1	0.0	4.5	0.0	30.1	4.3
Cycle Q Clear(g_c), s	5.2	0.0	27.7	15.3	0.0	0.0	3.1	0.0	4.5	0.0	30.1	4.3
Prop In Lane	1.00		0.99	0.60		0.40	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	441	0	495	119	0	0	278	0	975	655	886	751
V/C Ratio(X)	0.27	0.00	0.92	0.04	0.00	0.00	0.40	0.00	0.17	0.00	0.77	0.16
Avail Cap(c_a), veh/h	486	0	571	145	0	0	359	0	975	821	886	751
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(l)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.0	0.0	33.2	34.1	0.0	0.0	17.4	0.0	12.5	13.8	21.8	15.0
Incr Delay (d2), s/veh	0.3	0.0	18.9	0.1	0.0	0.0	0.9	0.0	0.4	0.0	6.3	0.5
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(50%),veh/ln	2.1	0.0	12.4	0.1	0.0	0.0	1.1	0.0	1.7	0.0	13.1	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.3	0.0	52.2	34.2	0.0	0.0	18.3	0.0	12.9	13.8	28.1	15.4
LnGrp LOS	C	A	D	C	A	A	B	A	B	B	C	B
Approach Vol, veh/h	575			5			273			801		
Approach Delay, s/veh	47.2			34.2			15.1			26.2		
Approach LOS	D			C			B			C		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.5	52.9		36.7	5.6	57.7	12.5	24.2				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	38.0		36.0	9.5	38.0	9.5	21.0				
Max Q Clear Time (g_c+I1), s	5.1	32.1		29.7	2.0	6.5	7.2	17.3				
Green Ext Time (p_c), s	0.1	3.5		1.4	0.0	1.5	0.1	0.0				
Intersection Summary												
HCM 6th Ctrl Delay				31.7								
HCM 6th LOS				C								

Timings

1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

11/14/2022

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	39	510	273	102	687	24	292	45	199	36	25
Future Volume (vph)	39	510	273	102	687	24	292	45	199	36	25
Lane Group Flow (vph)	40	520	279	104	701	24	298	46	203	37	67
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	34.0	34.0	15.0	34.0	34.0	18.0	33.0	33.0	18.0	33.0
Total Split (%)	15.0%	34.0%	34.0%	15.0%	34.0%	34.0%	18.0%	33.0%	33.0%	18.0%	33.0%
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
v/c Ratio	0.12	0.53	0.28	0.22	0.67	0.02	1.00	0.16	0.49	0.17	0.40
Control Delay	8.5	19.5	2.8	8.6	21.4	0.0	87.7	39.2	10.2	29.9	28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	19.5	2.8	8.6	21.4	0.0	87.7	39.2	10.2	29.9	28.3
Queue Length 50th (ft)	9	219	0	23	332	0	172	27	0	18	16
Queue Length 95th (ft)	23	365	45	48	#554	0	#267	60	64	42	56
Internal Link Dist (ft)		837			1303			833			239
Turn Bay Length (ft)	165			215		160	140				
Base Capacity (vph)	396	988	991	498	1053	982	299	512	582	308	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.53	0.28	0.21	0.67	0.02	1.00	0.09	0.35	0.12	0.14

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

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

			
Ø1	Ø2 (R)	Ø3	Ø4
15 s	34 s	18 s	33 s
			
Ø5	Ø6 (R)	Ø7	Ø8
15 s	34 s	18 s	33 s

HCM 6th Signalized Intersection Summary

1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

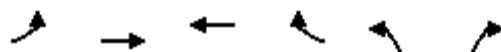
11/14/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	510	273	102	687	24	292	45	199	36	25	40
Future Volume (veh/h)	39	510	273	102	687	24	292	45	199	36	25	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1826	1870	1870	1826	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	40	520	0	104	701	24	298	46	0	37	26	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	5	2	2	5	2	2	2	2	2	2	2
Cap, veh/h	345	1006		484	1030	895	355	281		207	107	
Arrive On Green	0.03	0.55	0.00	0.05	0.56	0.56	0.13	0.15	0.00	0.03	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	40	520	0	104	701	24	298	46	0	37	26	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	1.0	17.9	0.0	2.5	27.1	0.7	12.5	2.1	0.0	1.9	1.3	0.0
Cycle Q Clear(g_c), s	1.0	17.9	0.0	2.5	27.1	0.7	12.5	2.1	0.0	1.9	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	345	1006		484	1030	895	355	281		207	107	
V/C Ratio(X)	0.12	0.52		0.21	0.68	0.03	0.84	0.16		0.18	0.24	
Avail Cap(c_a), veh/h	455	1005		569	1030	895	355	514		372	514	
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)	0.91	0.91	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.4	14.1	0.0	10.4	15.4	9.6	39.1	37.0	0.0	42.4	45.1	0.0
Incr Delay (d2), s/veh	0.1	1.7	0.0	0.2	3.6	0.1	16.1	0.3	0.0	0.4	1.2	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(50%),veh/ln	0.3	6.8	0.0	0.8	10.5	0.2	8.6	1.0	0.0	0.9	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.5	15.8	0.0	10.6	19.0	9.7	55.2	37.3	0.0	42.8	46.2	0.0
LnGrp LOS	B	B		B	B	A	E	D		D	D	
Approach Vol, veh/h	560				829				344			
Approach Delay, s/veh	15.6				17.7				52.8			
Approach LOS	B				B				D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.9	61.9	18.0	11.2	10.2	60.6	8.7	20.5				
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	28.5	12.5	27.5	9.5	28.5	12.5	27.5				
Max Q Clear Time (g_c+I1), s	3.0	29.1	14.5	3.3	4.5	19.9	3.9	4.1				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.1	3.2	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay	24.7											
HCM 6th LOS	C											

Timings

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

11/14/2022



Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	153	349	850	118	234	540
Future Volume (vph)	153	349	850	118	234	540
Lane Group Flow (vph)	163	371	904	126	249	574
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)	21.0	81.0	60.0	60.0	39.0	39.0
Total Split (%)	17.5%	67.5%	50.0%	50.0%	32.5%	32.5%
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
v/c Ratio	0.37	0.15	0.45	0.13	0.76	0.58
Control Delay	8.2	5.9	15.8	2.8	61.1	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	5.9	15.8	2.8	61.1	5.6
Queue Length 50th (ft)	34	41	196	0	185	0
Queue Length 95th (ft)	70	72	295	30	258	48
Internal Link Dist (ft)		863	837			
Turn Bay Length (ft)	200			280		
Base Capacity (vph)	495	2487	2021	982	494	1191
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.15	0.45	0.13	0.50	0.48

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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)



HCM 6th Signalized Intersection Summary 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)

11/14/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	153	349	0	0	850	118	234	0	540	0	0	0
Future Volume (veh/h)	153	349	0	0	850	118	234	0	540	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	163	371	0	0	904	0	249	0	574			
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	419	2344	0	0	1997		414	0	649			
Arrive On Green	0.05	0.68	0.00	0.00	0.58	0.00	0.23	0.00	0.23			
Sat Flow, veh/h	1781	3561	0	0	3561	1585	1781	0	2790			
Grp Volume(v), veh/h	163	371	0	0	904	0	249	0	574			
Grp Sat Flow(s),veh/h/ln	1781	1735	0	0	1735	1585	1781	0	1395			
Q Serve(g_s), s	4.3	4.7	0.0	0.0	17.9	0.0	15.0	0.0	23.9			
Cycle Q Clear(g_c), s	4.3	4.7	0.0	0.0	17.9	0.0	15.0	0.0	23.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	419	2344	0	0	1997		414	0	649			
V/C Ratio(X)	0.39	0.16	0.00	0.00	0.45		0.60	0.00	0.88			
Avail Cap(c_a), veh/h	553	2344	0	0	1997		497	0	779			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.97	0.97	0.00	0.00	0.56	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	10.5	7.1	0.0	0.0	14.6	0.0	41.1	0.0	44.5			
Incr Delay (d2), s/veh	0.6	0.1	0.0	0.0	0.4	0.0	1.4	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(50%),veh/ln	1.5	1.5	0.0	0.0	6.4	0.0	6.6	0.0	9.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.1	7.2	0.0	0.0	15.0	0.0	42.5	0.0	54.9			
LnGrp LOS	B	A	A	A	B		D	A	D			
Approach Vol, veh/h	534			904			823					
Approach Delay, s/veh	8.4			15.0			51.1					
Approach LOS	A			B			D					
Timer - Assigned Phs	1	2					6	8				
Phs Duration (G+Y+Rc), s	12.0	74.6					86.6	33.4				
Change Period (Y+Rc), s	5.5	5.5					5.5	5.5				
Max Green Setting (Gmax), s	15.5	54.5					75.5	33.5				
Max Q Clear Time (g_c+I1), s	6.3	19.9					6.7	25.9				
Green Ext Time (p_c), s	0.3	12.9					4.8	2.1				
Intersection Summary												
HCM 6th Ctrl Delay				26.6								
HCM 6th LOS				C								

Timings

3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

11/14/2022



Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations	↑↑	↑	↵	↑	↵	↑
Traffic Volume (vph)	437	109	560	500	65	37
Future Volume (vph)	437	109	560	500	65	37
Lane Group Flow (vph)	475	118	609	543	71	40
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)	31.5	31.5	33.0	64.5	35.5	35.5
Total Split (%)	31.5%	31.5%	33.0%	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
v/c Ratio	0.26	0.13	0.77	0.36	0.43	0.18
Control Delay	15.0	3.7	42.9	3.8	49.9	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.0	3.7	42.9	3.8	49.9	2.0
Queue Length 50th (ft)	86	0	188	78	44	0
Queue Length 95th (ft)	144	33	231	141	85	3
Internal Link Dist (ft)	919			863		
Turn Bay Length (ft)		220	260			
Base Capacity (vph)	1836	900	952	1501	531	535
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.13	0.64	0.36	0.13	0.07

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

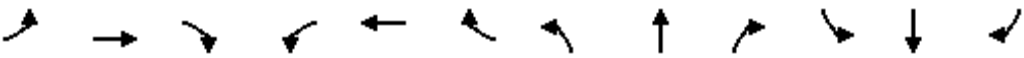
Splits and Phases: 3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary

3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

11/14/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↘↗	↑					↖		↗
Traffic Volume (veh/h)	0	437	109	560	500	0	0	0	0	65	0	37
Future Volume (veh/h)	0	437	109	560	500	0	0	0	0	65	0	37
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	475	0	609	543	0				71	0	40
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	1981		709	1517	0				105	0	93
Arrive On Green	0.00	0.57	0.00	0.21	0.83	0.00				0.06	0.00	0.06
Sat Flow, veh/h	0	3561	1585	3456	1826	0				1781	0	1585
Grp Volume(v), veh/h	0	475	0	609	543	0				71	0	40
Grp Sat Flow(s),veh/h/ln	0	1735	1585	1728	1826	0				1781	0	1585
Q Serve(g_s), s	0.0	6.8	0.0	17.0	7.1	0.0				3.9	0.0	2.4
Cycle Q Clear(g_c), s	0.0	6.8	0.0	17.0	7.1	0.0				3.9	0.0	2.4
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1981		709	1517	0				105	0	93
V/C Ratio(X)	0.00	0.24		0.86	0.36	0.00				0.68	0.00	0.43
Avail Cap(c_a), veh/h	0	1981		950	1517	0				534	0	476
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	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	10.7	0.0	38.3	2.0	0.0				46.1	0.0	45.4
Incr Delay (d2), s/veh	0.0	0.3	0.0	5.3	0.6	0.0				7.4	0.0	3.1
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(50%),veh/ln	0.0	2.3	0.0	7.3	0.9	0.0				1.9	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	11.0	0.0	43.7	2.6	0.0				53.5	0.0	48.5
LnGrp LOS	A	B		D	A	A				D	A	D
Approach Vol, veh/h		475			1152						111	
Approach Delay, s/veh		11.0			24.3						51.7	
Approach LOS		B			C						D	
Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		88.6		11.4	26.0	62.6						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		59.0		30.0	27.5	26.0						
Max Q Clear Time (g_c+I1), s		9.1		5.9	19.0	8.8						
Green Ext Time (p_c), s		7.6		0.3	1.5	4.5						
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.												

HCM 6th Roundabout

4: Vanderbilt Way/State Barn Rd & SR 306 (Keith Bridge Rd)

11/14/2022

Intersection					
Intersection Delay, s/veh 5.6					
Intersection LOS A					
Approach	EB	WB	NB	SB	
Entry Lanes	1	1	1	1	
Conflicting Circle Lanes	1	1	1	1	
Adj Approach Flow, veh/h	396	590	23	229	
Demand Flow Rate, veh/h	404	601	23	233	
Vehicles Circulating, veh/h	214	17	606	280	
Vehicles Exiting, veh/h	299	612	12	14	
Ped Vol Crossing Leg, #/h	0	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	1.000	
Approach Delay, s/veh	7.0	4.6	5.2	5.7	
Approach LOS	A	A	A	A	
Lane	Left	Left	Bypass	Left	Left
Designated Moves	LTR	LT	R	LTR	LTR
Assumed Moves	LTR	LT	R	LTR	LTR
RT Channelized			Yield		
Lane Util	1.000	1.000		1.000	1.000
Follow-Up Headway, s	2.609	2.609		2.609	2.609
Critical Headway, s	4.976	4.976	324	4.976	4.976
Entry Flow, veh/h	404	277	1360	23	233
Cap Entry Lane, veh/h	1109	1356	0.980	744	1037
Entry HV Adj Factor	0.981	0.981	318	0.998	0.983
Flow Entry, veh/h	396	272	1334	23	229
Cap Entry, veh/h	1088	1330	0.238	742	1019
V/C Ratio	0.364	0.204	4.7	0.031	0.225
Control Delay, s/veh	7.0	4.4	A	5.2	5.7
LOS	A	A	1	A	A
95th %tile Queue, veh	2	1		0	1

HCM 6th TWSC
5: Central Park Drwy & SR 306 (Keith Bridge Rd)

11/14/2022

Intersection						
Int Delay, s/veh	2.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	317	75	127	141	12	44
Future Vol, veh/h	317	75	127	141	12	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	135	110	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	382	90	153	170	14	53
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	472	0	858	382
Stage 1	-	-	-	-	382	-
Stage 2	-	-	-	-	476	-
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	-	-	1090	-	327	665
Stage 1	-	-	-	-	690	-
Stage 2	-	-	-	-	625	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1090	-	281	665
Mov Cap-2 Maneuver	-	-	-	-	281	-
Stage 1	-	-	-	-	690	-
Stage 2	-	-	-	-	538	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		4.2		12.5	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	281	665	-	-	1090	-
HCM Lane V/C Ratio	0.051	0.08	-	-	0.14	-
HCM Control Delay (s)	18.5	10.9	-	-	8.8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.3	-	-	0.5	-

Timings

6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)

11/14/2022



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	170	46	508	66	197
Future Volume (vph)	170	46	508	66	197
Lane Group Flow (vph)	181	49	933	70	210
Turn Type	Prot	Perm	NA	pm+pt	NA
Protected Phases	8		6	5	2
Permitted Phases		8		2	
Detector Phase	8	8	6	5	2
Switch Phase					
Minimum Initial (s)	6.0	6.0	15.0	5.0	15.0
Minimum Split (s)	23.5	23.5	21.5	15.0	21.5
Total Split (s)	23.6	23.6	51.4	15.0	66.4
Total Split (%)	26.2%	26.2%	57.1%	16.7%	73.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Min	None	C-Min
v/c Ratio	0.66	0.18	0.85	0.27	0.16
Control Delay	46.7	19.2	25.3	6.8	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	46.7	19.2	25.3	6.8	4.7
Queue Length 50th (ft)	97	11	402	10	32
Queue Length 95th (ft)	158	40	#762	25	63
Internal Link Dist (ft)	1938		406		484
Turn Bay Length (ft)		25		80	
Base Capacity (vph)	355	339	1097	314	1344
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.14	0.85	0.22	0.16

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

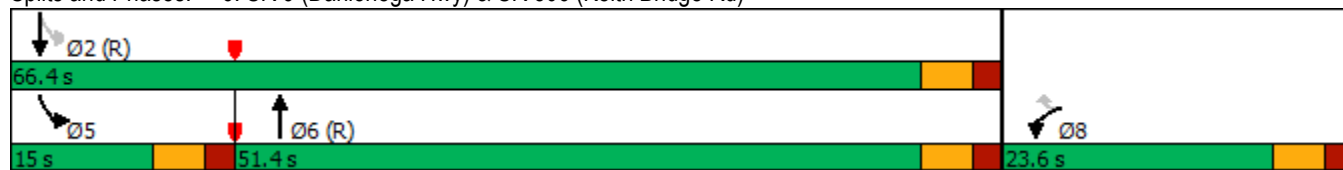
Natural Cycle: 90

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary 6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)

11/14/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	170	46	508	369	66	197
Future Volume (veh/h)	170	46	508	369	66	197
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	181	49	540	0	70	210
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	222	198	1208		597	1409
Arrive On Green	0.12	0.12	0.65	0.00	0.05	0.75
Sat Flow, veh/h	1781	1585	1870	0	1781	1870
Grp Volume(v), veh/h	181	49	540	0	70	210
Grp Sat Flow(s),veh/h/ln	1781	1585	1870	0	1781	1870
Q Serve(g_s), s	8.9	2.5	12.9	0.0	1.1	2.8
Cycle Q Clear(g_c), s	8.9	2.5	12.9	0.0	1.1	2.8
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	222	198	1208		597	1409
V/C Ratio(X)	0.81	0.25	0.45		0.12	0.15
Avail Cap(c_a), veh/h	358	319	1208		703	1409
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	38.4	35.6	7.9	0.0	5.2	3.1
Incr Delay (d2), s/veh	7.4	0.6	1.2	0.0	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.9	4.1	0.0	0.2	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	45.7	36.2	9.1	0.0	5.3	3.3
LnGrp LOS	D	D	A		A	A
Approach Vol, veh/h	230		540			280
Approach Delay, s/veh	43.7		9.1			3.8
Approach LOS	D		A			A
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	73.3		9.6		63.6	16.7
Change Period (Y+Rc), s	5.5		5.5		5.5	5.5
Max Green Setting (Gmax), s	60.9		9.5		45.9	18.1
Max Q Clear Time (g_c+I1), s	4.8		3.1		14.9	10.9
Green Ext Time (p_c), s	2.3		0.1		6.6	0.3

Intersection Summary

HCM 6th Ctrl Delay	15.3
HCM 6th LOS	B

Notes

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

HCM 6th TWSC
7: SR 9 (Dahlonega Hwy) & State Barn Rd

11/14/2022

Intersection						
Int Delay, s/veh	9.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	326	513	5	183	270
Future Vol, veh/h	9	326	513	5	183	270
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	358	564	5	201	297
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1266	567	0	0	569	0
Stage 1	567	-	-	-	-	-
Stage 2	699	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	187	523	-	-	1003	-
Stage 1	568	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	150	523	-	-	1003	-
Mov Cap-2 Maneuver	150	-	-	-	-	-
Stage 1	568	-	-	-	-	-
Stage 2	394	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	31.3	0		3.8		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	490	1003	-	
HCM Lane V/C Ratio	-	-	0.751	0.2	-	
HCM Control Delay (s)	-	-	31.3	9.5	-	
HCM Lane LOS	-	-	D	A	-	
HCM 95th %tile Q(veh)	-	-	6.4	0.7	-	

HCM 6th TWSC
8: SR 9 (Dahlonega Hwy) & Johnson Dr

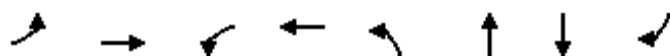
11/14/2022

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	5	10	824	460	2
Future Vol, veh/h	4	5	10	824	460	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	5	11	896	500	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1419	501	502	0	-	0
Stage 1	501	-	-	-	-	-
Stage 2	918	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	151	570	1062	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	389	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	148	570	1062	-	-	-
Mov Cap-2 Maneuver	148	-	-	-	-	-
Stage 1	596	-	-	-	-	-
Stage 2	389	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	19.9	0.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1062	-	251	-	-	
HCM Lane V/C Ratio	0.01	-	0.039	-	-	
HCM Control Delay (s)	8.4	0	19.9	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

Timings

9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy

11/14/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR	Ø5
Lane Configurations									
Traffic Volume (vph)	84	0	1	2	454	431	284	128	
Future Volume (vph)	84	0	1	2	454	431	284	128	
Lane Group Flow (vph)	94	207	0	3	510	484	319	144	
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	NA	Perm	
Protected Phases	7	4		8	1	6	2		5
Permitted Phases	4		8		6			2	
Detector Phase	7	4	8	8	1	6	2	2	
Switch Phase									
Minimum Initial (s)	5.0	6.0	6.0	6.0	5.0	15.0	15.0	15.0	5.0
Minimum Split (s)	15.0	24.5	26.5	26.5	15.0	26.5	25.5	25.5	15.0
Total Split (s)	15.0	41.5	26.5	26.5	30.0	43.5	28.5	28.5	15.0
Total Split (%)	15.0%	41.5%	26.5%	26.5%	30.0%	43.5%	28.5%	28.5%	15%
Yellow Time (s)	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
Lost Time Adjust (s)	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	
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lag	Lag	Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	None
v/c Ratio	0.52	0.30		0.03	0.59	0.33	0.37	0.17	
Control Delay	50.5	1.1		44.7	7.2	4.7	22.1	1.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	50.5	1.1		44.7	7.2	4.7	22.1	1.5	
Queue Length 50th (ft)	58	0		2	72	66	127	0	
Queue Length 95th (ft)	94	0		11	189	171	259	12	
Internal Link Dist (ft)		526		91		941	548		
Turn Bay Length (ft)	250				130			130	
Base Capacity (vph)	193	947		391	876	1452	851	835	
Starvation Cap Reductn	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.49	0.22		0.01	0.58	0.33	0.37	0.17	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

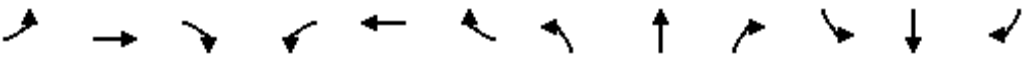
Splits and Phases: 9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy



HCM 6th Signalized Intersection Summary

9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy

11/14/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	0	184	1	2	0	454	431	0	0	284	128
Future Volume (veh/h)	84	0	184	1	2	0	454	431	0	0	284	128
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	0	207	1	2	0	510	484	0	0	319	144
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	305	0	282	65	86	0	723	1332	0	526	928	786
Arrive On Green	0.06	0.00	0.18	0.06	0.06	0.00	0.16	0.71	0.00	0.00	0.50	0.50
Sat Flow, veh/h	1781	0	1585	276	1431	0	1781	1870	0	1781	1870	1585
Grp Volume(v), veh/h	94	0	207	3	0	0	510	484	0	0	319	144
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1707	0	0	1781	1870	0	1781	1870	1585
Q Serve(g_s), s	4.8	0.0	12.3	0.0	0.0	0.0	13.0	10.1	0.0	0.0	10.4	5.0
Cycle Q Clear(g_c), s	4.8	0.0	12.3	0.2	0.0	0.0	13.0	10.1	0.0	0.0	10.4	5.0
Prop In Lane	1.00		1.00	0.33		0.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	305	0	282	150	0	0	723	1332	0	526	928	786
V/C Ratio(X)	0.31	0.00	0.73	0.02	0.00	0.00	0.70	0.36	0.00	0.00	0.34	0.18
Avail Cap(c_a), veh/h	362	0	571	385	0	0	873	1332	0	693	928	786
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	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	38.8	0.0	38.9	44.3	0.0	0.0	9.0	5.6	0.0	0.0	15.3	14.0
Incr Delay (d2), s/veh	0.6	0.0	3.7	0.1	0.0	0.0	2.0	0.8	0.0	0.0	1.0	0.5
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(50%),veh/ln	2.0	0.0	4.8	0.1	0.0	0.0	3.9	2.9	0.0	0.0	4.2	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.3	0.0	42.5	44.3	0.0	0.0	11.0	6.4	0.0	0.0	16.3	14.5
LnGrp LOS	D	A	D	D	A	A	B	A	A	A	B	B
Approach Vol, veh/h	301				3				994			
Approach Delay, s/veh	41.5				44.3				8.8			
Approach LOS	D				D				A			
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.6	55.1		23.3	0.0	76.7	11.8	11.5				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	24.5	23.0		36.0	9.5	38.0	9.5	21.0				
Max Q Clear Time (g_c+I1), s	15.0	12.4		14.3	0.0	12.1	6.8	2.2				
Green Ext Time (p_c), s	1.2	2.9		1.1	0.0	5.4	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	16.3											
HCM 6th LOS	B											

Future “No-Build” Intersection Analysis

Timings

2a. No Build 2027 AM

1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

11/18/2022

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	38	642	117	66	995	45	145	34	66	22	11
Future Volume (vph)	38	642	117	66	995	45	145	34	66	22	11
Lane Group Flow (vph)	40	683	124	70	1059	48	154	36	70	23	66
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	45.0	45.0	15.0	45.0	45.0	27.0	35.0	35.0	25.0	33.0
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%	37.5%	22.5%	29.2%	29.2%	20.8%	27.5%
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
v/c Ratio	0.25	0.60	0.12	0.18	0.92	0.05	0.54	0.13	0.21	0.14	0.44
Control Delay	17.1	16.3	2.4	8.6	38.0	0.1	46.2	44.6	2.1	36.1	27.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	16.3	2.4	8.6	38.0	0.1	46.2	44.6	2.1	36.1	27.5
Queue Length 50th (ft)	6	213	0	16	739	0	103	25	0	14	9
Queue Length 95th (ft)	41	343	4	40	#1210	0	150	54	5	33	53
Internal Link Dist (ft)		837			1303			833			239
Turn Bay Length (ft)	165			215		160	140				
Base Capacity (vph)	203	1137	1014	427	1148	1023	355	457	481	354	416
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.60	0.12	0.16	0.92	0.05	0.43	0.08	0.15	0.06	0.16

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

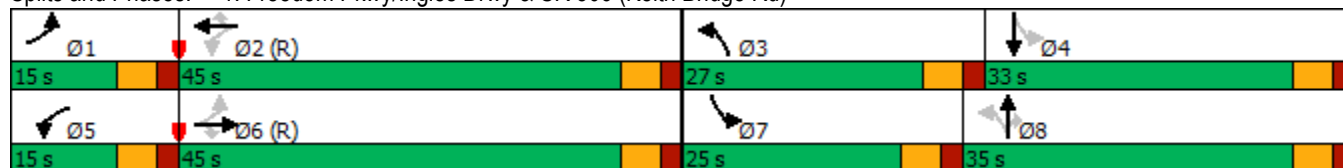
Natural Cycle: 150

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary

1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

2a. No Build 2027 AM
11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	642	117	66	995	45	145	34	66	22	11	51
Future Volume (veh/h)	38	642	117	66	995	45	145	34	66	22	11	51
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	40	683	0	70	1059	48	154	36	0	23	12	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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	1190		609	1203	1019	289	226		162	85	
Arrive On Green	0.06	1.00	0.00	0.04	0.64	0.64	0.10	0.12	0.00	0.02	0.05	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	40	683	0	70	1059	48	154	36	0	23	12	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.9	0.0	0.0	1.6	55.9	1.3	9.5	2.1	0.0	1.5	0.7	0.0
Cycle Q Clear(g_c), s	0.9	0.0	0.0	1.6	55.9	1.3	9.5	2.1	0.0	1.5	0.7	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	205	1190		609	1203	1019	289	226		162	85	
V/C Ratio(X)	0.20	0.57		0.11	0.88	0.05	0.53	0.16		0.14	0.14	
Avail Cap(c_a), veh/h	291	1190		683	1203	1019	434	460		412	429	
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	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.9	0.0	0.0	6.7	17.6	7.9	46.4	47.3	0.0	52.8	55.0	0.0
Incr Delay (d2), s/veh	0.4	1.8	0.0	0.1	9.4	0.1	1.5	0.3	0.0	0.4	0.8	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(50%),veh/ln	0.5	0.6	0.0	0.5	23.0	0.4	4.2	1.0	0.0	0.7	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.3	1.8	0.0	6.7	27.0	8.0	47.9	47.6	0.0	53.2	55.8	0.0
LnGrp LOS	C	A		A	C	A	D	D		D	E	
Approach Vol, veh/h		723			1177			190			35	
Approach Delay, s/veh		2.9			25.0			47.9			54.1	
Approach LOS		A			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.2	82.7	17.2	10.9	10.0	81.8	8.2	20.0				
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	39.5	21.5	27.5	9.5	39.5	19.5	29.5				
Max Q Clear Time (g_c+I1), s	2.9	57.9	11.5	2.7	3.6	2.0	3.5	4.1				
Green Ext Time (p_c), s	0.0	0.0	0.3	0.0	0.1	9.9	0.0	0.1				

Intersection Summary

HCM 6th Ctrl Delay	20.0
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

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

Timings 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)

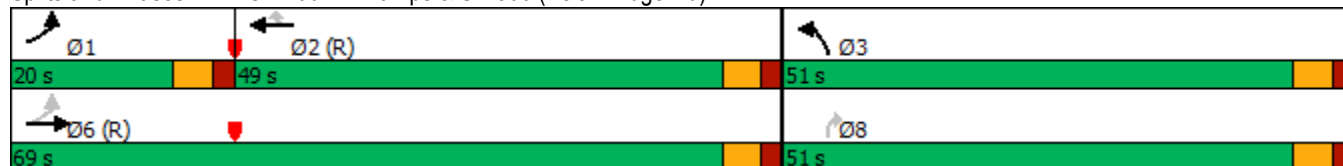
2a. No Build 2027 AM
11/18/2022

						
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations		 	 			 
Traffic Volume (vph)	35	472	1221	54	54	412
Future Volume (vph)	35	472	1221	54	54	412
Lane Group Flow (vph)	37	502	1299	57	57	438
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)	20.0	69.0	49.0	49.0	51.0	51.0
Total Split (%)	16.7%	57.5%	40.8%	40.8%	42.5%	42.5%
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
v/c Ratio	0.11	0.17	0.48	0.05	0.42	0.71
Control Delay	2.8	1.8	4.9	0.9	61.0	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.8	1.8	4.9	0.9	61.0	11.4
Queue Length 50th (ft)	4	27	121	0	43	0
Queue Length 95th (ft)	9	35	m164	m1	85	52
Internal Link Dist (ft)		863	837			
Turn Bay Length (ft)	200			280		
Base Capacity (vph)	441	2938	2731	1238	671	1328
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.17	0.48	0.05	0.08	0.33

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

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



HCM 6th Signalized Intersection Summary
2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)

2a. No Build 2027 AM
11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 				 			
Traffic Volume (veh/h)	35	472	0	0	1221	54	54	0	412	0	0	0
Future Volume (veh/h)	35	472	0	0	1221	54	54	0	412	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	1870	0	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	37	502	0	0	1299	0	57	0	438			
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	2	0	0	2	2	2	0	2			
Cap, veh/h	388	2572	0	0	2305		329	0	515			
Arrive On Green	0.06	1.00	0.00	0.00	1.00	0.00	0.18	0.00	0.18			
Sat Flow, veh/h	1781	3647	0	0	3647	1585	1781	0	2790			
Grp Volume(v), veh/h	37	502	0	0	1299	0	57	0	438			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1585	1781	0	1395			
Q Serve(g_s), s	0.8	0.0	0.0	0.0	0.0	0.0	3.2	0.0	18.2			
Cycle Q Clear(g_c), s	0.8	0.0	0.0	0.0	0.0	0.0	3.2	0.0	18.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	388	2572	0	0	2305		329	0	515			
V/C Ratio(X)	0.10	0.20	0.00	0.00	0.56		0.17	0.00	0.85			
Avail Cap(c_a), veh/h	550	2572	0	0	2305		675	0	1058			
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	0.36	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	5.6	0.0	0.0	0.0	0.0	0.0	41.2	0.0	47.3			
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.0	0.4	0.0	0.2	0.0	4.1			
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(50%),veh/ln	0.2	0.1	0.0	0.0	0.1	0.0	1.4	0.0	6.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.7	0.2	0.0	0.0	0.4	0.0	41.5	0.0	51.4			
LnGrp LOS	A	A	A	A	A		D	A	D			
Approach Vol, veh/h	539			1299			495					
Approach Delay, s/veh	0.5			0.4			50.3					
Approach LOS	A			A			D					
Timer - Assigned Phs	1	2					6	8				
Phs Duration (G+Y+Rc), s	9.0	83.3					92.4	27.6				
Change Period (Y+Rc), s	5.5	5.5					5.5	5.5				
Max Green Setting (Gmax), s	14.5	43.5					63.5	45.5				
Max Q Clear Time (g_c+I1), s	2.8	2.0					2.0	20.2				
Green Ext Time (p_c), s	0.0	22.3					6.8	1.9				

Intersection Summary

HCM 6th Ctrl Delay	11.0
HCM 6th LOS	B

Notes

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

Timings
3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

2a. No Build 2027 AM
11/18/2022

	→	↘	↙	←	↘	↙
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations	↑↑	↑	↘↙	↑	↘	↙
Traffic Volume (vph)	460	532	862	381	47	55
Future Volume (vph)	460	532	862	381	47	55
Lane Group Flow (vph)	469	543	880	389	48	56
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	44.0	84.5	35.5	35.5
Total Split (%)	33.8%	33.8%	36.7%	70.4%	29.6%	29.6%
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
v/c Ratio	0.26	0.52	0.85	0.24	0.38	0.31
Control Delay	19.2	5.1	49.3	3.4	60.7	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	5.1	49.3	3.4	60.7	11.6
Queue Length 50th (ft)	110	20	353	74	36	0
Queue Length 95th (ft)	171	111	376	119	74	28
Internal Link Dist (ft)	919			863		
Turn Bay Length (ft)		220	260			
Base Capacity (vph)	1793	1045	1128	1608	442	450
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.52	0.78	0.24	0.11	0.12

Intersection Summary

Cycle Length: 120

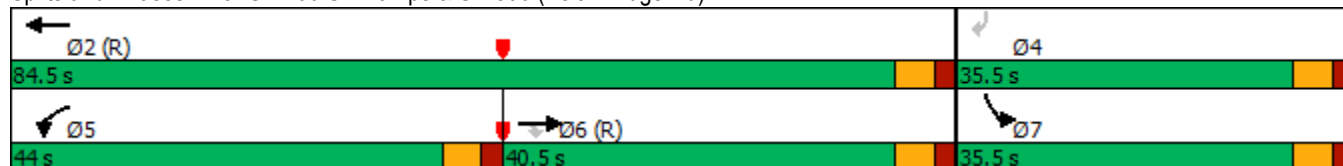
Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Splits and Phases: 3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary 3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

2a. No Build 2027 AM
11/18/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↗↘	↑					↗		↗
Traffic Volume (veh/h)	0	460	532	862	381	0	0	0	0	47	0	55
Future Volume (veh/h)	0	460	532	862	381	0	0	0	0	47	0	55
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	1870	1870	1870	1870	0				1870	0	1870
Adj Flow Rate, veh/h	0	469	0	880	389	0				48	0	56
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	1905		949	1602	0				92	0	82
Arrive On Green	0.00	0.54	0.00	0.46	1.00	0.00				0.05	0.00	0.05
Sat Flow, veh/h	0	3647	1585	3456	1870	0				1781	0	1585
Grp Volume(v), veh/h	0	469	0	880	389	0				48	0	56
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1870	0				1781	0	1585
Q Serve(g_s), s	0.0	8.5	0.0	28.8	0.0	0.0				3.2	0.0	4.2
Cycle Q Clear(g_c), s	0.0	8.5	0.0	28.8	0.0	0.0				3.2	0.0	4.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1905		949	1602	0				92	0	82
V/C Ratio(X)	0.00	0.25		0.93	0.24	0.00				0.52	0.00	0.68
Avail Cap(c_a), veh/h	0	1905		1109	1602	0				445	0	396
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.88	0.88	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.9	0.0	31.3	0.0	0.0				55.4	0.0	55.9
Incr Delay (d2), s/veh	0.0	0.3	0.0	10.8	0.3	0.0				4.5	0.0	9.5
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(50%),veh/ln	0.0	3.2	0.0	10.4	0.1	0.0				1.5	0.0	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.2	0.0	42.1	0.3	0.0				59.9	0.0	65.4
LnGrp LOS	A	B		D	A	A				E	A	E
Approach Vol, veh/h		469			1269						104	
Approach Delay, s/veh		15.2			29.3						62.9	
Approach LOS		B			C						E	
Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		108.3		11.7	38.5	69.8						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		79.0		30.0	38.5	35.0						
Max Q Clear Time (g_c+I1), s		2.0		6.2	30.8	10.5						
Green Ext Time (p_c), s		5.0		0.3	2.2	5.2						
Intersection Summary												
HCM 6th Ctrl Delay				27.6								
HCM 6th LOS				C								

Notes

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

Intersection					
Intersection Delay, s/veh 11.0					
Intersection LOS B					
Approach	EB	WB	NB	SB	
Entry Lanes	1	1	1	1	
Conflicting Circle Lanes	1	1	1	1	
Adj Approach Flow, veh/h	431	454	20	614	
Demand Flow Rate, veh/h	439	461	20	614	
Vehicles Circulating, veh/h	596	9	1031	357	
Vehicles Exiting, veh/h	375	1042	4	9	
Ped Vol Crossing Leg, #/h	0	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	1.000	
Approach Delay, s/veh	14.4	4.5	8.0	13.4	
Approach LOS	B	A	A	B	
Lane	Left	Left	Bypass	Left	Left
Designated Moves	LTR	LT	R	LTR	LTR
Assumed Moves	LTR	LT	R	LTR	LTR
RT Channelized			Yield		
Lane Util	1.000	1.000		1.000	1.000
Follow-Up Headway, s	2.609	2.609		2.609	2.609
Critical Headway, s	4.976	4.976	104	4.976	4.976
Entry Flow, veh/h	439	357	1367	20	614
Cap Entry Lane, veh/h	751	1367	1.000	482	959
Entry HV Adj Factor	0.981	0.981	104	1.000	1.000
Flow Entry, veh/h	431	350	1367	20	614
Cap Entry, veh/h	737	1341	0.076	482	959
V/C Ratio	0.584	0.261	3.2	0.041	0.640
Control Delay, s/veh	14.4	4.9	A	8.0	13.4
LOS	B	A	0	A	B
95th %tile Queue, veh	4	1		0	5

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	446	19	33	301	28	28
Future Vol, veh/h	446	19	33	301	28	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	135	110	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	519	22	38	350	33	33
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	541	0	945	519
Stage 1	-	-	-	-	519	-
Stage 2	-	-	-	-	426	-
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	-	-	1028	-	291	557
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	659	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1028	-	280	557
Mov Cap-2 Maneuver	-	-	-	-	280	-
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	635	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.9		15.7	
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	280	557	-	-	1028	-
HCM Lane V/C Ratio	0.116	0.058	-	-	0.037	-
HCM Control Delay (s)	19.5	11.9	-	-	8.6	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	0.2	-	-	0.1	-

Timings
6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)

2a. No Build 2027 AM
11/18/2022

	WBL	WBR	NBT	SBL	SBT
Lane Group					
Lane Configurations					
Traffic Volume (vph)	281	14	165	81	537
Future Volume (vph)	281	14	165	81	537
Lane Group Flow (vph)	305	15	408	88	584
Turn Type	Prot	Perm	NA	pm+pt	NA
Protected Phases	8		6	5	2
Permitted Phases		8		2	
Detector Phase	8	8	6	5	2
Switch Phase					
Minimum Initial (s)	6.0	6.0	15.0	5.0	15.0
Minimum Split (s)	23.5	23.5	21.5	15.0	21.5
Total Split (s)	40.0	40.0	53.0	17.0	70.0
Total Split (%)	36.4%	36.4%	48.2%	15.5%	63.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Min	None	C-Min
v/c Ratio	0.78	0.04	0.40	0.15	0.46
Control Delay	54.1	24.1	13.3	7.7	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	54.1	24.1	13.3	7.7	10.6
Queue Length 50th (ft)	204	6	124	19	174
Queue Length 95th (ft)	277	21	239	45	308
Internal Link Dist (ft)	1938		406		484
Turn Bay Length (ft)		25		80	
Base Capacity (vph)	555	499	1032	631	1265
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.55	0.03	0.40	0.14	0.46

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary
6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)

2a. No Build 2027 AM
11/18/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	281	14	165	211	81	537
Future Volume (veh/h)	281	14	165	211	81	537
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	305	15	179	0	88	584
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	342	304	1152		834	1324
Arrive On Green	0.19	0.19	0.62	0.00	0.04	0.71
Sat Flow, veh/h	1781	1585	1870	0	1781	1870
Grp Volume(v), veh/h	305	15	179	0	88	584
Grp Sat Flow(s),veh/h/ln	1781	1585	1870	0	1781	1870
Q Serve(g_s), s	18.4	0.8	4.5	0.0	1.9	14.6
Cycle Q Clear(g_c), s	18.4	0.8	4.5	0.0	1.9	14.6
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	342	304	1152		834	1324
V/C Ratio(X)	0.89	0.05	0.16		0.11	0.44
Avail Cap(c_a), veh/h	559	497	1152		945	1324
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	43.3	36.3	9.0	0.0	6.3	6.8
Incr Delay (d2), s/veh	10.3	0.1	0.3	0.0	0.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	0.3	1.6	0.0	0.6	4.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	53.7	36.3	9.3	0.0	6.3	7.9
LnGrp LOS	D	D	A		A	A
Approach Vol, veh/h	320		179			672
Approach Delay, s/veh	52.9		9.3			7.7
Approach LOS	D		A			A
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	83.4		10.2		73.2	26.6
Change Period (Y+Rc), s	5.5		5.5		5.5	5.5
Max Green Setting (Gmax), s	64.5		11.5		47.5	34.5
Max Q Clear Time (g_c+I1), s	16.6		3.9		6.5	20.4
Green Ext Time (p_c), s	8.1		0.1		1.9	0.8
Intersection Summary						
HCM 6th Ctrl Delay			20.3			
HCM 6th LOS			C			

Notes

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

Intersection						
Int Delay, s/veh	4.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	108	163	11	573	565
Future Vol, veh/h	2	108	163	11	573	565
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	2	113	170	11	597	589
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1959	176	0	0	181	0
Stage 1	176	-	-	-	-	-
Stage 2	1783	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	71	872	-	-	1407	-
Stage 1	859	-	-	-	-	-
Stage 2	149	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	41	872	-	-	1407	-
Mov Cap-2 Maneuver	41	-	-	-	-	-
Stage 1	859	-	-	-	-	-
Stage 2	86	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.9	0		4.7		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	637	1407	-	
HCM Lane V/C Ratio	-	-	0.18	0.424	-	
HCM Control Delay (s)	-	-	11.9	9.4	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.7	2.2	-	

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	4	4	273	1125	4
Future Vol, veh/h	3	4	4	273	1125	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	4	4	284	1172	4

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1466	1174	1176	0	-	0
Stage 1	1174	-	-	-	-	-
Stage 2	292	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	141	234	594	-	-	-
Stage 1	294	-	-	-	-	-
Stage 2	758	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	140	234	594	-	-	-
Mov Cap-2 Maneuver	140	-	-	-	-	-
Stage 1	292	-	-	-	-	-
Stage 2	758	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.6	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	594	-	182	-	-
HCM Lane V/C Ratio	0.007	-	0.04	-	-
HCM Control Delay (s)	11.1	0	25.6	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Timings

9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy

2a. No Build 2027 AM

11/18/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	118	4	3	0	110	158	1	670	119
Future Volume (vph)	118	4	3	0	110	158	1	670	119
Lane Group Flow (vph)	127	482	0	5	118	171	1	720	128
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4		8	1	6	5	2	
Permitted Phases	4		8		6		2		2
Detector Phase	7	4	8	8	1	6	5	2	2
Switch Phase									
Minimum Initial (s)	5.0	6.0	6.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	24.5	26.5	26.5	15.0	26.5	15.0	25.5	25.5
Total Split (s)	24.0	51.0	27.0	27.0	15.0	54.0	15.0	54.0	54.0
Total Split (%)	20.0%	42.5%	22.5%	22.5%	12.5%	45.0%	12.5%	45.0%	45.0%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	None	C-Min	C-Min
v/c Ratio	0.35	0.88		0.02	0.34	0.14	0.00	0.68	0.13
Control Delay	40.0	37.6		0.2	10.6	10.2	10.0	25.7	4.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	37.6		0.2	10.6	10.2	10.0	25.7	4.2
Queue Length 50th (ft)	84	177		0	27	40	0	368	2
Queue Length 95th (ft)	120	273		0	68	118	3	#778	40
Internal Link Dist (ft)		526		91		941		548	
Turn Bay Length (ft)	250				130		150		130
Base Capacity (vph)	381	764		374	362	1258	827	1060	954
Starvation Cap Reductn	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.63		0.01	0.33	0.14	0.00	0.68	0.13

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

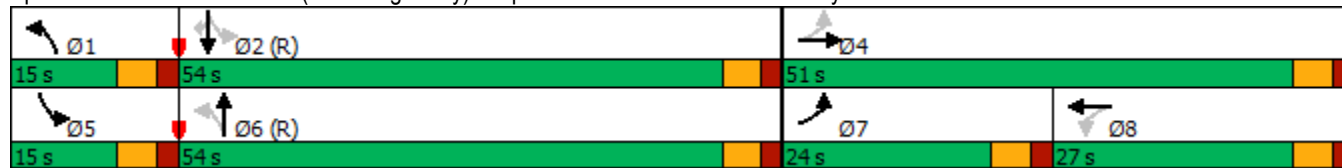
Natural Cycle: 95

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy



HCM 6th Signalized Intersection Summary
9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy

2a. No Build 2027 AM
11/18/2022

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	118	4	445	3	0	2	110	158	1	1	670	119						
Future Volume (veh/h)	118	4	445	3	0	2	110	158	1	1	670	119						
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	127	4	478	3	0	2	118	170	1	1	720	128						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93						
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2						
Cap, veh/h	450	4	513	69	12	22	255	994	6	655	913	774						
Arrive On Green	0.07	0.33	0.33	0.21	0.00	0.21	0.05	0.53	0.53	0.00	0.49	0.49						
Sat Flow, veh/h	1781	13	1574	102	56	105	1781	1857	11	1781	1870	1585						
Grp Volume(v), veh/h	127	0	482	5	0	0	118	0	171	1	720	128						
Grp Sat Flow(s),veh/h/ln	1781	0	1587	262	0	0	1781	0	1868	1781	1870	1585						
Q Serve(g_s), s	6.5	0.0	35.3	0.1	0.0	0.0	3.8	0.0	5.6	0.0	38.4	5.4						
Cycle Q Clear(g_c), s	6.5	0.0	35.3	21.3	0.0	0.0	3.8	0.0	5.6	0.0	38.4	5.4						
Prop In Lane	1.00		0.99	0.60		0.40	1.00		0.01	1.00		1.00						
Lane Grp Cap(c), veh/h	450	0	518	103	0	0	255	0	1000	655	913	774						
V/C Ratio(X)	0.28	0.00	0.93	0.05	0.00	0.00	0.46	0.00	0.17	0.00	0.79	0.17						
Avail Cap(c_a), veh/h	598	0	602	103	0	0	310	0	1000	794	913	774						
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(l)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00						
Uniform Delay (d), s/veh	31.9	0.0	39.1	39.3	0.0	0.0	21.2	0.0	14.3	15.6	25.5	17.1						
Incr Delay (d2), s/veh	0.3	0.0	19.8	0.2	0.0	0.0	1.3	0.0	0.4	0.0	6.9	0.5						
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(50%),veh/ln	2.7	0.0	15.8	0.1	0.0	0.0	1.5	0.0	2.3	0.0	17.3	1.9						
Unsig. Movement Delay, s/veh																		
LnGrp Delay(d),s/veh	32.3	0.0	58.9	39.5	0.0	0.0	22.5	0.0	14.7	15.6	32.4	17.6						
LnGrp LOS	C	A	E	D	A	A	C	A	B	B	C	B						
Approach Vol, veh/h	609			5			289			849								
Approach Delay, s/veh	53.3			39.5			17.8			30.1								
Approach LOS	D			D			B			C								
Timer - Assigned Phs	1	2	4		5	6	7	8										
Phs Duration (G+Y+Rc), s	11.3	64.1	44.6		5.7	69.7	14.0	30.6										
Change Period (Y+Rc), s	5.5	5.5	5.5		5.5	5.5	5.5	5.5										
Max Green Setting (Gmax), s	9.5	48.5	45.5		9.5	48.5	18.5	21.5										
Max Q Clear Time (g_c+I1), s	5.8	40.4	37.3		2.0	7.6	8.5	23.3										
Green Ext Time (p_c), s	0.1	4.8	1.9		0.0	1.8	0.2	0.0										
Intersection Summary																		
HCM 6th Ctrl Delay																		
HCM 6th LOS																		

Timings

2b. No Build 2027 PM

1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

11/18/2022

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	41	541	289	108	728	25	310	48	211	38	27
Future Volume (vph)	41	541	289	108	728	25	310	48	211	38	27
Lane Group Flow (vph)	42	552	295	110	743	26	316	49	215	39	71
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	45.0	45.0	15.0	45.0	45.0	27.0	35.0	35.0	25.0	33.0
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%	37.5%	22.5%	29.2%	29.2%	20.8%	27.5%
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
v/c Ratio	0.15	0.57	0.31	0.26	0.72	0.03	0.83	0.13	0.44	0.21	0.46
Control Delay	10.3	20.2	2.9	11.3	27.4	0.0	57.3	40.7	8.5	34.1	35.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	20.2	2.9	11.3	27.4	0.0	57.3	40.7	8.5	34.1	35.0
Queue Length 50th (ft)	9	211	1	32	443	0	213	32	0	22	21
Queue Length 95th (ft)	27	383	15	62	#693	0	295	67	65	47	67
Internal Link Dist (ft)		837			1303			833			239
Turn Bay Length (ft)	165			215		160	140				
Base Capacity (vph)	321	975	954	434	1039	937	390	468	559	364	421
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.57	0.31	0.25	0.72	0.03	0.81	0.10	0.38	0.11	0.17

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

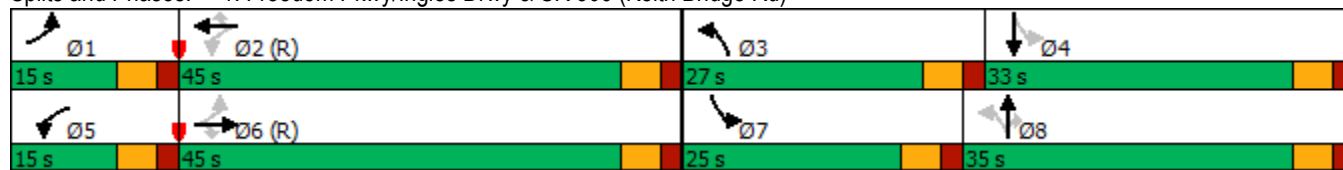
Natural Cycle: 110

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary

1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

2b. No Build 2027 PM
11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	541	289	108	728	25	310	48	211	38	27	42
Future Volume (veh/h)	41	541	289	108	728	25	310	48	211	38	27	42
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	42	552	0	110	743	26	316	49	0	39	28	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	302	1020		604	1042	883	427	370		180	92	
Arrive On Green	0.06	1.00	0.00	0.04	0.56	0.56	0.18	0.20	0.00	0.03	0.05	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	42	552	0	110	743	26	316	49	0	39	28	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	1.2	0.0	0.0	3.2	35.0	0.9	19.5	2.6	0.0	2.5	1.7	0.0
Cycle Q Clear(g_c), s	1.2	0.0	0.0	3.2	35.0	0.9	19.5	2.6	0.0	2.5	1.7	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	302	1020		604	1042	883	427	370		180	92	
V/C Ratio(X)	0.14	0.54		0.18	0.71	0.03	0.74	0.13		0.22	0.31	
Avail Cap(c_a), veh/h	387	1020		668	1042	883	427	460		416	429	
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(l)	0.91	0.91	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	15.5	0.0	0.0	10.8	19.5	12.0	41.7	39.6	0.0	52.0	55.1	0.0
Incr Delay (d2), s/veh	0.2	1.9	0.0	0.1	4.2	0.1	6.7	0.2	0.0	0.6	1.9	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(50%),veh/ln	0.4	0.5	0.0	1.2	14.7	0.3	9.1	1.2	0.0	1.1	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	1.9	0.0	11.0	23.7	12.0	48.4	39.8	0.0	52.6	57.0	0.0
LnGrp LOS	B	A		B	C	B	D	D		D	E	
Approach Vol, veh/h	594			879			365			67		
Approach Delay, s/veh	2.9			21.7			47.3			54.4		
Approach LOS	A			C			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.3	72.4	27.0	11.4	10.7	70.9	9.1	29.2				
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	39.5	21.5	27.5	9.5	39.5	19.5	29.5				
Max Q Clear Time (g_c+I1), s	3.2	37.0	21.5	3.7	5.2	2.0	4.5	4.6				
Green Ext Time (p_c), s	0.0	1.6	0.0	0.1	0.1	7.3	0.0	0.2				

Intersection Summary

HCM 6th Ctrl Delay 21.9
HCM 6th LOS C

Notes

User approved pedestrian interval to be less than phase max green.

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

Timings 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)

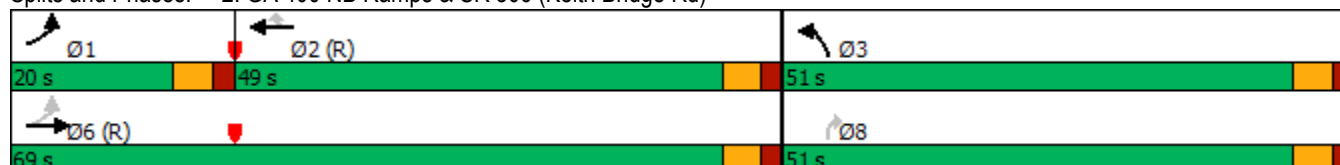
2b. No Build 2027 PM
11/18/2022

						
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	162	370	901	125	248	572
Future Volume (vph)	162	370	901	125	248	572
Lane Group Flow (vph)	172	394	959	133	264	609
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)	20.0	69.0	49.0	49.0	51.0	51.0
Total Split (%)	16.7%	57.5%	40.8%	40.8%	42.5%	42.5%
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
v/c Ratio	0.42	0.16	0.47	0.14	0.76	0.59
Control Delay	17.5	4.5	14.4	3.4	59.1	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.5	4.5	14.4	3.4	59.1	5.3
Queue Length 50th (ft)	22	26	152	8	195	0
Queue Length 95th (ft)	87	34	219	m11	267	47
Internal Link Dist (ft)		863	837			
Turn Bay Length (ft)	200			280		
Base Capacity (vph)	456	2519	2036	967	671	1434
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.16	0.47	0.14	0.39	0.42

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

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



HCM 6th Signalized Intersection Summary
2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)

2b. No Build 2027 PM
11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	162	370	0	0	901	125	248	0	572	0	0	0
Future Volume (veh/h)	162	370	0	0	901	125	248	0	572	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	1870	0	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	172	394	0	0	959	0	264	0	609			
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	2	0	0	2	2	2	0	2			
Cap, veh/h	489	2332	0	0	1955		449	0	704			
Arrive On Green	0.12	1.00	0.00	0.00	1.00	0.00	0.25	0.00	0.25			
Sat Flow, veh/h	1781	3647	0	0	3647	1585	1781	0	2790			
Grp Volume(v), veh/h	172	394	0	0	959	0	264	0	609			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1585	1781	0	1395			
Q Serve(g_s), s	5.0	0.0	0.0	0.0	0.0	0.0	15.6	0.0	25.1			
Cycle Q Clear(g_c), s	5.0	0.0	0.0	0.0	0.0	0.0	15.6	0.0	25.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	489	2332	0	0	1955		449	0	704			
V/C Ratio(X)	0.35	0.17	0.00	0.00	0.49		0.59	0.00	0.87			
Avail Cap(c_a), veh/h	597	2332	0	0	1955		675	0	1058			
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	0.58	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	8.7	0.0	0.0	0.0	0.0	0.0	39.4	0.0	42.9			
Incr Delay (d2), s/veh	0.4	0.2	0.0	0.0	0.5	0.0	1.2	0.0	5.1			
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(50%),veh/ln	1.6	0.0	0.0	0.0	0.1	0.0	6.8	0.0	8.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.1	0.2	0.0	0.0	0.5	0.0	40.6	0.0	48.0			
LnGrp LOS	A	A	A	A	A		D	A	D			
Approach Vol, veh/h	566			959			873					
Approach Delay, s/veh	2.9			0.5			45.8					
Approach LOS	A			A			D					
Timer - Assigned Phs	1	2					6	8				
Phs Duration (G+Y+Rc), s	12.7	71.5					84.2	35.8				
Change Period (Y+Rc), s	5.5	5.5					5.5	5.5				
Max Green Setting (Gmax), s	14.5	43.5					63.5	45.5				
Max Q Clear Time (g_c+I1), s	7.0	2.0					2.0	27.1				
Green Ext Time (p_c), s	0.2	14.9					5.1	3.2				

Intersection Summary

HCM 6th Ctrl Delay	17.5
HCM 6th LOS	B

Notes

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

Timings
3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

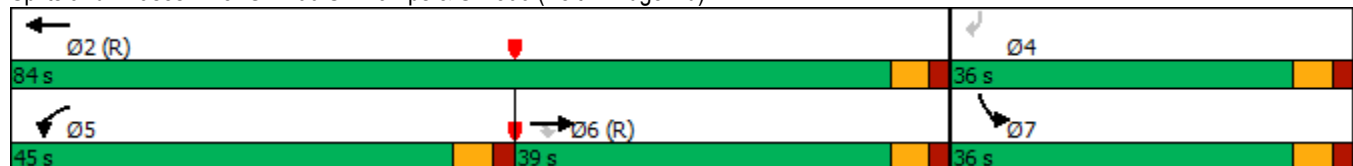
2b. No Build 2027 PM
11/18/2022

	→	↘	↙	←	↘	↙
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations	↑↑	↑	↘↙	↑	↘	↙
Traffic Volume (vph)	463	116	594	530	69	39
Future Volume (vph)	463	116	594	530	69	39
Lane Group Flow (vph)	503	126	646	576	75	42
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)	39.0	39.0	45.0	84.0	36.0	36.0
Total Split (%)	32.5%	32.5%	37.5%	70.0%	30.0%	30.0%
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	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None
v/c Ratio	0.25	0.13	0.80	0.36	0.49	0.21
Control Delay	15.8	3.4	51.7	3.2	62.0	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.8	3.4	51.7	3.2	62.0	5.6
Queue Length 50th (ft)	105	0	241	68	56	0
Queue Length 95th (ft)	169	34	313	138	103	12
Internal Link Dist (ft)	919			863		
Turn Bay Length (ft)		220	260			
Base Capacity (vph)	1982	941	1130	1583	449	456
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.13	0.57	0.36	0.17	0.09

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary

3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

2b. No Build 2027 PM
11/18/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑					↑		↑
Traffic Volume (veh/h)	0	463	116	594	530	0	0	0	0	69	0	39
Future Volume (veh/h)	0	463	116	594	530	0	0	0	0	69	0	39
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	1870	1870	1870	1870	0				1870	0	1870
Adj Flow Rate, veh/h	0	503	0	646	576	0				75	0	42
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	2	2	2	2	0				2	0	2
Cap, veh/h	0	2107		728	1588	0				105	0	94
Arrive On Green	0.00	0.59	0.00	0.35	1.00	0.00				0.06	0.00	0.06
Sat Flow, veh/h	0	3647	1585	3456	1870	0				1781	0	1585
Grp Volume(v), veh/h	0	503	0	646	576	0				75	0	42
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1870	0				1781	0	1585
Q Serve(g_s), s	0.0	8.1	0.0	21.1	0.0	0.0				5.0	0.0	3.1
Cycle Q Clear(g_c), s	0.0	8.1	0.0	21.1	0.0	0.0				5.0	0.0	3.1
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2107		728	1588	0				105	0	94
V/C Ratio(X)	0.00	0.24		0.89	0.36	0.00				0.71	0.00	0.45
Avail Cap(c_a), veh/h	0	2107		1138	1588	0				453	0	403
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	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	11.6	0.0	37.6	0.0	0.0				55.4	0.0	54.6
Incr Delay (d2), s/veh	0.0	0.3	0.0	4.8	0.5	0.0				8.5	0.0	3.3
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(50%),veh/ln	0.0	2.9	0.0	7.7	0.2	0.0				2.4	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	11.9	0.0	42.4	0.5	0.0				64.0	0.0	57.9
LnGrp LOS	A	B		D	A	A				E	A	E
Approach Vol, veh/h		503			1222						117	
Approach Delay, s/veh		11.9			22.6						61.8	
Approach LOS		B			C						E	
Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		107.4		12.6	30.8	76.6						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		78.5		30.5	39.5	33.5						
Max Q Clear Time (g_c+I1), s		2.0		7.0	23.1	10.1						
Green Ext Time (p_c), s		8.5		0.3	2.1	5.6						
Intersection Summary												
HCM 6th Ctrl Delay			22.2									
HCM 6th LOS			C									

Notes

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

Intersection					
Intersection Delay, s/veh 5.8					
Intersection LOS A					
Approach	EB	WB	NB	SB	
Entry Lanes	1	1	1	1	
Conflicting Circle Lanes	1	1	1	1	
Adj Approach Flow, veh/h	420	625	24	242	
Demand Flow Rate, veh/h	428	631	24	242	
Vehicles Circulating, veh/h	222	18	638	298	
Vehicles Exiting, veh/h	318	644	12	15	
Ped Vol Crossing Leg, #/h	0	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	1.000	
Approach Delay, s/veh	7.4	4.7	5.3	5.8	
Approach LOS	A	A	A	A	
Lane	Left	Left	Bypass	Left	Left
Designated Moves	LTR	LT	R	LTR	LTR
Assumed Moves	LTR	LT	R	LTR	LTR
RT Channelized			Yield		
Lane Util	1.000	1.000		1.000	1.000
Follow-Up Headway, s	2.609	2.609		2.609	2.609
Critical Headway, s	4.976	4.976	336	4.976	4.976
Entry Flow, veh/h	428	295	1359	24	242
Cap Entry Lane, veh/h	1100	1355	1.000	720	1018
Entry HV Adj Factor	0.981	0.981	336	1.000	1.000
Flow Entry, veh/h	420	289	1359	24	242
Cap Entry, veh/h	1080	1329	0.247	720	1018
V/C Ratio	0.389	0.218	4.8	0.033	0.238
Control Delay, s/veh	7.4	4.6	A	5.3	5.8
LOS	A	A	1	A	A
95th %tile Queue, veh	2	1		0	1

Intersection						
Int Delay, s/veh	2.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	336	80	135	149	13	47
Future Vol, veh/h	336	80	135	149	13	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	135	110	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	405	96	163	180	16	57
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	501	0	911	405
Stage 1	-	-	-	-	405	-
Stage 2	-	-	-	-	506	-
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	-	-	1063	-	304	646
Stage 1	-	-	-	-	673	-
Stage 2	-	-	-	-	606	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1063	-	257	646
Mov Cap-2 Maneuver	-	-	-	-	257	-
Stage 1	-	-	-	-	673	-
Stage 2	-	-	-	-	513	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		4.3		13	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	257	646	-	-	1063	-
HCM Lane V/C Ratio	0.061	0.088	-	-	0.153	-
HCM Control Delay (s)	19.9	11.1	-	-	9	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.3	-	-	0.5	-

Timings
6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)

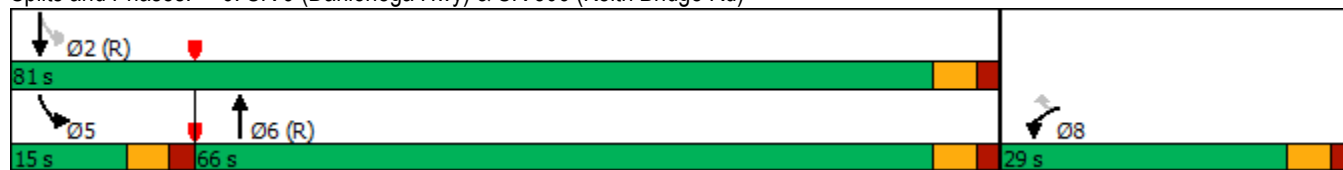
2b. No Build 2027 PM
11/18/2022

					
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	180	49	538	70	209
Future Volume (vph)	180	49	538	70	209
Lane Group Flow (vph)	191	52	988	74	222
Turn Type	Prot	Perm	NA	pm+pt	NA
Protected Phases	8		6	5	2
Permitted Phases		8		2	
Detector Phase	8	8	6	5	2
Switch Phase					
Minimum Initial (s)	6.0	6.0	15.0	5.0	15.0
Minimum Split (s)	23.5	23.5	21.5	15.0	21.5
Total Split (s)	29.0	29.0	66.0	15.0	81.0
Total Split (%)	26.4%	26.4%	60.0%	13.6%	73.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Min	None	C-Min
v/c Ratio	0.70	0.20	0.85	0.29	0.16
Control Delay	57.0	26.1	25.4	7.4	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	57.0	26.1	25.4	7.4	4.9
Queue Length 50th (ft)	129	18	504	12	39
Queue Length 95th (ft)	194	51	#953	30	77
Internal Link Dist (ft)	1938		406		484
Turn Bay Length (ft)		25		80	
Base Capacity (vph)	378	356	1162	291	1388
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.15	0.85	0.25	0.16

Intersection Summary

Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary
6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)

2b. No Build 2027 PM
11/18/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	180	49	538	391	70	209
Future Volume (veh/h)	180	49	538	391	70	209
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	191	52	572	0	74	222
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	226	201	1276		594	1446
Arrive On Green	0.13	0.13	0.68	0.00	0.04	0.77
Sat Flow, veh/h	1781	1585	1870	0	1781	1870
Grp Volume(v), veh/h	191	52	572	0	74	222
Grp Sat Flow(s),veh/h/ln	1781	1585	1870	0	1781	1870
Q Serve(g_s), s	11.5	3.3	15.4	0.0	1.2	3.4
Cycle Q Clear(g_c), s	11.5	3.3	15.4	0.0	1.2	3.4
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	226	201	1276		594	1446
V/C Ratio(X)	0.84	0.26	0.45		0.12	0.15
Avail Cap(c_a), veh/h	381	339	1276		675	1446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	46.9	43.3	8.0	0.0	5.4	3.2
Incr Delay (d2), s/veh	8.4	0.7	1.1	0.0	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	1.3	5.1	0.0	0.3	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	55.3	44.0	9.1	0.0	5.4	3.4
LnGrp LOS	E	D	A		A	A
Approach Vol, veh/h	243		572			296
Approach Delay, s/veh	52.9		9.1			3.9
Approach LOS	D		A			A
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	90.5		10.0		80.5	19.5
Change Period (Y+Rc), s	5.5		5.5		5.5	5.5
Max Green Setting (Gmax), s	75.5		9.5		60.5	23.5
Max Q Clear Time (g_c+l1), s	5.4		3.2		17.4	13.5
Green Ext Time (p_c), s	2.5		0.1		7.7	0.5

Intersection Summary

HCM 6th Ctrl Delay	17.3
HCM 6th LOS	B

Notes

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

Intersection						
Int Delay, s/veh	12					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	346	544	5	194	286
Future Vol, veh/h	10	346	544	5	194	286
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	11	380	598	5	213	314
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1341	601	0	0	603	0
Stage 1	601	-	-	-	-	-
Stage 2	740	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	170	504	-	-	984	-
Stage 1	551	-	-	-	-	-
Stage 2	475	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	133	504	-	-	984	-
Mov Cap-2 Maneuver	133	-	-	-	-	-
Stage 1	551	-	-	-	-	-
Stage 2	372	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	41.3	0		3.9		
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	467	984	-	
HCM Lane V/C Ratio	-	-	0.838	0.217	-	
HCM Control Delay (s)	-	-	41.3	9.7	-	
HCM Lane LOS	-	-	E	A	-	
HCM 95th %tile Q(veh)	-	-	8.3	0.8	-	

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	5	11	873	488	2
Future Vol, veh/h	4	5	11	873	488	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	5	12	949	530	2

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1504	531	532	0	-	0
Stage 1	531	-	-	-	-	-
Stage 2	973	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	134	548	1036	-	-	-
Stage 1	590	-	-	-	-	-
Stage 2	366	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	131	548	1036	-	-	-
Mov Cap-2 Maneuver	131	-	-	-	-	-
Stage 1	576	-	-	-	-	-
Stage 2	366	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.6	0.1	0
HCM LOS	C		

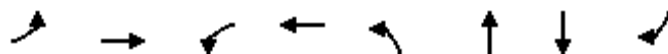
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1036	-	227	-	-
HCM Lane V/C Ratio	0.012	-	0.043	-	-
HCM Control Delay (s)	8.5	0	21.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Timings

9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy

2b. No Build 2027 PM

11/18/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR	Ø5
Lane Configurations									
Traffic Volume (vph)	89	0	1	2	481	457	301	136	
Future Volume (vph)	89	0	1	2	481	457	301	136	
Lane Group Flow (vph)	100	219	0	3	540	513	338	153	
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	NA	Perm	
Protected Phases	7	4		8	1	6	2		5
Permitted Phases	4		8		6			2	
Detector Phase	7	4	8	8	1	6	2	2	
Switch Phase									
Minimum Initial (s)	5.0	6.0	6.0	6.0	5.0	15.0	15.0	15.0	5.0
Minimum Split (s)	15.0	24.5	26.5	26.5	15.0	26.5	25.5	25.5	15.0
Total Split (s)	24.0	51.0	27.0	27.0	15.0	54.0	54.0	54.0	15.0
Total Split (%)	20.0%	42.5%	22.5%	22.5%	12.5%	45.0%	45.0%	45.0%	13%
Yellow Time (s)	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
Lost Time Adjust (s)	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	
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lag	Lag	Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	None
v/c Ratio	0.50	0.35		0.03	0.60	0.35	0.44	0.21	
Control Delay	55.3	1.6		55.0	8.4	5.5	27.5	5.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	55.3	1.6		55.0	8.4	5.5	27.5	5.2	
Queue Length 50th (ft)	75	0		2	93	85	183	5	
Queue Length 95th (ft)	110	0		13	253	229	269	46	
Internal Link Dist (ft)		526		91		941	548		
Turn Bay Length (ft)	250				130			130	
Base Capacity (vph)	291	903		333	894	1465	768	736	
Starvation Cap Reductn	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.34	0.24		0.01	0.60	0.35	0.44	0.21	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy



HCM 6th Signalized Intersection Summary
9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy

2b. No Build 2027 PM
11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	0	195	1	2	0	481	457	0	0	301	136
Future Volume (veh/h)	89	0	195	1	2	0	481	457	0	0	301	136
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	100	0	219	1	2	0	540	513	0	0	338	153
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	280	0	258	54	71	0	687	1395	0	612	1161	984
Arrive On Green	0.07	0.00	0.16	0.05	0.05	0.00	0.08	0.75	0.00	0.00	0.62	0.62
Sat Flow, veh/h	1781	0	1585	275	1428	0	1781	1870	0	1781	1870	1585
Grp Volume(v), veh/h	100	0	219	3	0	0	540	513	0	0	338	153
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1703	0	0	1781	1870	0	1781	1870	1585
Q Serve(g_s), s	6.2	0.0	16.1	0.0	0.0	0.0	9.5	11.5	0.0	0.0	10.0	4.9
Cycle Q Clear(g_c), s	6.2	0.0	16.1	0.2	0.0	0.0	9.5	11.5	0.0	0.0	10.0	4.9
Prop In Lane	1.00		1.00	0.33		0.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	280	0	258	125	0	0	687	1395	0	612	1161	984
V/C Ratio(X)	0.36	0.00	0.85	0.02	0.00	0.00	0.79	0.37	0.00	0.00	0.29	0.16
Avail Cap(c_a), veh/h	436	0	601	326	0	0	687	1395	0	752	1161	984
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	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	47.7	0.0	48.8	54.2	0.0	0.0	12.1	5.3	0.0	0.0	10.5	9.6
Incr Delay (d2), s/veh	0.8	0.0	7.6	0.1	0.0	0.0	6.0	0.7	0.0	0.0	0.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	6.7	0.1	0.0	0.0	5.3	3.5	0.0	0.0	3.9	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.5	0.0	56.5	54.3	0.0	0.0	18.1	6.1	0.0	0.0	11.2	9.9
LnGrp LOS	D	A	E	D	A	A	B	A	A	A	B	A
Approach Vol, veh/h	319			3			1053			491		
Approach Delay, s/veh	54.0			54.3			12.2			10.8		
Approach LOS	D			D			B			B		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	80.0		25.0	0.0	95.0	13.5	11.5				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	48.5		45.5	9.5	48.5	18.5	21.5				
Max Q Clear Time (g_c+I1), s	11.5	12.0		18.1	0.0	13.5	8.2	2.2				
Green Ext Time (p_c), s	0.0	5.3		1.2	0.0	6.4	0.1	0.0				
Intersection Summary												
HCM 6th Ctrl Delay				19.1								
HCM 6th LOS				B								

Future “Build” Intersections Analysis

Timings

3a. Build 2027 AM

1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

11/18/2022

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	38	674	149	66	1044	45	194	34	66	22	11
Future Volume (vph)	38	674	149	66	1044	45	194	34	66	22	11
Lane Group Flow (vph)	40	717	159	70	1111	48	206	36	70	23	66
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	45.0	45.0	15.0	45.0	45.0	27.0	35.0	35.0	25.0	33.0
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%	37.5%	22.5%	29.2%	29.2%	20.8%	27.5%
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
v/c Ratio	0.25	0.66	0.16	0.20	1.01	0.05	0.64	0.11	0.19	0.14	0.44
Control Delay	18.8	21.0	4.8	10.0	56.4	0.1	47.3	41.9	1.8	34.5	27.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.8	21.0	4.8	10.0	56.4	0.1	47.3	41.9	1.8	34.5	27.5
Queue Length 50th (ft)	7	185	3	18	~947	0	136	25	0	14	9
Queue Length 95th (ft)	39	519	31	42	#1321	0	193	53	5	32	53
Internal Link Dist (ft)		837			1303			833			239
Turn Bay Length (ft)	165			215		160	140				
Base Capacity (vph)	203	1091	978	373	1103	987	370	457	481	358	416
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.66	0.16	0.19	1.01	0.05	0.56	0.08	0.15	0.06	0.16

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

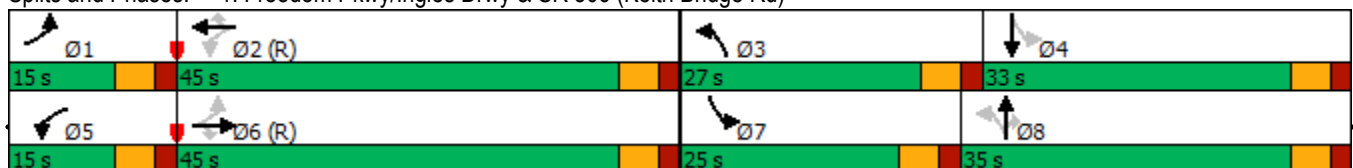
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary
1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

3a. Build 2027 AM

11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	674	149	66	1044	45	194	34	66	22	11	51
Future Volume (veh/h)	38	674	149	66	1044	45	194	34	66	22	11	51
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	40	717	0	70	1111	48	206	36	0	23	12	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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	1138		574	1151	975	338	277		162	85	
Arrive On Green	0.06	1.00	0.00	0.04	0.62	0.62	0.13	0.15	0.00	0.02	0.05	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	40	717	0	70	1111	48	206	36	0	23	12	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	1.0	0.0	0.0	1.7	67.5	1.4	12.8	2.0	0.0	1.5	0.7	0.0
Cycle Q Clear(g_c), s	1.0	0.0	0.0	1.7	67.5	1.4	12.8	2.0	0.0	1.5	0.7	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	140	1138		574	1151	975	338	277		162	85	
V/C Ratio(X)	0.29	0.63		0.12	0.97	0.05	0.61	0.13		0.14	0.14	
Avail Cap(c_a), veh/h	227	1138		648	1151	975	434	460		412	429	
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)	0.96	0.96	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.2	0.0	0.0	7.8	21.9	9.2	44.9	44.4	0.0	52.8	55.0	0.0
Incr Delay (d2), s/veh	1.1	2.5	0.0	0.1	19.4	0.1	1.8	0.2	0.0	0.4	0.8	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(50%),veh/ln	0.7	0.8	0.0	0.6	30.9	0.5	5.6	0.9	0.0	0.7	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.3	2.5	0.0	7.9	41.2	9.2	46.6	44.6	0.0	53.2	55.8	0.0
LnGrp LOS	C	A		A	D	A	D	D		D	E	
Approach Vol, veh/h	757			1229			242			35		
Approach Delay, s/veh	3.9			38.1			46.3			54.1		
Approach LOS	A			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.2	79.4	20.5	10.9	10.0	78.5	8.2	23.3				
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	39.5	21.5	27.5	9.5	39.5	19.5	29.5				
Max Q Clear Time (g_c+I1), s	3.0	69.5	14.8	2.7	3.7	2.0	3.5	4.0				
Green Ext Time (p_c), s	0.0	0.0	0.3	0.0	0.1	10.7	0.0	0.1				

Intersection Summary

HCM 6th Ctrl Delay	27.8
HCM 6th LOS	C

Notes

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

Timings 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)

3a. Build 2027 AM
11/18/2022

						
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations		 	 			 
Traffic Volume (vph)	154	535	1320	54	497	412
Future Volume (vph)	154	535	1320	54	497	412
Lane Group Flow (vph)	164	569	1404	57	529	438
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)	20.0	69.0	49.0	49.0	51.0	51.0
Total Split (%)	16.7%	57.5%	40.8%	40.8%	42.5%	42.5%
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
v/c Ratio	0.72	0.28	0.92	0.08	0.89	0.36
Control Delay	71.9	8.1	31.5	1.5	56.0	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.9	8.1	31.5	1.5	56.0	3.1
Queue Length 50th (ft)	99	48	458	1	380	0
Queue Length 95th (ft)	180	64	m#665	m1	503	35
Internal Link Dist (ft)		863	837			
Turn Bay Length (ft)	200			280		
Base Capacity (vph)	272	2029	1534	727	671	1328
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.28	0.92	0.08	0.79	0.33

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green

Natural Cycle: 90

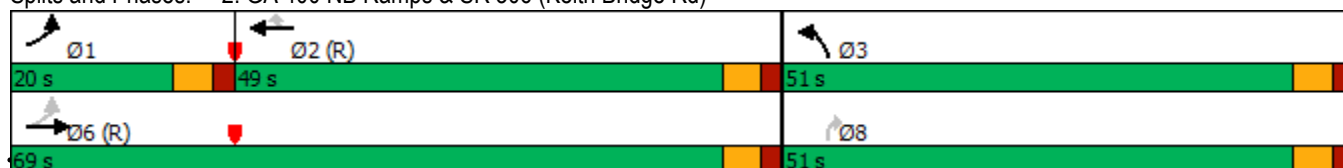
Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

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



HCM 6th Signalized Intersection Summary
2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)

3a. Build 2027 AM
11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	535	0	0	1320	54	497	0	412	0	0	0
Future Volume (veh/h)	154	535	0	0	1320	54	497	0	412	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	1870	0	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	164	569	0	0	1404	0	529	0	438			
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	2	0	0	2	2	2	0	2			
Cap, veh/h	319	2076	0	0	1683		577	0	904			
Arrive On Green	0.13	1.00	0.00	0.00	0.95	0.00	0.32	0.00	0.32			
Sat Flow, veh/h	1781	3647	0	0	3647	1585	1781	0	2790			
Grp Volume(v), veh/h	164	569	0	0	1404	0	529	0	438			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1585	1781	0	1395			
Q Serve(g_s), s	5.6	0.0	0.0	0.0	11.9	0.0	34.3	0.0	15.1			
Cycle Q Clear(g_c), s	5.6	0.0	0.0	0.0	11.9	0.0	34.3	0.0	15.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	319	2076	0	0	1683		577	0	904			
V/C Ratio(X)	0.51	0.27	0.00	0.00	0.83		0.92	0.00	0.48			
Avail Cap(c_a), veh/h	419	2076	0	0	1683		675	0	1058			
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	0.21	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	13.5	0.0	0.0	0.0	2.0	0.0	39.0	0.0	32.5			
Incr Delay (d2), s/veh	1.2	0.3	0.0	0.0	1.1	0.0	15.9	0.0	0.4			
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(50%),veh/ln	1.9	0.1	0.0	0.0	1.3	0.0	17.0	0.0	5.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.6	0.3	0.0	0.0	3.1	0.0	54.9	0.0	32.9			
LnGrp LOS	B	A	A	A	A		D	A	C			
Approach Vol, veh/h	733			1404			967					
Approach Delay, s/veh	3.5			3.1			44.9					
Approach LOS	A			A			D					
Timer - Assigned Phs	1	2					6	8				
Phs Duration (G+Y+Rc), s	13.3	62.3					75.6	44.4				
Change Period (Y+Rc), s	5.5	5.5					5.5	5.5				
Max Green Setting (Gmax), s	14.5	43.5					63.5	45.5				
Max Q Clear Time (g_c+I1), s	7.6	13.9					2.0	36.3				
Green Ext Time (p_c), s	0.2	19.7					8.0	2.6				
Intersection Summary												
HCM 6th Ctrl Delay	16.2											
HCM 6th LOS	B											

Timings 3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

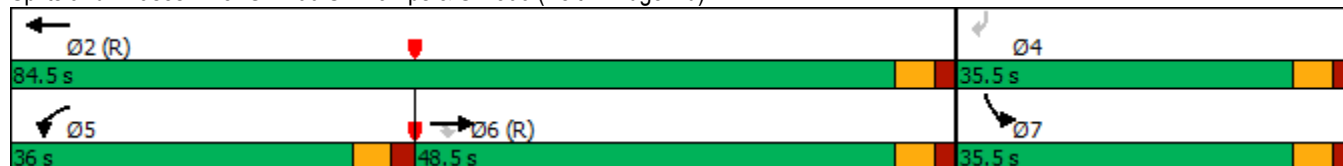
3a. Build 2027 AM
11/18/2022

	→	↘	↙	←	↘	↙
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations	↑↑	↑	↘↙	↑	↘	↙
Traffic Volume (vph)	643	815	862	923	47	242
Future Volume (vph)	643	815	862	923	47	242
Lane Group Flow (vph)	656	832	880	942	48	247
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)	48.5	48.5	36.0	84.5	35.5	35.5
Total Split (%)	40.4%	40.4%	30.0%	70.4%	29.6%	29.6%
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
v/c Ratio	0.42	0.83	0.80	0.63	0.26	0.78
Control Delay	21.9	12.0	43.7	10.4	49.9	34.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	12.0	43.7	10.4	49.9	34.1
Queue Length 50th (ft)	155	101	352	210	35	60
Queue Length 95th (ft)	m184	m130	m410	m480	68	142
Internal Link Dist (ft)	919			863		
Turn Bay Length (ft)		220	260			
Base Capacity (vph)	1545	998	1096	1494	442	521
Starvation Cap Reductn	0	0	0	28	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.83	0.80	0.64	0.11	0.47

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

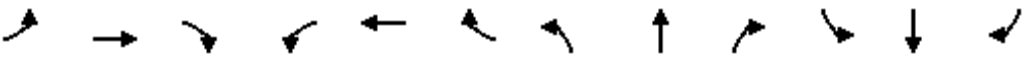


HCM 6th Signalized Intersection Summary

3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

3a. Build 2027 AM

11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑					↑		↑
Traffic Volume (veh/h)	0	643	815	862	923	0	0	0	0	47	0	242
Future Volume (veh/h)	0	643	815	862	923	0	0	0	0	47	0	242
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	1870	1870	1870	1870	0				1870	0	1870
Adj Flow Rate, veh/h	0	656	0	880	942	0				48	0	247
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	1542		878	1373	0				311	0	277
Arrive On Green	0.00	0.43	0.00	0.42	1.00	0.00				0.17	0.00	0.17
Sat Flow, veh/h	0	3647	1585	3456	1870	0				1781	0	1585
Grp Volume(v), veh/h	0	656	0	880	942	0				48	0	247
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1870	0				1781	0	1585
Q Serve(g_s), s	0.0	15.4	0.0	30.5	0.0	0.0				2.7	0.0	18.3
Cycle Q Clear(g_c), s	0.0	15.4	0.0	30.5	0.0	0.0				2.7	0.0	18.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1542		878	1373	0				311	0	277
V/C Ratio(X)	0.00	0.43		1.00	0.69	0.00				0.15	0.00	0.89
Avail Cap(c_a), veh/h	0	1542		878	1373	0				445	0	396
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.19	0.00	0.29	0.29	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	23.6	0.0	34.5	0.0	0.0				42.0	0.0	48.4
Incr Delay (d2), s/veh	0.0	0.2	0.0	16.8	0.8	0.0				0.2	0.0	16.5
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(50%),veh/ln	0.0	6.1	0.0	11.9	0.3	0.0				1.2	0.0	16.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	23.8	0.0	51.3	0.8	0.0				42.2	0.0	65.0
LnGrp LOS	A	C		F	A	A				D	A	E
Approach Vol, veh/h		656			1822						295	
Approach Delay, s/veh		23.8			25.2						61.3	
Approach LOS		C			C						E	
Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		93.6		26.4	36.0	57.6						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		79.0		30.0	30.5	43.0						
Max Q Clear Time (g_c+I1), s		2.0		20.3	32.5	17.4						
Green Ext Time (p_c), s		21.0		0.7	0.0	7.8						
Intersection Summary												
HCM 6th Ctrl Delay			28.7									
HCM 6th LOS			C									
Notes												
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.												

HCM 6th Roundabout
4: Vanderbilt Way/State Barn Rd & SR 306 (Keith Bridge Rd)

3a. Build 2027 AM

11/18/2022

Intersection					
Intersection Delay, s/veh31.9					
Intersection LOS D					
Approach	EB	WB	NB	SB	
Entry Lanes	1	1	1	1	
Conflicting Circle Lanes	1	1	1	1	
Adj Approach Flow, veh/h	585	658	30	866	
Demand Flow Rate, veh/h	595	666	31	866	
Vehicles Circulating, veh/h	788	98	1372	396	
Vehicles Exiting, veh/h	474	1305	11	98	
Ped Vol Crossing Leg, #/h	0	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	1.000	
Approach Delay, s/veh	53.8	5.4	12.5	37.9	
Approach LOS	F	A	B	E	
Lane	Left	Left	Bypass	Left	Left
Designated Moves	LTR	LT	R	LTR	LTR
Assumed Moves	LTR	LT	R	LTR	LTR
RT Channelized			Yield		
Lane Util	1.000	1.000		1.000	1.000
Follow-Up Headway, s	2.609	2.609		2.609	2.609
Critical Headway, s	4.976	4.976	270	4.976	4.976
Entry Flow, veh/h	595	396	1249	31	866
Cap Entry Lane, veh/h	618	1249	1.000	341	921
Entry HV Adj Factor	0.984	0.981	270	0.968	1.000
Flow Entry, veh/h	585	388	1249	30	866
Cap Entry, veh/h	608	1225	0.216	330	921
V/C Ratio	0.963	0.317	4.8	0.091	0.940
Control Delay, s/veh	53.8	5.9	A	12.5	37.9
LOS	F	A	1	B	E
95th %tile Queue, veh	13	1		0	15

Intersection						
Int Delay, s/veh	1.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	584	19	40	389	28	38
Future Vol, veh/h	584	19	40	389	28	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	135	110	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	679	22	47	452	33	44

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	701
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	896
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	896
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	19.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	188	452	-	-	896	-
HCM Lane V/C Ratio	0.173	0.098	-	-	0.052	-
HCM Control Delay (s)	28.1	13.8	-	-	9.2	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.6	0.3	-	-	0.2	-

Timings

3a. Build 2027 AM

11/18/2022

6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)

	WBL	WBR	NBT	SBL	SBT
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	369	14	165	81	537
Future Volume (vph)	369	14	165	81	537
Lane Group Flow (vph)	401	15	558	88	584
Turn Type	Prot	Perm	NA	pm+pt	NA
Protected Phases	8		6	5	2
Permitted Phases		8		2	
Detector Phase	8	8	6	5	2
Switch Phase					
Minimum Initial (s)	6.0	6.0	15.0	5.0	15.0
Minimum Split (s)	23.5	23.5	21.5	15.0	21.5
Total Split (s)	46.0	46.0	49.0	15.0	64.0
Total Split (%)	41.8%	41.8%	44.5%	13.6%	58.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Min	None	C-Min
v/c Ratio	0.82	0.03	0.59	0.21	0.50
Control Delay	50.7	21.1	19.8	11.0	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	50.7	21.1	19.8	11.0	14.5
Queue Length 50th (ft)	264	6	217	23	210
Queue Length 95th (ft)	342	20	409	53	367
Internal Link Dist (ft)	1938		406		484
Turn Bay Length (ft)		25		80	
Base Capacity (vph)	651	585	939	432	1161
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.62	0.03	0.59	0.20	0.50

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Splits and Phases: 6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary
6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)

3a. Build 2027 AM
11/18/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	369	14	165	349	81	537
Future Volume (veh/h)	369	14	165	349	81	537
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	401	15	179	0	88	584
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	439	391	1049		761	1222
Arrive On Green	0.25	0.25	0.56	0.00	0.04	0.65
Sat Flow, veh/h	1781	1585	1870	0	1781	1870
Grp Volume(v), veh/h	401	15	179	0	88	584
Grp Sat Flow(s),veh/h/ln	1781	1585	1870	0	1781	1870
Q Serve(g_s), s	24.1	0.8	5.1	0.0	2.2	17.3
Cycle Q Clear(g_c), s	24.1	0.8	5.1	0.0	2.2	17.3
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	439	391	1049		761	1222
V/C Ratio(X)	0.91	0.04	0.17		0.12	0.48
Avail Cap(c_a), veh/h	656	584	1049		840	1222
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	40.3	31.5	11.7	0.0	8.5	9.6
Incr Delay (d2), s/veh	12.7	0.0	0.4	0.0	0.1	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	0.3	2.0	0.0	0.7	6.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	53.0	31.6	12.1	0.0	8.6	10.9
LnGrp LOS	D	C	B		A	B
Approach Vol, veh/h	416		179			672
Approach Delay, s/veh	52.2		12.1			10.6
Approach LOS	D		B			B
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	77.4		10.2		67.2	32.6
Change Period (Y+Rc), s	5.5		5.5		5.5	5.5
Max Green Setting (Gmax), s	58.5		9.5		43.5	40.5
Max Q Clear Time (g_c+I1), s	19.3		4.2		7.1	26.1
Green Ext Time (p_c), s	7.8		0.1		1.8	1.0

Intersection Summary

HCM 6th Ctrl Delay	24.5
HCM 6th LOS	C

Notes

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

Intersection						
Int Delay, s/veh	5.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	171	163	11	672	565
Future Vol, veh/h	2	171	163	11	672	565
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Yield	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	2	178	170	11	700	589
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	2165	176	0	0	170	0
Stage 1	176	-	-	-	-	-
Stage 2	1989	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	53	872	-	-	1420	-
Stage 1	859	-	-	-	-	-
Stage 2	118	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	27	872	-	-	1420	-
Mov Cap-2 Maneuver	27	-	-	-	-	-
Stage 1	859	-	-	-	-	-
Stage 2	60	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12.8	0		5.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-		640	1420	
HCM Lane V/C Ratio	-	-		0.282	0.493	
HCM Control Delay (s)	-	-		12.8	10	
HCM Lane LOS	-	-		B	A	
HCM 95th %tile Q(veh)	-	-		1.2	2.8	

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	14	11	329	1213	4
Future Vol, veh/h	3	14	11	329	1213	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	15	11	343	1264	4
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1631	1266	1268	0	-	0
Stage 1	1266	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	112	206	548	-	-	-
Stage 1	265	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	109	206	548	-	-	-
Mov Cap-2 Maneuver	109	-	-	-	-	-
Stage 1	258	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	27.4	0.4		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	548	-	178	-	-	
HCM Lane V/C Ratio	0.021	-	0.099	-	-	
HCM Control Delay (s)	11.7	0	27.4	-	-	
HCM Lane LOS	B	A	D	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-	

Timings

3a. Build 2027 AM

9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy

11/18/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	118	4	3	0	135	190	1	719	119
Future Volume (vph)	118	4	3	0	135	190	1	719	119
Lane Group Flow (vph)	127	524	0	5	145	205	1	773	128
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4		8	1	6	5	2	
Permitted Phases	4		8		6		2		2
Detector Phase	7	4	8	8	1	6	5	2	2
Switch Phase									
Minimum Initial (s)	5.0	6.0	6.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	24.5	26.5	26.5	15.0	26.5	15.0	25.5	25.5
Total Split (s)	24.0	51.0	27.0	27.0	15.0	54.0	15.0	54.0	54.0
Total Split (%)	20.0%	42.5%	22.5%	22.5%	12.5%	45.0%	12.5%	45.0%	45.0%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	None	C-Min	C-Min
v/c Ratio	0.30	0.89		0.02	0.56	0.17	0.00	0.79	0.14
Control Delay	35.1	39.1		0.2	21.0	12.5	12.0	33.7	4.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.1	39.1		0.2	21.0	12.5	12.0	33.7	4.6
Queue Length 50th (ft)	79	222		0	39	57	0	481	2
Queue Length 95th (ft)	113	318		0	107	151	3	#879	40
Internal Link Dist (ft)		526		91		941		548	
Turn Bay Length (ft)	250				130		150		130
Base Capacity (vph)	437	756		319	267	1183	753	974	887
Starvation Cap Reductn	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.69		0.02	0.54	0.17	0.00	0.79	0.14

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

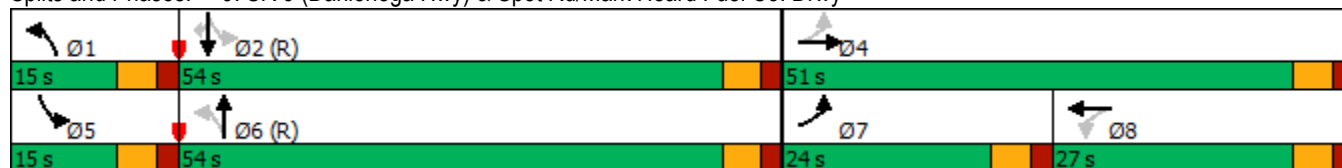
Natural Cycle: 105

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy



HCM 6th Signalized Intersection Summary
9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy

3a. Build 2027 AM

11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	4	484	3	0	2	135	190	1	1	719	119
Future Volume (veh/h)	118	4	484	3	0	2	135	190	1	1	719	119
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	127	4	520	3	0	2	145	204	1	1	773	128
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	474	4	550	66	12	20	208	951	5	594	850	720
Arrive On Green	0.07	0.35	0.35	0.23	0.00	0.23	0.06	0.51	0.51	0.00	0.45	0.45
Sat Flow, veh/h	1781	12	1575	79	50	86	1781	1860	9	1781	1870	1585
Grp Volume(v), veh/h	127	0	524	5	0	0	145	0	205	1	773	128
Grp Sat Flow(s),veh/h/ln	1781	0	1587	214	0	0	1781	0	1869	1781	1870	1585
Q Serve(g_s), s	6.3	0.0	38.5	0.1	0.0	0.0	5.0	0.0	7.2	0.0	46.1	5.8
Cycle Q Clear(g_c), s	6.3	0.0	38.5	24.8	0.0	0.0	5.0	0.0	7.2	0.0	46.1	5.8
Prop In Lane	1.00		0.99	0.60		0.40	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	474	0	555	98	0	0	208	0	956	594	850	720
V/C Ratio(X)	0.27	0.00	0.94	0.05	0.00	0.00	0.70	0.00	0.21	0.00	0.91	0.18
Avail Cap(c_a), veh/h	625	0	602	98	0	0	244	0	956	732	850	720
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.8	0.0	37.9	37.6	0.0	0.0	26.5	0.0	16.1	17.8	30.4	19.4
Incr Delay (d2), s/veh	0.3	0.0	23.0	0.2	0.0	0.0	6.9	0.0	0.5	0.0	15.4	0.5
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(50%),veh/ln	2.6	0.0	17.5	0.1	0.0	0.0	2.2	0.0	3.0	0.0	22.6	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.1	0.0	60.9	37.8	0.0	0.0	33.4	0.0	16.6	17.8	45.8	20.0
LnGrp LOS	C	A	E	D	A	A	C	A	B	B	D	B
Approach Vol, veh/h	651		5				350				902	
Approach Delay, s/veh	54.9		37.8				23.6				42.1	
Approach LOS	D		D				C				D	
Timer - Assigned Phs	1	2	4		5	6	7	8				
Phs Duration (G+Y+Rc), s	12.5	60.0	47.4		5.7	66.9	13.8	33.6				
Change Period (Y+Rc), s	5.5	5.5	5.5		5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	48.5	45.5		9.5	48.5	18.5	21.5				
Max Q Clear Time (g_c+I1), s	7.0	48.1	40.5		2.0	9.2	8.3	26.8				
Green Ext Time (p_c), s	0.1	0.3	1.5		0.0	2.1	0.2	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	43.1											
HCM 6th LOS	D											

Intersection												
Int Delay, s/veh	5.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔	↔	↔	↔	↔	↔	
Traffic Vol, veh/h	9	10	77	62	10	27	36	137	84	66	617	4
Future Vol, veh/h	9	10	77	62	10	27	36	137	84	66	617	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	150	-	-	150	135	-	75	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	10	11	84	67	11	29	39	149	91	72	671	4
Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	1110	1135	673	1092	1046	149	675	0	0	240	0	0
Stage 1	817	817	-	227	227	-	-	-	-	-	-	-
Stage 2	293	318	-	865	819	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	188	204	459	194	230	903	926	-	-	1339	-	-
Stage 1	373	393	-	780	720	-	-	-	-	-	-	-
Stage 2	719	657	-	351	392	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	162	185	459	141	208	903	926	-	-	1339	-	-
Mov Cap-2 Maneuver	162	185	-	141	208	-	-	-	-	-	-	-
Stage 1	357	372	-	747	690	-	-	-	-	-	-	-
Stage 2	656	629	-	264	371	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB		SB		SB	
HCM Control Delay, s	17.4		41.6		1.3		0.8					
HCM LOS	C		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR		
Capacity (veh/h)	926	-	-	173	459	148	903	1339	-	-		
HCM Lane V/C Ratio	0.042	-	-	0.119	0.182	0.529	0.033	0.054	-	-		
HCM Control Delay (s)	9.1	-	-	28.6	14.6	53.8	9.1	7.8	-	-		
HCM Lane LOS	A	-	-	D	B	F	A	A	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.7	2.6	0.1	0.2	-	-		

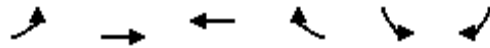
Intersection												
Int Delay, s/veh	8.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔	↔	↔	↔	↔	↔	
Traffic Vol, veh/h	9	10	77	68	10	27	36	221	97	66	686	4
Future Vol, veh/h	9	10	77	68	10	27	36	221	97	66	686	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	150	-	-	150	135	-	75	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	10	11	84	74	11	29	39	240	105	72	746	4
Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	1283	1315	748	1258	1212	240	750	0	0	345	0	0
Stage 1	892	892	-	318	318	-	-	-	-	-	-	-
Stage 2	391	423	-	940	894	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	143	159	416	149	184	804	868	-	-	1225	-	-
Stage 1	339	363	-	698	657	-	-	-	-	-	-	-
Stage 2	637	591	-	319	362	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	121	143	416	104	165	804	868	-	-	1225	-	-
Mov Cap-2 Maneuver	121	143	-	104	165	-	-	-	-	-	-	-
Stage 1	324	342	-	667	627	-	-	-	-	-	-	-
Stage 2	576	564	-	232	341	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB		SB		SB	
HCM Control Delay, s	20.1		81.7		1		0.7		0.7		0.7	
HCM LOS	C		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR		
Capacity (veh/h)	868	-	-	132	416	109	804	1225	-	-		
HCM Lane V/C Ratio	0.045	-	-	0.156	0.201	0.778	0.037	0.059	-	-		
HCM Control Delay (s)	9.3	-	-	37.3	15.8	106.6	9.6	8.1	-	-		
HCM Lane LOS	A	-	-	E	C	F	A	A	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.7	4.3	0.1	0.2	-	-		

Timings

12: SR 306 (Keith Bridge Rd) & Site Drwy 1

3a. Build 2027 AM

11/18/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	143	1099	565	599	359	67
Future Volume (vph)	143	1099	565	599	359	67
Lane Group Flow (vph)	155	1195	614	651	390	73
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		4	
Permitted Phases	6			2		4
Detector Phase	1	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	6.0	6.0
Minimum Split (s)	15.0	21.5	21.5	21.5	21.5	21.5
Total Split (s)	15.0	67.0	52.0	52.0	53.0	53.0
Total Split (%)	12.5%	55.8%	43.3%	43.3%	44.2%	44.2%
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
v/c Ratio	0.40	1.01	0.65	0.60	0.82	0.15
Control Delay	13.0	50.9	26.7	6.4	54.5	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	50.9	26.7	6.4	54.5	9.1
Queue Length 50th (ft)	44	~889	319	82	283	5
Queue Length 95th (ft)	90	#1342	#618	196	361	37
Internal Link Dist (ft)		666	919		741	
Turn Bay Length (ft)	150			250		150
Base Capacity (vph)	398	1189	943	1083	700	665
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	1.01	0.65	0.60	0.56	0.11

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

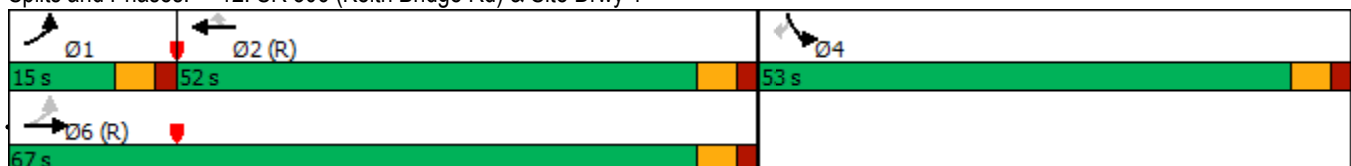
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 12: SR 306 (Keith Bridge Rd) & Site Drwy 1



HCM 6th Signalized Intersection Summary
12: SR 306 (Keith Bridge Rd) & Site Drwy 1

3a. Build 2027 AM
11/18/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	143	1099	565	599	359	67
Future Volume (veh/h)	143	1099	565	599	359	67
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	155	1195	614	651	390	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	388	1250	1068	905	427	
Arrive On Green	0.05	0.67	0.95	0.95	0.24	0.00
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	155	1195	614	651	390	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	4.1	70.4	4.0	7.3	25.6	0.0
Cycle Q Clear(g_c), s	4.1	70.4	4.0	7.3	25.6	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	388	1250	1068	905	427	
V/C Ratio(X)	0.40	0.96	0.57	0.72	0.91	
Avail Cap(c_a), veh/h	437	1250	1068	905	705	
HCM Platoon Ratio	1.00	1.00	1.67	1.67	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.70	0.70	1.00	0.00
Uniform Delay (d), s/veh	8.8	18.3	1.3	1.4	44.4	0.0
Incr Delay (d2), s/veh	0.7	16.8	1.6	3.5	10.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	29.9	1.2	1.6	12.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.4	35.1	2.9	4.8	54.9	0.0
LnGrp LOS	A	D	A	A	D	
Approach Vol, veh/h		1350	1265		390	
Approach Delay, s/veh		32.1	3.9		54.9	
Approach LOS		C	A		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	11.7	74.0		34.3		85.7
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5
Max Green Setting (Gmax), s	9.5	46.5		47.5		61.5
Max Q Clear Time (g_c+I1), s	6.1	9.3		27.6		72.4
Green Ext Time (p_c), s	0.1	17.1		1.2		0.0

Intersection Summary

HCM 6th Ctrl Delay	23.2
HCM 6th LOS	C

Notes

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

Timings

3b. Build 2027 PM

1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

11/18/2022

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	41	596	344	108	769	25	351	48	211	38	27
Future Volume (vph)	41	596	344	108	769	25	351	48	211	38	27
Lane Group Flow (vph)	42	608	351	110	785	26	358	49	215	39	71
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	45.0	45.0	15.0	45.0	45.0	27.0	35.0	35.0	25.0	33.0
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%	37.5%	22.5%	29.2%	29.2%	20.8%	27.5%
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
v/c Ratio	0.17	0.63	0.37	0.30	0.76	0.03	0.92	0.13	0.44	0.21	0.46
Control Delay	12.2	22.3	5.1	11.8	29.5	0.0	69.7	40.6	8.4	34.1	35.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	22.3	5.1	11.8	29.5	0.0	69.7	40.6	8.4	34.1	35.0
Queue Length 50th (ft)	11	220	4	32	485	0	248	32	0	22	21
Queue Length 95th (ft)	32	426	83	62	#794	0	#327	67	65	47	67
Internal Link Dist (ft)		837			1303			833			239
Turn Bay Length (ft)	165			215		160	140				
Base Capacity (vph)	286	967	958	386	1031	931	390	468	559	364	421
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.63	0.37	0.28	0.76	0.03	0.92	0.10	0.38	0.11	0.17

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

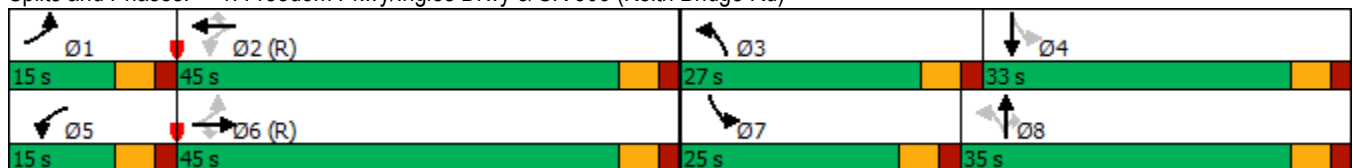
Natural Cycle: 110

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary
1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

3b. Build 2027 PM

11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	596	344	108	769	25	351	48	211	38	27	42
Future Volume (veh/h)	41	596	344	108	769	25	351	48	211	38	27	42
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	42	608	0	110	785	26	358	49	0	39	28	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	275	1020		580	1042	883	427	370		180	92	
Arrive On Green	0.06	1.00	0.00	0.04	0.56	0.56	0.18	0.20	0.00	0.03	0.05	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	42	608	0	110	785	26	358	49	0	39	28	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	1.2	0.0	0.0	3.2	38.4	0.9	21.5	2.6	0.0	2.5	1.7	0.0
Cycle Q Clear(g_c), s	1.2	0.0	0.0	3.2	38.4	0.9	21.5	2.6	0.0	2.5	1.7	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	275	1020		580	1042	883	427	370		180	92	
V/C Ratio(X)	0.15	0.60		0.19	0.75	0.03	0.84	0.13		0.22	0.31	
Avail Cap(c_a), veh/h	360	1020		644	1042	883	427	460		416	429	
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(l)	0.94	0.94	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.5	0.0	0.0	10.8	20.3	12.0	43.1	39.6	0.0	52.0	55.1	0.0
Incr Delay (d2), s/veh	0.2	2.4	0.0	0.2	5.0	0.1	13.8	0.2	0.0	0.6	1.9	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(50%),veh/ln	0.4	0.7	0.0	1.2	16.3	0.3	11.3	1.2	0.0	1.1	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.8	2.4	0.0	11.0	25.3	12.0	56.9	39.8	0.0	52.6	57.0	0.0
LnGrp LOS	B	A		B	C	B	E	D		D	E	
Approach Vol, veh/h		650			921			407			67	
Approach Delay, s/veh		3.3			23.2			54.8			54.4	
Approach LOS		A			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.3	72.4	27.0	11.4	10.7	70.9	9.1	29.2				
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	39.5	21.5	27.5	9.5	39.5	19.5	29.5				
Max Q Clear Time (g_c+I1), s	3.2	40.4	23.5	3.7	5.2	2.0	4.5	4.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.1	8.4	0.0	0.2				

Intersection Summary

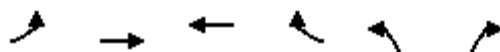
HCM 6th Ctrl Delay	24.2
HCM 6th LOS	C

Notes

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

Timings 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)

3b. Build 2027 PM
11/18/2022



Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	370	480	984	125	620	572
Future Volume (vph)	370	480	984	125	620	572
Lane Group Flow (vph)	394	511	1047	133	660	609
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)	20.0	69.0	49.0	49.0	51.0	51.0
Total Split (%)	16.7%	57.5%	40.8%	40.8%	42.5%	42.5%
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
v/c Ratio	1.42	0.27	0.82	0.20	0.98	0.45
Control Delay	244.5	8.1	35.0	4.2	68.4	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	244.5	8.1	35.0	4.2	68.4	6.5
Queue Length 50th (ft)	~354	41	378	8	501	33
Queue Length 95th (ft)	#574	52	m413	m10	#752	79
Internal Link Dist (ft)		863	837			
Turn Bay Length (ft)	200			280		
Base Capacity (vph)	278	1872	1282	658	671	1360
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.42	0.27	0.82	0.20	0.98	0.45

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

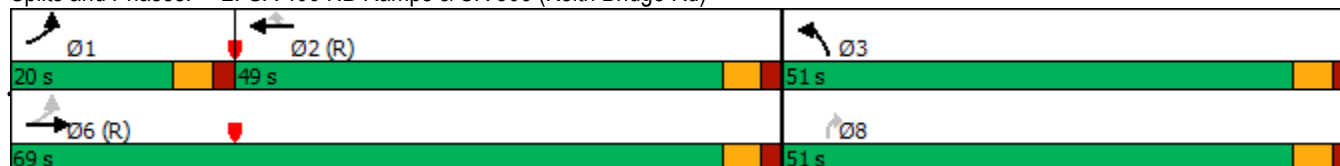
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

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



HCM 6th Signalized Intersection Summary
2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)

3b. Build 2027 PM

11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	370	480	0	0	984	125	620	0	572	0	0	0
Future Volume (veh/h)	370	480	0	0	984	125	620	0	572	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	1870	0	0	1870	1870	1870	0	1870			
Adj Flow Rate, veh/h	394	511	0	0	1047	0	660	0	609			
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	2	0	0	2	2	2	0	2			
Cap, veh/h	364	1880	0	0	1288		675	0	1058			
Arrive On Green	0.16	0.70	0.00	0.00	0.73	0.00	0.38	0.00	0.38			
Sat Flow, veh/h	1781	3647	0	0	3647	1585	1781	0	2790			
Grp Volume(v), veh/h	394	511	0	0	1047	0	660	0	609			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1585	1781	0	1395			
Q Serve(g_s), s	14.5	6.3	0.0	0.0	23.7	0.0	43.9	0.0	20.8			
Cycle Q Clear(g_c), s	14.5	6.3	0.0	0.0	23.7	0.0	43.9	0.0	20.8			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	364	1880	0	0	1288		675	0	1058			
V/C Ratio(X)	1.08	0.27	0.00	0.00	0.81		0.98	0.00	0.58			
Avail Cap(c_a), veh/h	364	1880	0	0	1288		675	0	1058			
HCM Platoon Ratio	1.33	1.33	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.89	0.89	0.00	0.00	0.48	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	26.1	9.3	0.0	0.0	13.8	0.0	36.7	0.0	29.6			
Incr Delay (d2), s/veh	68.1	0.3	0.0	0.0	2.8	0.0	28.9	0.0	0.8			
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(50%),veh/ln	12.4	2.2	0.0	0.0	5.0	0.0	23.6	0.0	6.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	94.2	9.6	0.0	0.0	16.6	0.0	65.6	0.0	30.4			
LnGrp LOS	F	A	A	A	B		E	A	C			
Approach Vol, veh/h	905			1047			1269					
Approach Delay, s/veh	46.4			16.6			48.7					
Approach LOS	D			B			D					
Timer - Assigned Phs	1	2					6	8				
Phs Duration (G+Y+Rc), s	20.0	49.0					69.0	51.0				
Change Period (Y+Rc), s	5.5	5.5					5.5	5.5				
Max Green Setting (Gmax), s	14.5	43.5					63.5	45.5				
Max Q Clear Time (g_c+I1), s	16.5	25.7					8.3	45.9				
Green Ext Time (p_c), s	0.0	10.5					6.9	0.0				

Intersection Summary

HCM 6th Ctrl Delay	37.6
HCM 6th LOS	D

Notes

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

Timings 3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

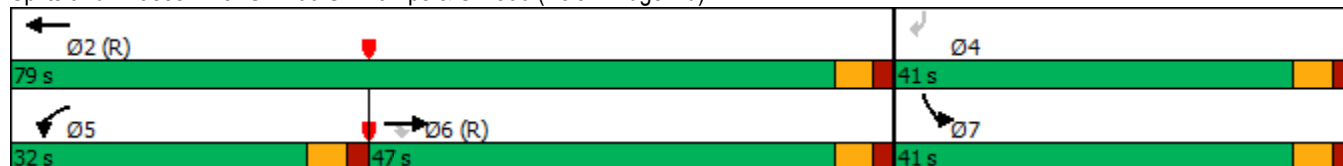
3b. Build 2027 PM
11/18/2022

	→	↘	↙	←	↘	↙
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations	↑↑	↑	↘↙	↑	↘	↙
Traffic Volume (vph)	781	610	594	985	69	196
Future Volume (vph)	781	610	594	985	69	196
Lane Group Flow (vph)	849	663	646	1071	75	213
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)	47.0	47.0	32.0	79.0	41.0	41.0
Total Split (%)	39.2%	39.2%	26.7%	65.8%	34.2%	34.2%
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
v/c Ratio	0.47	0.59	0.81	0.73	0.36	0.76
Control Delay	19.2	3.4	41.8	14.0	51.6	41.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	3.4	41.8	14.0	51.6	41.7
Queue Length 50th (ft)	197	40	243	410	54	79
Queue Length 95th (ft)	m282	m39	m272	m608	95	155
Internal Link Dist (ft)	919			863		
Turn Bay Length (ft)		220	260			
Base Capacity (vph)	1817	1120	828	1475	523	544
Starvation Cap Reductn	0	0	0	8	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.59	0.78	0.73	0.14	0.39

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary

3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

3b. Build 2027 PM

11/18/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↗↘	↑					↗		↗
Traffic Volume (veh/h)	0	781	610	594	985	0	0	0	0	69	0	196
Future Volume (veh/h)	0	781	610	594	985	0	0	0	0	69	0	196
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	1870	1870	1870	1870	0				1870	0	1870
Adj Flow Rate, veh/h	0	849	0	646	1071	0				75	0	213
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	2	2	2	2	0				2	0	2
Cap, veh/h	0	1795		701	1410	0				275	0	245
Arrive On Green	0.00	0.51	0.00	0.34	1.00	0.00				0.15	0.00	0.15
Sat Flow, veh/h	0	3647	1585	3456	1870	0				1781	0	1585
Grp Volume(v), veh/h	0	849	0	646	1071	0				75	0	213
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1870	0				1781	0	1585
Q Serve(g_s), s	0.0	18.6	0.0	21.6	0.0	0.0				4.5	0.0	15.7
Cycle Q Clear(g_c), s	0.0	18.6	0.0	21.6	0.0	0.0				4.5	0.0	15.7
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1795		701	1410	0				275	0	245
V/C Ratio(X)	0.00	0.47		0.92	0.76	0.00				0.27	0.00	0.87
Avail Cap(c_a), veh/h	0	1795		763	1410	0				527	0	469
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.28	0.00	0.35	0.35	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	19.3	0.0	38.8	0.0	0.0				44.8	0.0	49.5
Incr Delay (d2), s/veh	0.0	0.3	0.0	6.7	1.4	0.0				0.5	0.0	9.1
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(50%),veh/ln	0.0	7.1	0.0	8.0	0.5	0.0				2.0	0.0	13.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	19.6	0.0	45.5	1.4	0.0				45.3	0.0	58.7
LnGrp LOS	A	B		D	A	A				D	A	E
Approach Vol, veh/h		849			1717						288	
Approach Delay, s/veh		19.6			18.0						55.2	
Approach LOS		B			B						E	
Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		95.9		24.1	29.8	66.1						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		73.5		35.5	26.5	41.5						
Max Q Clear Time (g_c+I1), s		2.0		17.7	23.6	20.6						
Green Ext Time (p_c), s		27.8		0.8	0.8	9.4						
Intersection Summary												
HCM 6th Ctrl Delay			22.2									
HCM 6th LOS			C									
Notes												
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.												

Intersection					
Intersection Delay, s/veh11.1					
Intersection LOS B					
Approach	EB	WB	NB	SB	
Entry Lanes	1	1	1	1	
Conflicting Circle Lanes	1	1	1	1	
Adj Approach Flow, veh/h	555	953	32	596	
Demand Flow Rate, veh/h	564	960	33	596	
Vehicles Circulating, veh/h	477	108	1017	381	
Vehicles Exiting, veh/h	500	941	24	105	
Ped Vol Crossing Leg, #/h	0	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	1.000	
Approach Delay, s/veh	15.8	7.0	8.5	13.5	
Approach LOS	C	A	A	B	
Lane	Left	Left	Bypass	Left	Left
Designated Moves	LTR	LT	R	LTR	LTR
Assumed Moves	LTR	LT	R	LTR	LTR
RT Channelized			Yield		
Lane Util	1.000	1.000		1.000	1.000
Follow-Up Headway, s	2.609	2.609		2.609	2.609
Critical Headway, s	4.976	4.976	582	4.976	4.976
Entry Flow, veh/h	564	378	1240	33	596
Cap Entry Lane, veh/h	848	1236	1.000	489	936
Entry HV Adj Factor	0.984	0.981	582	0.970	1.000
Flow Entry, veh/h	555	371	1240	32	596
Cap Entry, veh/h	835	1213	0.469	474	936
V/C Ratio	0.665	0.306	7.8	0.067	0.637
Control Delay, s/veh	15.8	5.8	A	8.5	13.5
LOS	C	A	3	A	B
95th %tile Queue, veh	5	1		0	5

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Vol, veh/h	452	80	146	302	13	55
Future Vol, veh/h	452	80	146	302	13	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	135	110	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	545	96	176	364	16	66
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	641	0	1261	545
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	716	-
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	-	-	943	-	188	538
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	484	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	943	-	153	538
Mov Cap-2 Maneuver	-	-	-	-	153	-
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	393	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		3.2		16.2	
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	153	538	-	-	943	-
HCM Lane V/C Ratio	0.102	0.123	-	-	0.187	-
HCM Control Delay (s)	31.2	12.6	-	-	9.7	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0.4	-	-	0.7	-

Timings

3b. Build 2027 PM

6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)

11/18/2022

	←	↖	↑	↗	↓
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations	↖	↖	↖	↖	↖
Traffic Volume (vph)	333	49	538	70	209
Future Volume (vph)	333	49	538	70	209
Lane Group Flow (vph)	354	52	1111	74	222
Turn Type	Prot	Perm	NA	pm+pt	NA
Protected Phases	8		6	5	2
Permitted Phases		8		2	
Detector Phase	8	8	6	5	2
Switch Phase					
Minimum Initial (s)	6.0	6.0	15.0	5.0	15.0
Minimum Split (s)	23.5	23.5	21.5	15.0	21.5
Total Split (s)	54.0	54.0	41.0	15.0	56.0
Total Split (%)	49.1%	49.1%	37.3%	13.6%	50.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Min	None	C-Min
v/c Ratio	0.78	0.12	1.14	0.40	0.19
Control Delay	49.8	21.3	102.0	17.6	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	49.8	21.3	102.0	17.6	9.6
Queue Length 50th (ft)	233	19	~931	18	58
Queue Length 95th (ft)	304	45	#1318	54	116
Internal Link Dist (ft)	1938		406		484
Turn Bay Length (ft)		25		80	
Base Capacity (vph)	780	707	973	216	1199
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.45	0.07	1.14	0.34	0.19

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

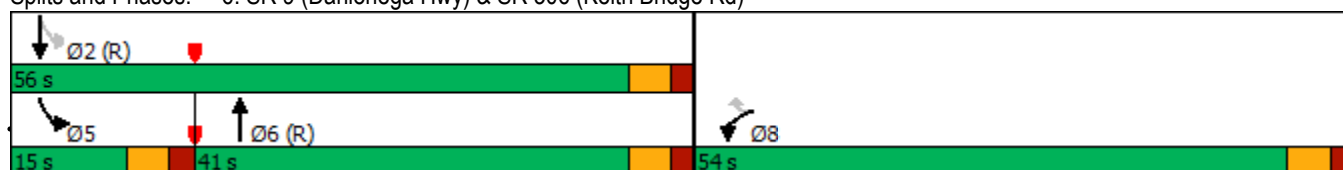
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary
6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)

3b. Build 2027 PM
11/18/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	333	49	538	507	70	209
Future Volume (veh/h)	333	49	538	507	70	209
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	354	52	572	0	74	222
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	395	351	1099		479	1269
Arrive On Green	0.22	0.22	0.59	0.00	0.04	0.68
Sat Flow, veh/h	1781	1585	1870	0	1781	1870
Grp Volume(v), veh/h	354	52	572	0	74	222
Grp Sat Flow(s),veh/h/ln	1781	1585	1870	0	1781	1870
Q Serve(g_s), s	21.2	2.9	20.0	0.0	1.7	4.8
Cycle Q Clear(g_c), s	21.2	2.9	20.0	0.0	1.7	4.8
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	395	351	1099		479	1269
V/C Ratio(X)	0.90	0.15	0.52		0.15	0.17
Avail Cap(c_a), veh/h	785	699	1099		560	1269
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	41.6	34.5	13.5	0.0	9.6	6.5
Incr Delay (d2), s/veh	7.4	0.2	1.8	0.0	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	1.1	7.6	0.0	0.5	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	49.0	34.6	15.2	0.0	9.7	6.8
LnGrp LOS	D	C	B		A	A
Approach Vol, veh/h	406		572			296
Approach Delay, s/veh	47.1		15.2			7.5
Approach LOS	D		B			A
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	80.1		10.0		70.1	29.9
Change Period (Y+Rc), s	5.5		5.5		5.5	5.5
Max Green Setting (Gmax), s	50.5		9.5		35.5	48.5
Max Q Clear Time (g_c+I1), s	6.8		3.7		22.0	23.2
Green Ext Time (p_c), s	2.4		0.1		4.8	1.1
Intersection Summary						
HCM 6th Ctrl Delay	23.6					
HCM 6th LOS	C					

Notes

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

Intersection						
Int Delay, s/veh	26.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	456	544	5	277	286
Future Vol, veh/h	10	456	544	5	277	286
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Yield	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	11	485	579	5	295	304
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1476	582	0	0	579	0
Stage 1	582	-	-	-	-	-
Stage 2	894	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	140	517	-	-	1005	-
Stage 1	563	-	-	-	-	-
Stage 2	403	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	99	517	-	-	1005	-
Mov Cap-2 Maneuver	99	-	-	-	-	-
Stage 1	563	-	-	-	-	-
Stage 2	285	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	83.6	0		5		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-		474	1005	
HCM Lane V/C Ratio	-	-		1.046	0.293	
HCM Control Delay (s)	-	-		83.6	10.1	
HCM Lane LOS	-	-		F	B	
HCM 95th %tile Q(veh)	-	-		15.1	1.2	

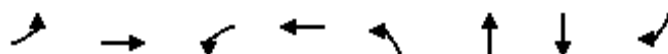
Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	13	22	972	563	2
Future Vol, veh/h	4	13	22	972	563	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	14	24	1057	612	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1718	613	614	0	-	0
Stage 1	613	-	-	-	-	-
Stage 2	1105	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	99	492	965	-	-	-
Stage 1	541	-	-	-	-	-
Stage 2	317	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	93	492	965	-	-	-
Mov Cap-2 Maneuver	93	-	-	-	-	-
Stage 1	509	-	-	-	-	-
Stage 2	317	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	20.9	0.2		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	965	-	245	-	-	
HCM Lane V/C Ratio	0.025	-	0.075	-	-	
HCM Control Delay (s)	8.8	0	20.9	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-	

Timings

3b. Build 2027 PM

9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy

11/18/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR	Ø5
Lane Configurations									
Traffic Volume (vph)	89	0	1	2	525	512	342	136	
Future Volume (vph)	89	0	1	2	525	512	342	136	
Lane Group Flow (vph)	100	256	0	3	590	575	384	153	
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	NA	Perm	
Protected Phases	7	4		8	1	6	2		5
Permitted Phases	4		8		6			2	
Detector Phase	7	4	8	8	1	6	2	2	
Switch Phase									
Minimum Initial (s)	5.0	6.0	6.0	6.0	5.0	15.0	15.0	15.0	5.0
Minimum Split (s)	15.0	24.5	26.5	26.5	15.0	26.5	25.5	25.5	15.0
Total Split (s)	23.0	51.0	28.0	28.0	15.0	54.0	54.0	54.0	15.0
Total Split (%)	19.2%	42.5%	23.3%	23.3%	12.5%	45.0%	45.0%	45.0%	13%
Yellow Time (s)	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
Lost Time Adjust (s)	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	
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lag	Lag	Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	None
v/c Ratio	0.50	0.44		0.03	0.69	0.39	0.51	0.21	
Control Delay	55.3	2.4		55.0	13.2	5.9	29.8	6.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	55.3	2.4		55.0	13.2	5.9	29.8	6.9	
Queue Length 50th (ft)	75	0		2	110	100	220	13	
Queue Length 95th (ft)	110	0		13	#376	267	310	54	
Internal Link Dist (ft)		526		91		941	548		
Turn Bay Length (ft)	250				130			130	
Base Capacity (vph)	279	875		349	858	1465	752	713	
Starvation Cap Reductn	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.36	0.29		0.01	0.69	0.39	0.51	0.21	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

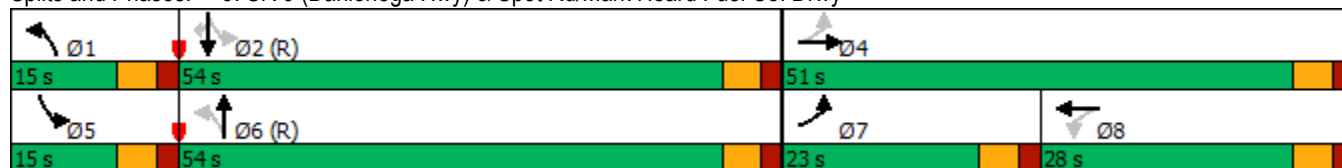
Natural Cycle: 95

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy



HCM 6th Signalized Intersection Summary
 9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy

3b. Build 2027 PM

11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	0	228	1	2	0	525	512	0	0	342	136
Future Volume (veh/h)	89	0	228	1	2	0	525	512	0	0	342	136
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	100	0	256	1	2	0	590	575	0	0	384	153
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	0	294	55	81	0	630	1352	0	562	1118	948
Arrive On Green	0.07	0.00	0.19	0.07	0.07	0.00	0.08	0.72	0.00	0.00	0.60	0.60
Sat Flow, veh/h	1781	0	1585	197	1096	0	1781	1870	0	1781	1870	1585
Grp Volume(v), veh/h	100	0	256	3	0	0	590	575	0	0	384	153
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1293	0	0	1781	1870	0	1781	1870	1585
Q Serve(g_s), s	6.0	0.0	18.8	0.0	0.0	0.0	9.5	14.8	0.0	0.0	12.5	5.2
Cycle Q Clear(g_c), s	6.0	0.0	18.8	5.5	0.0	0.0	9.5	14.8	0.0	0.0	12.5	5.2
Prop In Lane	1.00		1.00	0.33		0.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	285	0	294	136	0	0	630	1352	0	562	1118	948
V/C Ratio(X)	0.35	0.00	0.87	0.02	0.00	0.00	0.94	0.43	0.00	0.00	0.34	0.16
Avail Cap(c_a), veh/h	428	0	601	309	0	0	630	1352	0	702	1118	948
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(l)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	45.2	0.0	47.5	51.5	0.0	0.0	19.7	6.7	0.0	0.0	12.2	10.7
Incr Delay (d2), s/veh	0.7	0.0	7.9	0.1	0.0	0.0	21.7	1.0	0.0	0.0	0.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	7.8	0.1	0.0	0.0	12.8	4.7	0.0	0.0	4.9	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.0	0.0	55.3	51.6	0.0	0.0	41.4	7.6	0.0	0.0	13.0	11.1
LnGrp LOS	D	A	E	D	A	A	D	A	A	A	B	B
Approach Vol, veh/h	356				3				1165			
Approach Delay, s/veh	52.7				51.6				24.7			
Approach LOS	D				D				C			
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	77.2		27.8	0.0	92.2	13.4	14.4				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	48.5		45.5	9.5	48.5	17.5	22.5				
Max Q Clear Time (g_c+I1), s	11.5	14.5		20.8	0.0	16.8	8.0	7.5				
Green Ext Time (p_c), s	0.0	5.9		1.4	0.0	7.2	0.1	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	26.4											
HCM 6th LOS	C											

Intersection												
Int Delay, s/veh	8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↱	↰	↱	↰	↱
Traffic Vol, veh/h	8	10	71	93	10	61	94	361	69	41	253	10
Future Vol, veh/h	8	10	71	93	10	61	94	361	69	41	253	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	150	-	-	150	135	-	75	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	9	11	77	101	11	66	102	392	75	45	275	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1043	1042	281	1011	972	392	286	0	0	467	0	0
Stage 1	371	371	-	596	596	-	-	-	-	-	-	-
Stage 2	672	671	-	415	376	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	209	232	763	220	254	661	1288	-	-	1105	-	-
Stage 1	653	623	-	494	495	-	-	-	-	-	-	-
Stage 2	449	458	-	619	620	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	165	205	763	173	224	661	1288	-	-	1105	-	-
Mov Cap-2 Maneuver	165	205	-	173	224	-	-	-	-	-	-	-
Stage 1	601	597	-	455	456	-	-	-	-	-	-	-
Stage 2	363	422	-	524	595	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.5		38.7		1.4		1.1	
HCM LOS	B		E					

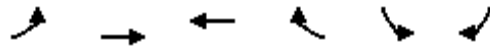
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1288	-	-	185	763	177	661	1105	-	-
HCM Lane V/C Ratio	0.079	-	-	0.106	0.101	0.633	0.1	0.04	-	-
HCM Control Delay (s)	8	-	-	26.7	10.2	55	11.1	8.4	-	-
HCM Lane LOS	A	-	-	D	B	F	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	0.3	0.3	3.6	0.3	0.1	-	-

Intersection												
Int Delay, s/veh	17.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔	↔	↔	↔	↔	↔	
Traffic Vol, veh/h	8	10	71	106	10	61	94	455	77	41	366	10
Future Vol, veh/h	8	10	71	106	10	61	94	455	77	41	366	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	150	-	-	150	135	-	75	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	9	11	77	115	11	66	102	495	84	45	398	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1274	1277	404	1237	1198	495	409	0	0	579	0	0
Stage 1	494	494	-	699	699	-	-	-	-	-	-	-
Stage 2	780	783	-	538	499	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	145	168	651	154	187	579	1161	-	-	1005	-	-
Stage 1	561	550	-	434	445	-	-	-	-	-	-	-
Stage 2	391	407	-	531	547	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	110	146	651	116	163	579	1161	-	-	1005	-	-
Mov Cap-2 Maneuver	110	146	-	116	163	-	-	-	-	-	-	-
Stage 1	512	525	-	396	406	-	-	-	-	-	-	-
Stage 2	307	371	-	438	522	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	16.8		115.2		1.3		0.9					
HCM LOS	C		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR		
Capacity (veh/h)	1161	-	-	127	651	119	579	1005	-	-		
HCM Lane V/C Ratio	0.088	-	-	0.154	0.119	1.06	0.115	0.044	-	-		
HCM Control Delay (s)	8.4	-	-	38.4	11.3	169.5	12	8.7	-	-		
HCM Lane LOS	A	-	-	E	B	F	B	A	-	-		
HCM 95th %tile Q(veh)	0.3	-	-	0.5	0.4	7.3	0.4	0.1	-	-		

Timings
12: SR 306 (Keith Bridge Rd) & Site Drwy 1

3b. Build 2027 PM

11/18/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	100	749	742	440	642	126
Future Volume (vph)	100	749	742	440	642	126
Lane Group Flow (vph)	109	814	807	478	698	137
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		4	
Permitted Phases	6			2		4
Detector Phase	1	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	6.0	6.0
Minimum Split (s)	15.0	21.5	21.5	21.5	21.5	21.5
Total Split (s)	15.0	58.0	43.0	43.0	62.0	62.0
Total Split (%)	12.5%	48.3%	35.8%	35.8%	51.7%	51.7%
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
v/c Ratio	0.57	0.92	1.22	0.64	0.91	0.19
Control Delay	33.0	48.0	147.1	19.6	48.0	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.0	48.0	147.1	19.6	48.0	9.2
Queue Length 50th (ft)	48	598	~805	178	476	25
Queue Length 95th (ft)	97	#897	#1080	250	#655	61
Internal Link Dist (ft)		666	919		741	
Turn Bay Length (ft)	150			250		150
Base Capacity (vph)	201	882	661	744	833	786
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.92	1.22	0.64	0.84	0.17

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

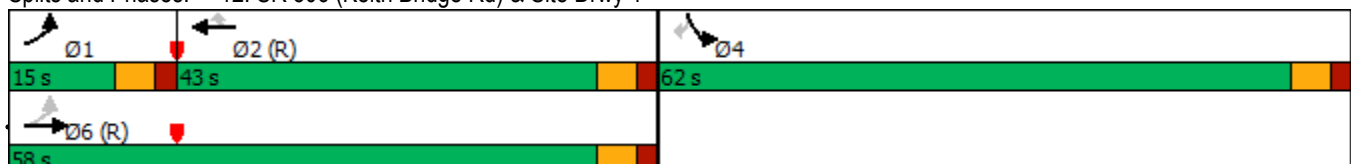
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 12: SR 306 (Keith Bridge Rd) & Site Drwy 1



HCM 6th Signalized Intersection Summary
12: SR 306 (Keith Bridge Rd) & Site Drwy 1

3b. Build 2027 PM
11/18/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	100	749	742	440	642	126
Future Volume (veh/h)	100	749	742	440	642	126
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	109	814	807	478	698	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	150	929	749	635	733	
Arrive On Green	0.05	0.50	0.80	0.80	0.41	0.00
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	109	814	807	478	698	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	4.2	46.5	48.0	18.2	45.5	0.0
Cycle Q Clear(g_c), s	4.2	46.5	48.0	18.2	45.5	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	150	929	749	635	733	
V/C Ratio(X)	0.73	0.88	1.08	0.75	0.95	
Avail Cap(c_a), veh/h	201	929	749	635	839	
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.61	0.61	1.00	0.00
Uniform Delay (d), s/veh	28.6	26.9	12.0	9.0	34.2	0.0
Incr Delay (d2), s/veh	8.4	11.4	49.4	5.1	19.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	21.7	14.9	3.7	23.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.0	38.3	61.3	14.0	53.2	0.0
LnGrp LOS	D	D	F	B	D	
Approach Vol, veh/h		923	1285		698	
Approach Delay, s/veh		38.1	43.7		53.2	
Approach LOS		D	D		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	11.6	53.5		54.9		65.1
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5
Max Green Setting (Gmax), s	9.5	37.5		56.5		52.5
Max Q Clear Time (g_c+I1), s	6.2	50.0		47.5		48.5
Green Ext Time (p_c), s	0.1	0.0		1.9		2.7

Intersection Summary

HCM 6th Ctrl Delay	44.2
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

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

Future “Build” Intersections Analysis with Improvements

Timings

3a. Build 2027 AM - Improved

1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

11/18/2022

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	38	674	149	66	1044	45	194	34	66	22	11
Future Volume (vph)	38	674	149	66	1044	45	194	34	66	22	11
Lane Group Flow (vph)	40	717	159	70	1111	48	206	36	70	23	66
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	45.0	45.0	15.0	45.0	45.0	27.0	35.0	35.0	25.0	33.0
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%	37.5%	22.5%	29.2%	29.2%	20.8%	27.5%
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
v/c Ratio	0.25	0.68	0.16	0.20	1.04	0.05	0.64	0.11	0.19	0.14	0.44
Control Delay	19.0	19.5	3.9	10.0	64.8	0.1	47.3	41.9	1.8	34.5	27.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	19.5	3.9	10.0	64.8	0.1	47.3	41.9	1.8	34.5	27.5
Queue Length 50th (ft)	7	185	3	18	~971	0	136	25	0	14	9
Queue Length 95th (ft)	41	#457	23	42	#1342	0	193	53	5	32	53
Internal Link Dist (ft)		837			1303			833			239
Turn Bay Length (ft)	165			215		160	140				
Base Capacity (vph)	203	1061	978	373	1072	987	370	457	481	358	416
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.68	0.16	0.19	1.04	0.05	0.56	0.08	0.15	0.06	0.16

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

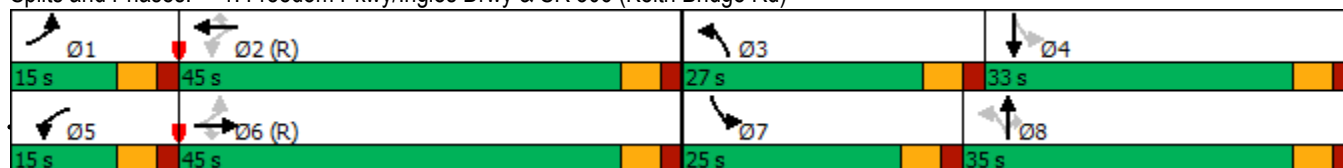
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary
1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

3a. Build 2027 AM - Improved

11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	674	149	66	1044	45	194	34	66	22	11	51
Future Volume (veh/h)	38	674	149	66	1044	45	194	34	66	22	11	51
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	40	717	0	70	1111	48	206	36	0	23	12	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	123	1111		574	1124	975	338	277		162	85	
Arrive On Green	0.06	1.00	0.00	0.04	0.62	0.62	0.13	0.15	0.00	0.02	0.05	0.00
Sat Flow, veh/h	1781	1826	1585	1781	1826	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	40	717	0	70	1111	48	206	36	0	23	12	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	1.0	0.0	0.0	1.7	71.7	1.4	12.8	2.0	0.0	1.5	0.7	0.0
Cycle Q Clear(g_c), s	1.0	0.0	0.0	1.7	71.7	1.4	12.8	2.0	0.0	1.5	0.7	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	123	1111		574	1124	975	338	277		162	85	
V/C Ratio(X)	0.32	0.65		0.12	0.99	0.05	0.61	0.13		0.14	0.14	
Avail Cap(c_a), veh/h	210	1111		648	1124	975	434	460		412	429	
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)	0.96	0.96	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	29.0	0.0	0.0	7.8	22.7	9.2	44.9	44.4	0.0	52.8	55.0	0.0
Incr Delay (d2), s/veh	1.4	2.8	0.0	0.1	24.3	0.1	1.8	0.2	0.0	0.4	0.8	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(50%),veh/ln	0.7	0.9	0.0	0.6	33.2	0.5	5.6	0.9	0.0	0.7	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.5	2.8	0.0	7.9	46.9	9.2	46.6	44.6	0.0	53.2	55.8	0.0
LnGrp LOS	C	A		A	D	A	D	D		D	E	
Approach Vol, veh/h	757			1229			242			35		
Approach Delay, s/veh	4.2			43.2			46.3			54.1		
Approach LOS	A			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.2	79.4	20.5	10.9	10.0	78.5	8.2	23.3				
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	39.5	21.5	27.5	9.5	39.5	19.5	29.5				
Max Q Clear Time (g_c+I1), s	3.0	73.7	14.8	2.7	3.7	2.0	3.5	4.0				
Green Ext Time (p_c), s	0.0	0.0	0.3	0.0	0.1	10.7	0.0	0.1				

Intersection Summary

HCM 6th Ctrl Delay	30.7
HCM 6th LOS	C

Notes

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

Timings 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)

3a. Build 2027 AM - Improved
11/18/2022

						
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations		 	 			 
Traffic Volume (vph)	154	535	1320	54	497	412
Future Volume (vph)	154	535	1320	54	497	412
Lane Group Flow (vph)	164	569	1404	57	529	438
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)	20.0	69.0	49.0	49.0	51.0	51.0
Total Split (%)	16.7%	57.5%	40.8%	40.8%	42.5%	42.5%
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
v/c Ratio	0.72	0.29	0.94	0.08	0.89	0.36
Control Delay	74.6	3.5	33.7	1.5	56.0	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.6	3.5	33.7	1.5	56.0	3.1
Queue Length 50th (ft)	91	20	478	1	380	0
Queue Length 95th (ft)	175	25	m#655	m1	503	35
Internal Link Dist (ft)		863	837			
Turn Bay Length (ft)	200			280		
Base Capacity (vph)	272	1971	1491	727	671	1328
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.29	0.94	0.08	0.79	0.33

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green

Natural Cycle: 90

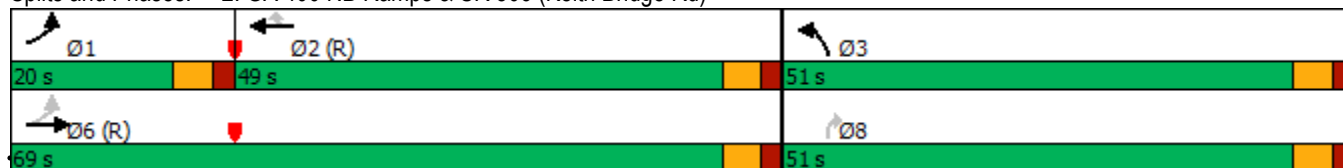
Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

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



HCM 6th Signalized Intersection Summary
2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)

3a. Build 2027 AM - Improved

11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 				 			
Traffic Volume (veh/h)	154	535	0	0	1320	54	497	0	412	0	0	0
Future Volume (veh/h)	154	535	0	0	1320	54	497	0	412	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	164	569	0	0	1404	0	529	0	438			
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	314	2027	0	0	1643		577	0	904			
Arrive On Green	0.13	1.00	0.00	0.00	0.95	0.00	0.32	0.00	0.32			
Sat Flow, veh/h	1781	3561	0	0	3561	1585	1781	0	2790			
Grp Volume(v), veh/h	164	569	0	0	1404	0	529	0	438			
Grp Sat Flow(s),veh/h/ln	1781	1735	0	0	1735	1585	1781	0	1395			
Q Serve(g_s), s	5.6	0.0	0.0	0.0	13.5	0.0	34.3	0.0	15.1			
Cycle Q Clear(g_c), s	5.6	0.0	0.0	0.0	13.5	0.0	34.3	0.0	15.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	314	2027	0	0	1643		577	0	904			
V/C Ratio(X)	0.52	0.28	0.00	0.00	0.85		0.92	0.00	0.48			
Avail Cap(c_a), veh/h	414	2027	0	0	1643		675	0	1058			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(l)	0.90	0.90	0.00	0.00	0.15	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	13.7	0.0	0.0	0.0	2.0	0.0	39.0	0.0	32.5			
Incr Delay (d2), s/veh	1.2	0.3	0.0	0.0	1.0	0.0	15.9	0.0	0.4			
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(50%),veh/ln	1.9	0.1	0.0	0.0	1.2	0.0	17.0	0.0	5.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.0	0.3	0.0	0.0	3.0	0.0	54.9	0.0	32.9			
LnGrp LOS	B	A	A	A	A		D	A	C			
Approach Vol, veh/h	733			1404			967					
Approach Delay, s/veh	3.6			3.0			44.9					
Approach LOS	A			A			D					
Timer - Assigned Phs	1	2					6	8				
Phs Duration (G+Y+Rc), s	13.3	62.3					75.6	44.4				
Change Period (Y+Rc), s	5.5	5.5					5.5	5.5				
Max Green Setting (Gmax), s	14.5	43.5					63.5	45.5				
Max Q Clear Time (g_c+I1), s	7.6	15.5					2.0	36.3				
Green Ext Time (p_c), s	0.2	19.0					8.0	2.6				

Intersection Summary

HCM 6th Ctrl Delay	16.2
HCM 6th LOS	B

Notes

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

Timings 3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

3a. Build 2027 AM - Improved
11/18/2022

	→	↘	↙	←	↘	↙
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations	↑↑	↑	↘↙	↑	↘	↙
Traffic Volume (vph)	643	815	862	923	47	242
Future Volume (vph)	643	815	862	923	47	242
Lane Group Flow (vph)	656	832	880	942	48	247
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)	36.0	36.0	37.0	73.0	47.0	47.0
Total Split (%)	30.0%	30.0%	30.8%	60.8%	39.2%	39.2%
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
v/c Ratio	0.46	0.81	0.82	0.67	0.21	0.79
Control Delay	26.7	13.0	37.2	16.6	45.3	42.7
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	26.7	13.0	37.2	16.7	45.3	42.7
Queue Length 50th (ft)	170	117	328	419	34	97
Queue Length 95th (ft)	m275	m#472	m372	m635	65	177
Internal Link Dist (ft)	919			863		
Turn Bay Length (ft)		220	260			
Base Capacity (vph)	1430	1023	1076	1403	612	625
Starvation Cap Reductn	0	0	0	28	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.81	0.82	0.69	0.08	0.40

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

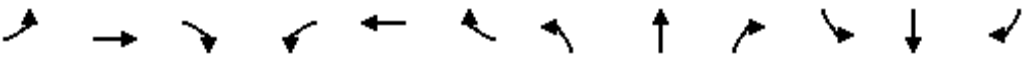
Splits and Phases: 3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary 3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

3a. Build 2027 AM - Improved

11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑					↑		↑
Traffic Volume (veh/h)	0	643	815	862	923	0	0	0	0	47	0	242
Future Volume (veh/h)	0	643	815	862	923	0	0	0	0	47	0	242
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	656	0	880	942	0				48	0	247
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	5	2	2	5	0				2	0	2
Cap, veh/h	0	1470		907	1337	0				314	0	279
Arrive On Green	0.00	0.71	0.00	0.52	1.00	0.00				0.18	0.00	0.18
Sat Flow, veh/h	0	3561	1585	3456	1826	0				1781	0	1585
Grp Volume(v), veh/h	0	656	0	880	942	0				48	0	247
Grp Sat Flow(s),veh/h/ln	0	1735	1585	1728	1826	0				1781	0	1585
Q Serve(g_s), s	0.0	9.7	0.0	29.6	0.0	0.0				2.7	0.0	18.2
Cycle Q Clear(g_c), s	0.0	9.7	0.0	29.6	0.0	0.0				2.7	0.0	18.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1470		907	1337	0				314	0	279
V/C Ratio(X)	0.00	0.45		0.97	0.70	0.00				0.15	0.00	0.88
Avail Cap(c_a), veh/h	0	1470		907	1337	0				616	0	548
HCM Platoon Ratio	1.00	1.67	1.67	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.46	0.00	0.25	0.25	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.5	0.0	28.0	0.0	0.0				41.8	0.0	48.2
Incr Delay (d2), s/veh	0.0	0.5	0.0	9.1	0.8	0.0				0.2	0.0	9.1
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(50%),veh/ln	0.0	2.9	0.0	8.6	0.3	0.0				1.2	0.0	15.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	12.0	0.0	37.2	0.8	0.0				42.1	0.0	57.3
LnGrp LOS	A	B		D	A	A				D	A	E
Approach Vol, veh/h		656			1822						295	
Approach Delay, s/veh		12.0			18.4						54.8	
Approach LOS		B			B						D	
Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		93.4		26.6	37.0	56.4						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		67.5		41.5	31.5	30.5						
Max Q Clear Time (g_c+I1), s		2.0		20.2	31.6	11.7						
Green Ext Time (p_c), s		20.3		0.9	0.0	6.7						
Intersection Summary												
HCM 6th Ctrl Delay			20.7									
HCM 6th LOS			C									

Notes

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

Intersection					
Intersection Delay, s/veh29.9					
Intersection LOS D					
Approach	EB	WB	NB	SB	
Entry Lanes	1	1	1	1	
Conflicting Circle Lanes	1	1	1	1	
Adj Approach Flow, veh/h	579	651	30	858	
Demand Flow Rate, veh/h	589	659	31	858	
Vehicles Circulating, veh/h	780	97	1358	392	
Vehicles Exiting, veh/h	470	1292	11	97	
Ped Vol Crossing Leg, #/h	0	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	1.000	
Approach Delay, s/veh	49.9	5.4	12.3	35.7	
Approach LOS	E	A	B	E	
Lane	Left	Left	Bypass	Left	Left
Designated Moves	LTR	LT	R	LTR	LTR
Assumed Moves	LTR	LT	R	LTR	LTR
RT Channelized			Yield		
Lane Util	1.000	1.000		1.000	1.000
Follow-Up Headway, s	2.609	2.609		2.609	2.609
Critical Headway, s	4.976	4.976	267	4.976	4.976
Entry Flow, veh/h	589	392	1250	31	858
Cap Entry Lane, veh/h	623	1250	1.000	345	925
Entry HV Adj Factor	0.984	0.981	267	0.968	1.000
Flow Entry, veh/h	579	384	1250	30	858
Cap Entry, veh/h	613	1226	0.214	334	925
V/C Ratio	0.946	0.314	4.7	0.090	0.927
Control Delay, s/veh	49.9	5.8	A	12.3	35.7
LOS	E	A	1	B	E
95th %tile Queue, veh	13	1		0	14

Intersection						
Int Delay, s/veh	1.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	584	19	40	389	28	38
Future Vol, veh/h	584	19	40	389	28	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	135	110	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	679	22	47	452	33	44
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	701	0	1225	679
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	546	-
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	-	-	896	-	198	452
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	580	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	896	-	188	452
Mov Cap-2 Maneuver	-	-	-	-	188	-
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	550	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.9		19.9	
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	188	452	-	-	896	-
HCM Lane V/C Ratio	0.173	0.098	-	-	0.052	-
HCM Control Delay (s)	28.1	13.8	-	-	9.2	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.6	0.3	-	-	0.2	-

Timings
6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)

3a. Build 2027 AM - Improved
11/18/2022

	←	↖	↑	↗	↓
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations	↖	↖	↖	↖	↑
Traffic Volume (vph)	369	14	165	81	537
Future Volume (vph)	369	14	165	81	537
Lane Group Flow (vph)	401	15	558	88	584
Turn Type	Prot	Perm	NA	pm+pt	NA
Protected Phases	8		6	5	2
Permitted Phases		8		2	
Detector Phase	8	8	6	5	2
Switch Phase					
Minimum Initial (s)	6.0	6.0	15.0	5.0	15.0
Minimum Split (s)	23.5	23.5	21.5	15.0	21.5
Total Split (s)	54.0	54.0	49.0	17.0	66.0
Total Split (%)	45.0%	45.0%	40.8%	14.2%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Min	None	C-Min
v/c Ratio	0.82	0.03	0.60	0.21	0.50
Control Delay	53.9	22.6	21.4	11.9	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	22.6	21.4	11.9	17.9
Queue Length 50th (ft)	290	6	240	37	325
Queue Length 95th (ft)	368	21	440	m50	465
Internal Link Dist (ft)	1938		406		484
Turn Bay Length (ft)		25		80	
Base Capacity (vph)	715	642	925	449	1176
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.56	0.02	0.60	0.20	0.50

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary
6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)

3a. Build 2027 AM - Improved

11/18/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	369	14	165	349	81	537
Future Volume (veh/h)	369	14	165	349	81	537
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	401	15	179	0	88	584
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	437	389	1080		773	1240
Arrive On Green	0.25	0.25	0.58	0.00	0.04	0.66
Sat Flow, veh/h	1781	1585	1870	0	1781	1870
Grp Volume(v), veh/h	401	15	179	0	88	584
Grp Sat Flow(s),veh/h/ln	1781	1585	1870	0	1781	1870
Q Serve(g_s), s	26.3	0.9	5.4	0.0	2.3	18.4
Cycle Q Clear(g_c), s	26.3	0.9	5.4	0.0	2.3	18.4
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	437	389	1080		773	1240
V/C Ratio(X)	0.92	0.04	0.17		0.11	0.47
Avail Cap(c_a), veh/h	720	641	1080		873	1240
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	44.1	34.5	11.8	0.0	8.7	9.9
Incr Delay (d2), s/veh	10.8	0.0	0.3	0.0	0.1	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.3	0.3	2.1	0.0	0.8	6.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	54.9	34.5	12.2	0.0	8.8	11.2
LnGrp LOS	D	C	B		A	B
Approach Vol, veh/h	416		179			672
Approach Delay, s/veh	54.2		12.2			10.9
Approach LOS	D		B			B
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	85.1		10.2		74.8	34.9
Change Period (Y+Rc), s	5.5		5.5		5.5	5.5
Max Green Setting (Gmax), s	60.5		11.5		43.5	48.5
Max Q Clear Time (g_c+I1), s	20.4		4.3		7.4	28.3
Green Ext Time (p_c), s	7.8		0.1		1.8	1.1

Intersection Summary

HCM 6th Ctrl Delay	25.3
HCM 6th LOS	C

Notes

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

Intersection						
Int Delay, s/veh	5.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	171	163	11	672	565
Future Vol, veh/h	2	171	163	11	672	565
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Yield	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	2	178	170	11	700	589
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	2165	176	0	0	170	0
Stage 1	176	-	-	-	-	-
Stage 2	1989	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	53	872	-	-	1420	-
Stage 1	859	-	-	-	-	-
Stage 2	118	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	27	872	-	-	1420	-
Mov Cap-2 Maneuver	27	-	-	-	-	-
Stage 1	859	-	-	-	-	-
Stage 2	60	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12.8	0		5.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	640	1420	-	
HCM Lane V/C Ratio	-	-	0.282	0.493	-	
HCM Control Delay (s)	-	-	12.8	10	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	1.2	2.8	-	

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	14	11	329	1213	4
Future Vol, veh/h	3	14	11	329	1213	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	15	11	343	1264	4
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1631	1266	1268	0	-	0
Stage 1	1266	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	112	206	548	-	-	-
Stage 1	265	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	109	206	548	-	-	-
Mov Cap-2 Maneuver	109	-	-	-	-	-
Stage 1	258	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	27.4	0.4		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	548	-	178	-	-	
HCM Lane V/C Ratio	0.021	-	0.099	-	-	
HCM Control Delay (s)	11.7	0	27.4	-	-	
HCM Lane LOS	B	A	D	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-	

Timings

3a. Build 2027 AM - Improved

9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy

11/18/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	118	4	3	0	135	190	1	719	119
Future Volume (vph)	118	4	3	0	135	190	1	719	119
Lane Group Flow (vph)	127	524	0	5	145	205	1	773	128
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4		8	1	6	5	2	
Permitted Phases	4		8		6		2		2
Detector Phase	7	4	8	8	1	6	5	2	2
Switch Phase									
Minimum Initial (s)	5.0	6.0	6.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	24.5	26.5	26.5	15.0	26.5	15.0	25.5	25.5
Total Split (s)	24.0	51.0	27.0	27.0	15.0	54.0	15.0	54.0	54.0
Total Split (%)	20.0%	42.5%	22.5%	22.5%	12.5%	45.0%	12.5%	45.0%	45.0%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	None	C-Min	C-Min
v/c Ratio	0.30	0.89		0.02	0.56	0.17	0.00	0.79	0.14
Control Delay	35.1	39.1		0.2	24.3	18.0	12.0	33.7	4.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.1	39.1		0.2	24.3	18.0	12.0	33.7	4.6
Queue Length 50th (ft)	79	222		0	58	78	0	481	2
Queue Length 95th (ft)	113	318		0	128	194	3	#879	40
Internal Link Dist (ft)		526		91		941		548	
Turn Bay Length (ft)	250				130		150		130
Base Capacity (vph)	437	756		319	267	1183	753	974	887
Starvation Cap Reductn	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.69		0.02	0.54	0.17	0.00	0.79	0.14

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

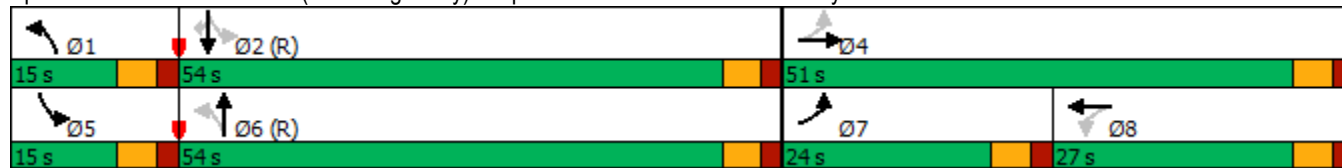
Natural Cycle: 105

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy



HCM 6th Signalized Intersection Summary
9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy

3a. Build 2027 AM - Improved

11/18/2022

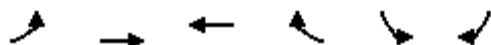
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	4	484	3	0	2	135	190	1	1	719	119
Future Volume (veh/h)	118	4	484	3	0	2	135	190	1	1	719	119
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	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	127	4	520	3	0	2	145	204	1	1	773	128
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	474	4	550	66	12	20	208	951	5	594	850	720
Arrive On Green	0.07	0.35	0.35	0.23	0.00	0.23	0.06	0.51	0.51	0.00	0.45	0.45
Sat Flow, veh/h	1781	12	1575	79	50	86	1781	1860	9	1781	1870	1585
Grp Volume(v), veh/h	127	0	524	5	0	0	145	0	205	1	773	128
Grp Sat Flow(s),veh/h/ln	1781	0	1587	214	0	0	1781	0	1869	1781	1870	1585
Q Serve(g_s), s	6.3	0.0	38.5	0.1	0.0	0.0	5.0	0.0	7.2	0.0	46.1	5.8
Cycle Q Clear(g_c), s	6.3	0.0	38.5	24.8	0.0	0.0	5.0	0.0	7.2	0.0	46.1	5.8
Prop In Lane	1.00		0.99	0.60		0.40	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	474	0	555	98	0	0	208	0	956	594	850	720
V/C Ratio(X)	0.27	0.00	0.94	0.05	0.00	0.00	0.70	0.00	0.21	0.00	0.91	0.18
Avail Cap(c_a), veh/h	625	0	602	98	0	0	244	0	956	732	850	720
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.8	0.0	37.9	37.6	0.0	0.0	26.5	0.0	16.1	17.8	30.4	19.4
Incr Delay (d2), s/veh	0.3	0.0	23.0	0.2	0.0	0.0	6.9	0.0	0.5	0.0	15.4	0.5
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(50%),veh/ln	2.6	0.0	17.5	0.1	0.0	0.0	2.2	0.0	3.0	0.0	22.6	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.1	0.0	60.9	37.8	0.0	0.0	33.4	0.0	16.6	17.8	45.8	20.0
LnGrp LOS	C	A	E	D	A	A	C	A	B	B	D	B
Approach Vol, veh/h	651		5				350				902	
Approach Delay, s/veh	54.9		37.8				23.6				42.1	
Approach LOS	D		D				C				D	
Timer - Assigned Phs	1	2	4		5	6	7	8				
Phs Duration (G+Y+Rc), s	12.5	60.0	47.4		5.7	66.9	13.8	33.6				
Change Period (Y+Rc), s	5.5	5.5	5.5		5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	48.5	45.5		9.5	48.5	18.5	21.5				
Max Q Clear Time (g_c+I1), s	7.0	48.1	40.5		2.0	9.2	8.3	26.8				
Green Ext Time (p_c), s	0.1	0.3	1.5		0.0	2.1	0.2	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	43.1											
HCM 6th LOS	D											

Intersection												
Int Delay, s/veh	5.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔	↔	↔	↔	↔	↔	
Traffic Vol, veh/h	9	10	77	62	10	27	36	137	84	66	617	4
Future Vol, veh/h	9	10	77	62	10	27	36	137	84	66	617	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	150	-	-	150	135	-	75	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	10	11	84	67	11	29	39	149	91	72	671	4
Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	1110	1135	673	1092	1046	149	675	0	0	240	0	0
Stage 1	817	817	-	227	227	-	-	-	-	-	-	-
Stage 2	293	318	-	865	819	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	188	204	459	194	230	903	926	-	-	1339	-	-
Stage 1	373	393	-	780	720	-	-	-	-	-	-	-
Stage 2	719	657	-	351	392	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	162	185	459	141	208	903	926	-	-	1339	-	-
Mov Cap-2 Maneuver	162	185	-	141	208	-	-	-	-	-	-	-
Stage 1	357	372	-	747	690	-	-	-	-	-	-	-
Stage 2	656	629	-	264	371	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB		SB		SB	
HCM Control Delay, s	17.4		41.6		1.3		0.8					
HCM LOS	C		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR		
Capacity (veh/h)	926	-	-	173	459	148	903	1339	-	-		
HCM Lane V/C Ratio	0.042	-	-	0.119	0.182	0.529	0.033	0.054	-	-		
HCM Control Delay (s)	9.1	-	-	28.6	14.6	53.8	9.1	7.8	-	-		
HCM Lane LOS	A	-	-	D	B	F	A	A	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.7	2.6	0.1	0.2	-	-		

Intersection												
Int Delay, s/veh	8.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱	↱		↱	↱	↱	↱	↱	↱	↱	
Traffic Vol, veh/h	9	10	77	68	10	27	36	221	97	66	686	4
Future Vol, veh/h	9	10	77	68	10	27	36	221	97	66	686	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	150	-	-	150	135	-	75	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	10	11	84	74	11	29	39	240	105	72	746	4
Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	1283	1315	748	1258	1212	240	750	0	0	345	0	0
Stage 1	892	892	-	318	318	-	-	-	-	-	-	-
Stage 2	391	423	-	940	894	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	143	159	416	149	184	804	868	-	-	1225	-	-
Stage 1	339	363	-	698	657	-	-	-	-	-	-	-
Stage 2	637	591	-	319	362	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	121	143	416	104	165	804	868	-	-	1225	-	-
Mov Cap-2 Maneuver	121	143	-	104	165	-	-	-	-	-	-	-
Stage 1	324	342	-	667	627	-	-	-	-	-	-	-
Stage 2	576	564	-	232	341	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB		SB		SB	
HCM Control Delay, s	20.1		81.7		1		0.7		0.7		0.7	
HCM LOS	C		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR		
Capacity (veh/h)	868	-	-	132	416	109	804	1225	-	-		
HCM Lane V/C Ratio	0.045	-	-	0.156	0.201	0.778	0.037	0.059	-	-		
HCM Control Delay (s)	9.3	-	-	37.3	15.8	106.6	9.6	8.1	-	-		
HCM Lane LOS	A	-	-	E	C	F	A	A	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.7	4.3	0.1	0.2	-	-		

Timings
12: SR 306 (Keith Bridge Rd) & Site Drwy 1

3a. Build 2027 AM - Improved
11/18/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	143	1099	565	599	359	67
Future Volume (vph)	143	1099	565	599	359	67
Lane Group Flow (vph)	155	1195	614	651	390	73
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		4	
Permitted Phases	6			2		4
Detector Phase	1	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	6.0	6.0
Minimum Split (s)	15.0	21.5	21.5	21.5	21.5	21.5
Total Split (s)	15.0	85.0	70.0	70.0	35.0	35.0
Total Split (%)	12.5%	70.8%	58.3%	58.3%	29.2%	29.2%
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
v/c Ratio	0.30	0.85	0.52	0.53	0.72	0.24
Control Delay	6.0	19.2	16.1	5.0	55.7	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	19.2	16.1	5.0	55.7	11.2
Queue Length 50th (ft)	28	554	281	112	149	0
Queue Length 95th (ft)	55	#1117	431	141	194	41
Internal Link Dist (ft)		666	919		741	
Turn Bay Length (ft)	150					150
Base Capacity (vph)	531	1398	1177	1240	843	444
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.85	0.52	0.53	0.46	0.16

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green

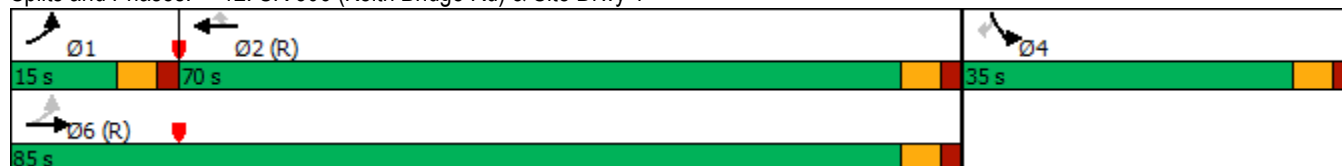
Natural Cycle: 90

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

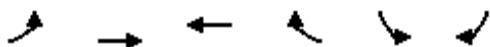
Queue shown is maximum after two cycles.

Splits and Phases: 12: SR 306 (Keith Bridge Rd) & Site Drwy 1



HCM 6th Signalized Intersection Summary
12: SR 306 (Keith Bridge Rd) & Site Drwy 1

3a. Build 2027 AM - Improved
11/18/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	143	1099	565	599	359	67
Future Volume (veh/h)	143	1099	565	599	359	67
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	155	1195	614	651	390	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	435	1443	1279	1084	473	
Arrive On Green	0.04	0.77	1.00	1.00	0.14	0.00
Sat Flow, veh/h	1781	1870	1870	1585	3456	1585
Grp Volume(v), veh/h	155	1195	614	651	390	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1728	1585
Q Serve(g_s), s	2.9	48.5	0.0	0.0	13.2	0.0
Cycle Q Clear(g_c), s	2.9	48.5	0.0	0.0	13.2	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	435	1443	1279	1084	473	
V/C Ratio(X)	0.36	0.83	0.48	0.60	0.83	
Avail Cap(c_a), veh/h	501	1443	1279	1084	850	
HCM Platoon Ratio	1.00	1.00	1.67	1.67	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.66	0.66	1.00	0.00
Uniform Delay (d), s/veh	4.4	8.7	0.0	0.0	50.4	0.0
Incr Delay (d2), s/veh	0.5	5.6	0.9	1.6	3.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	15.0	0.3	0.5	6.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.9	14.3	0.9	1.6	54.1	0.0
LnGrp LOS	A	B	A	A	D	
Approach Vol, veh/h		1350	1265		390	
Approach Delay, s/veh		13.2	1.3		54.1	
Approach LOS		B	A		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	10.6	87.5		21.9		98.1
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5
Max Green Setting (Gmax), s	9.5	64.5		29.5		79.5
Max Q Clear Time (g_c+I1), s	4.9	2.0		15.2		50.5
Green Ext Time (p_c), s	0.1	20.6		1.2		20.6

Intersection Summary

HCM 6th Ctrl Delay	13.5
HCM 6th LOS	B

Notes

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

Timings

3b. Build 2027 PM - Improved

1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

11/18/2022

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	41	596	344	108	769	25	351	48	211	38	27
Future Volume (vph)	41	596	344	108	769	25	351	48	211	38	27
Lane Group Flow (vph)	42	608	351	110	785	26	358	49	215	39	71
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	45.0	45.0	15.0	45.0	45.0	27.0	35.0	35.0	25.0	33.0
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%	37.5%	22.5%	29.2%	29.2%	20.8%	27.5%
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
v/c Ratio	0.17	0.65	0.37	0.30	0.78	0.03	0.92	0.13	0.44	0.21	0.46
Control Delay	11.7	21.5	4.7	11.8	30.8	0.0	69.7	40.6	8.4	34.1	35.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.7	21.5	4.7	11.8	30.8	0.0	69.7	40.6	8.4	34.1	35.0
Queue Length 50th (ft)	10	212	2	32	496	0	248	32	0	22	21
Queue Length 95th (ft)	32	398	77	62	#815	0	#327	67	65	47	67
Internal Link Dist (ft)		837			1303			833			239
Turn Bay Length (ft)	165			215		160	140				
Base Capacity (vph)	286	939	958	386	1002	931	390	468	559	364	421
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.65	0.37	0.28	0.78	0.03	0.92	0.10	0.38	0.11	0.17

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

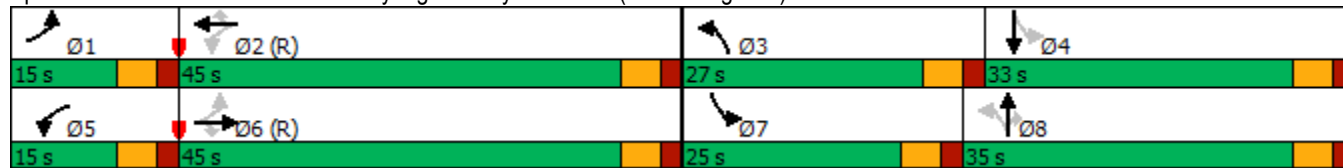
Natural Cycle: 120

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary
1: Freedom Pkwy/Ingles Drwy & SR 306 (Keith Bridge Rd)

3b. Build 2027 PM - Improved

11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	596	344	108	769	25	351	48	211	38	27	42
Future Volume (veh/h)	41	596	344	108	769	25	351	48	211	38	27	42
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	42	608	0	110	785	26	358	49	0	39	28	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	5	2	2	5	2	2	2	2	2	2	2
Cap, veh/h	266	996		580	1017	883	427	370		180	92	
Arrive On Green	0.06	1.00	0.00	0.04	0.56	0.56	0.18	0.20	0.00	0.03	0.05	0.00
Sat Flow, veh/h	1781	1826	1585	1781	1826	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	42	608	0	110	785	26	358	49	0	39	28	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	1.2	0.0	0.0	3.2	40.1	0.9	21.5	2.6	0.0	2.5	1.7	0.0
Cycle Q Clear(g_c), s	1.2	0.0	0.0	3.2	40.1	0.9	21.5	2.6	0.0	2.5	1.7	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	266	996		580	1017	883	427	370		180	92	
V/C Ratio(X)	0.16	0.61		0.19	0.77	0.03	0.84	0.13		0.22	0.31	
Avail Cap(c_a), veh/h	351	996		644	1017	883	427	460		416	429	
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(l)	0.94	0.94	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.1	0.0	0.0	10.8	20.6	12.0	43.1	39.6	0.0	52.0	55.1	0.0
Incr Delay (d2), s/veh	0.3	2.6	0.0	0.2	5.7	0.1	13.8	0.2	0.0	0.6	1.9	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(50%),veh/ln	0.4	0.7	0.0	1.2	16.7	0.3	11.3	1.2	0.0	1.1	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.3	2.6	0.0	11.0	26.3	12.0	56.9	39.8	0.0	52.6	57.0	0.0
LnGrp LOS	B	A		B	C	B	E	D		D	E	
Approach Vol, veh/h	650			921			407			67		
Approach Delay, s/veh	3.6			24.1			54.8			54.4		
Approach LOS	A			C			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.3	72.4	27.0	11.4	10.7	70.9	9.1	29.2				
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	39.5	21.5	27.5	9.5	39.5	19.5	29.5				
Max Q Clear Time (g_c+I1), s	3.2	42.1	23.5	3.7	5.2	2.0	4.5	4.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.1	8.4	0.0	0.2				

Intersection Summary

HCM 6th Ctrl Delay	24.7
HCM 6th LOS	C

Notes

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

Timings 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)

3b. Build 2027 PM - Improved

11/18/2022

						
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Configurations		 	 			 
Traffic Volume (vph)	370	480	984	125	620	572
Future Volume (vph)	370	480	984	125	620	572
Lane Group Flow (vph)	394	511	1047	133	660	609
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)	20.0	69.0	49.0	49.0	51.0	51.0
Total Split (%)	16.7%	57.5%	40.8%	40.8%	42.5%	42.5%
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
v/c Ratio	1.42	0.28	0.84	0.20	0.98	0.45
Control Delay	242.3	5.9	36.2	4.2	68.4	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	242.3	5.9	36.2	4.2	68.4	6.5
Queue Length 50th (ft)	~331	22	377	8	501	33
Queue Length 95th (ft)	#575	33	m425	m9	#752	79
Internal Link Dist (ft)		863	837			
Turn Bay Length (ft)	200			280		
Base Capacity (vph)	278	1819	1246	658	671	1360
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.42	0.28	0.84	0.20	0.98	0.45

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

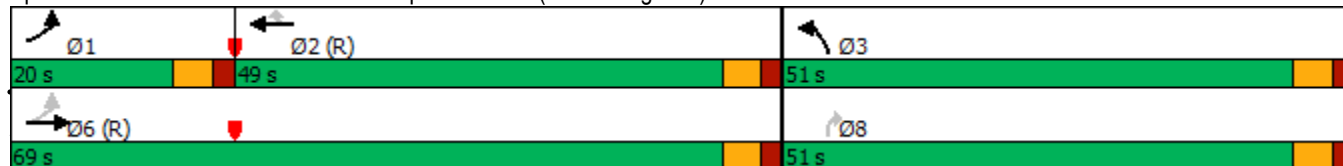
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

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



HCM 6th Signalized Intersection Summary 2: GA 400 NB Ramps & SR 306 (Keith Bridge Rd)

3b. Build 2027 PM - Improved
11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 				 			
Traffic Volume (veh/h)	370	480	0	0	984	125	620	0	572	0	0	0
Future Volume (veh/h)	370	480	0	0	984	125	620	0	572	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	394	511	0	0	1047	0	660	0	609			
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	358	1836	0	0	1258		675	0	1058			
Arrive On Green	0.16	0.70	0.00	0.00	0.73	0.00	0.38	0.00	0.38			
Sat Flow, veh/h	1781	3561	0	0	3561	1585	1781	0	2790			
Grp Volume(v), veh/h	394	511	0	0	1047	0	660	0	609			
Grp Sat Flow(s),veh/h/ln	1781	1735	0	0	1735	1585	1781	0	1395			
Q Serve(g_s), s	14.5	6.5	0.0	0.0	25.1	0.0	43.9	0.0	20.8			
Cycle Q Clear(g_c), s	14.5	6.5	0.0	0.0	25.1	0.0	43.9	0.0	20.8			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	358	1836	0	0	1258		675	0	1058			
V/C Ratio(X)	1.10	0.28	0.00	0.00	0.83		0.98	0.00	0.58			
Avail Cap(c_a), veh/h	358	1836	0	0	1258		675	0	1058			
HCM Platoon Ratio	1.33	1.33	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	0.45	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	25.8	9.3	0.0	0.0	14.0	0.0	36.7	0.0	29.6			
Incr Delay (d2), s/veh	74.6	0.3	0.0	0.0	3.1	0.0	28.9	0.0	0.8			
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(50%),veh/ln	12.8	2.2	0.0	0.0	5.1	0.0	23.6	0.0	6.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	100.5	9.7	0.0	0.0	17.0	0.0	65.6	0.0	30.4			
LnGrp LOS	F	A	A	A	B		E	A	C			
Approach Vol, veh/h	905			1047			1269					
Approach Delay, s/veh	49.2			17.0			48.7					
Approach LOS	D			B			D					
Timer - Assigned Phs	1	2					6	8				
Phs Duration (G+Y+Rc), s	20.0	49.0					69.0	51.0				
Change Period (Y+Rc), s	5.5	5.5					5.5	5.5				
Max Green Setting (Gmax), s	14.5	43.5					63.5	45.5				
Max Q Clear Time (g_c+I1), s	16.5	27.1					8.5	45.9				
Green Ext Time (p_c), s	0.0	9.9					7.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay				38.5								
HCM 6th LOS				D								

Notes

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

Timings 3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

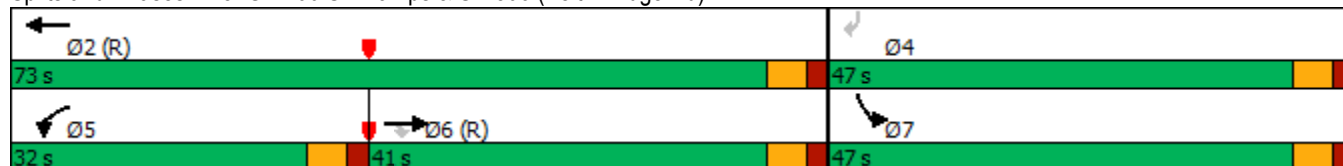
3b. Build 2027 PM - Improved
11/18/2022

	→	↘	↙	←	↘	↙
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations	↑↑	↑	↘↙	↑	↘	↙
Traffic Volume (vph)	781	610	594	985	69	196
Future Volume (vph)	781	610	594	985	69	196
Lane Group Flow (vph)	849	663	646	1071	75	213
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)	41.0	41.0	32.0	73.0	47.0	47.0
Total Split (%)	34.2%	34.2%	26.7%	60.8%	39.2%	39.2%
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
v/c Ratio	0.49	0.60	0.81	0.76	0.33	0.76
Control Delay	19.0	6.5	41.7	18.3	49.2	45.9
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	19.0	6.5	41.7	18.5	49.2	45.9
Queue Length 50th (ft)	231	170	243	564	54	96
Queue Length 95th (ft)	352	186	m264	m695	94	169
Internal Link Dist (ft)	919			863		
Turn Bay Length (ft)		220	260			
Base Capacity (vph)	1720	1101	828	1409	612	604
Starvation Cap Reductn	0	0	0	32	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.60	0.78	0.78	0.12	0.35

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

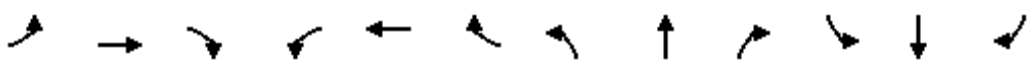


HCM 6th Signalized Intersection Summary

3: GA 400 SB Ramps & SR 306 (Keith Bridge Rd)

3b. Build 2027 PM - Improved

11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↘↗	↑					↘		↗
Traffic Volume (veh/h)	0	781	610	594	985	0	0	0	0	69	0	196
Future Volume (veh/h)	0	781	610	594	985	0	0	0	0	69	0	196
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	849	0	646	1071	0				75	0	213
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	1755		697	1375	0				276	0	246
Arrive On Green	0.00	1.00	0.00	0.40	1.00	0.00				0.16	0.00	0.16
Sat Flow, veh/h	0	3561	1585	3456	1826	0				1781	0	1585
Grp Volume(v), veh/h	0	849	0	646	1071	0				75	0	213
Grp Sat Flow(s),veh/h/ln	0	1735	1585	1728	1826	0				1781	0	1585
Q Serve(g_s), s	0.0	0.0	0.0	21.4	0.0	0.0				4.5	0.0	15.7
Cycle Q Clear(g_c), s	0.0	0.0	0.0	21.4	0.0	0.0				4.5	0.0	15.7
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1755		697	1375	0				276	0	246
V/C Ratio(X)	0.00	0.48		0.93	0.78	0.00				0.27	0.00	0.87
Avail Cap(c_a), veh/h	0	1755		763	1375	0				616	0	548
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.60	0.00	0.32	0.32	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	35.0	0.0	0.0				44.7	0.0	49.5
Incr Delay (d2), s/veh	0.0	0.6	0.0	6.6	1.5	0.0				0.5	0.0	8.9
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(50%),veh/ln	0.0	0.1	0.0	7.0	0.6	0.0				2.0	0.0	13.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.6	0.0	41.6	1.5	0.0				45.2	0.0	58.4
LnGrp LOS	A	A		D	A	A				D	A	E
Approach Vol, veh/h		849			1717						288	
Approach Delay, s/veh		0.6			16.6						55.0	
Approach LOS		A			B						D	
Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		95.9		24.1	29.7	66.2						
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5						
Max Green Setting (Gmax), s		67.5		41.5	26.5	35.5						
Max Q Clear Time (g_c+I1), s		2.0		17.7	23.4	2.0						
Green Ext Time (p_c), s		27.0		0.9	0.8	11.8						

Intersection Summary

HCM 6th Ctrl Delay	15.7
HCM 6th LOS	B

Notes

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

Intersection					
Intersection Delay, s/veh10.5					
Intersection LOS B					
Approach	EB	WB	NB	SB	
Entry Lanes	1	1	1	1	
Conflicting Circle Lanes	1	1	1	1	
Adj Approach Flow, veh/h	538	924	31	578	
Demand Flow Rate, veh/h	547	931	31	578	
Vehicles Circulating, veh/h	463	105	986	370	
Vehicles Exiting, veh/h	485	912	24	102	
Ped Vol Crossing Leg, #/h	0	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	1.000	
Approach Delay, s/veh	14.5	6.8	7.9	12.6	
Approach LOS	B	A	A	B	
Lane	Left	Left	Bypass	Left	Left
Designated Moves	LTR	LT	R	LTR	LTR
Assumed Moves	LTR	LT	R	LTR	LTR
RT Channelized			Yield		
Lane Util	1.000	1.000		1.000	1.000
Follow-Up Headway, s	2.609	2.609		2.609	2.609
Critical Headway, s	4.976	4.976	564	4.976	4.976
Entry Flow, veh/h	547	367	1244	31	578
Cap Entry Lane, veh/h	861	1240	1.000	505	946
Entry HV Adj Factor	0.984	0.981	564	1.000	1.000
Flow Entry, veh/h	538	360	1244	31	578
Cap Entry, veh/h	847	1216	0.454	505	946
V/C Ratio	0.636	0.296	7.5	0.061	0.611
Control Delay, s/veh	14.5	5.7	A	7.9	12.6
LOS	B	A	2	A	B
95th %tile Queue, veh	5	1		0	4

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Vol, veh/h	452	80	146	302	13	55
Future Vol, veh/h	452	80	146	302	13	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	135	110	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	545	96	176	364	16	66
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	641	0	1261	545
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	716	-
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	-	-	943	-	188	538
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	484	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	943	-	153	538
Mov Cap-2 Maneuver	-	-	-	-	153	-
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	393	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		3.2		16.2	
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	153	538	-	-	943	-
HCM Lane V/C Ratio	0.102	0.123	-	-	0.187	-
HCM Control Delay (s)	31.2	12.6	-	-	9.7	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0.4	-	-	0.7	-

Timings
6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)

3b. Build 2027 PM - Improved
11/18/2022

	WBL	WBR	NBT	SBL	SBT
Lane Group					
Lane Configurations					
Traffic Volume (vph)	333	49	538	70	209
Future Volume (vph)	333	49	538	70	209
Lane Group Flow (vph)	354	52	1111	74	222
Turn Type	Prot	Perm	NA	pm+pt	NA
Protected Phases	8		6	5	2
Permitted Phases		8		2	
Detector Phase	8	8	6	5	2
Switch Phase					
Minimum Initial (s)	6.0	6.0	15.0	5.0	15.0
Minimum Split (s)	23.5	23.5	21.5	15.0	21.5
Total Split (s)	54.0	54.0	49.0	17.0	66.0
Total Split (%)	45.0%	45.0%	40.8%	14.2%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Min	None	C-Min
v/c Ratio	0.80	0.13	1.10	0.44	0.18
Control Delay	55.5	24.8	86.3	20.1	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	55.5	24.8	86.3	20.1	14.5
Queue Length 50th (ft)	258	22	~988	35	116
Queue Length 95th (ft)	335	50	#1379	78	202
Internal Link Dist (ft)	1938		406		484
Turn Bay Length (ft)		25		80	
Base Capacity (vph)	715	648	1010	226	1226
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.50	0.08	1.10	0.33	0.18

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

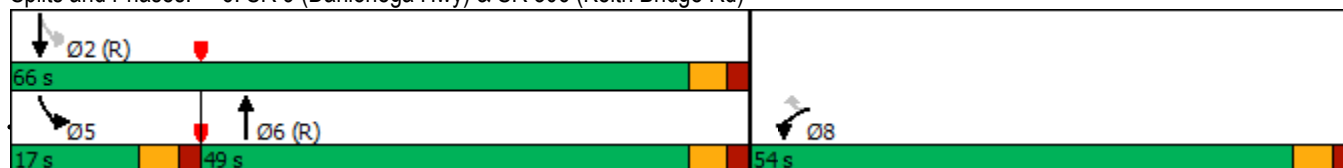
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)



HCM 6th Signalized Intersection Summary
6: SR 9 (Dahlonega Hwy) & SR 306 (Keith Bridge Rd)

3b. Build 2027 PM - Improved

11/18/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	333	49	538	507	70	209
Future Volume (veh/h)	333	49	538	507	70	209
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	354	52	572	0	74	222
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	391	348	1131		490	1288
Arrive On Green	0.22	0.22	0.60	0.00	0.04	0.69
Sat Flow, veh/h	1781	1585	1870	0	1781	1870
Grp Volume(v), veh/h	354	52	572	0	74	222
Grp Sat Flow(s),veh/h/ln	1781	1585	1870	0	1781	1870
Q Serve(g_s), s	23.2	3.2	20.9	0.0	1.8	5.0
Cycle Q Clear(g_c), s	23.2	3.2	20.9	0.0	1.8	5.0
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	391	348	1131		490	1288
V/C Ratio(X)	0.90	0.15	0.51		0.15	0.17
Avail Cap(c_a), veh/h	720	641	1131		593	1288
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	45.6	37.8	13.5	0.0	9.7	6.6
Incr Delay (d2), s/veh	8.0	0.2	1.6	0.0	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	1.2	8.1	0.0	0.6	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	53.6	38.0	15.1	0.0	9.8	6.9
LnGrp LOS	D	D	B		A	A
Approach Vol, veh/h	406		572			296
Approach Delay, s/veh	51.6		15.1			7.6
Approach LOS	D		B			A
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	88.1		10.1		78.1	31.9
Change Period (Y+Rc), s	5.5		5.5		5.5	5.5
Max Green Setting (Gmax), s	60.5		11.5		43.5	48.5
Max Q Clear Time (g_c+I1), s	7.0		3.8		22.9	25.2
Green Ext Time (p_c), s	2.5		0.1		6.1	1.1
Intersection Summary						
HCM 6th Ctrl Delay			25.0			
HCM 6th LOS			C			

Notes

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

Intersection						
Int Delay, s/veh	26.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	456	544	5	277	286
Future Vol, veh/h	10	456	544	5	277	286
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Yield	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	91
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	11	485	579	5	295	314
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1486	582	0	0	579	0
Stage 1	582	-	-	-	-	-
Stage 2	904	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	139	517	-	-	1005	-
Stage 1	563	-	-	-	-	-
Stage 2	398	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	98	517	-	-	1005	-
Mov Cap-2 Maneuver	98	-	-	-	-	-
Stage 1	563	-	-	-	-	-
Stage 2	281	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	83.6	0		4.9		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	474	1005	-	
HCM Lane V/C Ratio	-	-	1.046	0.293	-	
HCM Control Delay (s)	-	-	83.6	10.1	-	
HCM Lane LOS	-	-	F	B	-	
HCM 95th %tile Q(veh)	-	-	15.1	1.2	-	

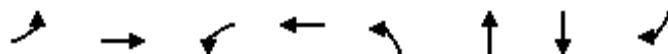
Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	13	22	972	563	2
Future Vol, veh/h	4	13	22	972	563	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	14	24	1057	612	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1718	613	614	0	-	0
Stage 1	613	-	-	-	-	-
Stage 2	1105	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	99	492	965	-	-	-
Stage 1	541	-	-	-	-	-
Stage 2	317	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	93	492	965	-	-	-
Mov Cap-2 Maneuver	93	-	-	-	-	-
Stage 1	509	-	-	-	-	-
Stage 2	317	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	20.9	0.2		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	965	-	245	-	-	
HCM Lane V/C Ratio	0.025	-	0.075	-	-	
HCM Control Delay (s)	8.8	0	20.9	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-	

Timings

3b. Build 2027 PM - Improved

9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy

11/18/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR	Ø5
Lane Configurations									
Traffic Volume (vph)	89	0	1	2	525	512	342	136	
Future Volume (vph)	89	0	1	2	525	512	342	136	
Lane Group Flow (vph)	100	256	0	3	590	575	384	153	
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	NA	Perm	
Protected Phases	7	4		8	1	6	2		5
Permitted Phases	4		8		6			2	
Detector Phase	7	4	8	8	1	6	2	2	
Switch Phase									
Minimum Initial (s)	5.0	6.0	6.0	6.0	5.0	15.0	15.0	15.0	5.0
Minimum Split (s)	15.0	24.5	26.5	26.5	15.0	26.5	25.5	25.5	15.0
Total Split (s)	24.0	51.0	27.0	27.0	15.0	54.0	54.0	54.0	15.0
Total Split (%)	20.0%	42.5%	22.5%	22.5%	12.5%	45.0%	45.0%	45.0%	13%
Yellow Time (s)	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
Lost Time Adjust (s)	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	
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lag	Lag	Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	None
v/c Ratio	0.50	0.44		0.03	0.69	0.39	0.51	0.21	
Control Delay	55.3	2.4		55.0	15.8	9.4	29.8	6.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	55.3	2.4		55.0	15.8	9.4	29.8	6.9	
Queue Length 50th (ft)	75	0		2	192	153	220	13	
Queue Length 95th (ft)	110	0		13	m398	m373	310	54	
Internal Link Dist (ft)		526		91		941	548		
Turn Bay Length (ft)	250				130			130	
Base Capacity (vph)	291	875		333	858	1465	752	713	
Starvation Cap Reductn	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.34	0.29		0.01	0.69	0.39	0.51	0.21	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy



HCM 6th Signalized Intersection Summary

3b. Build 2027 PM - Improved

9: SR 9 (Dahlonega Hwy) & Spot Rd/Mark Heard Fuel Co. Drwy

11/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	0	228	1	2	0	525	512	0	0	342	136
Future Volume (veh/h)	89	0	228	1	2	0	525	512	0	0	342	136
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	100	0	256	1	2	0	590	575	0	0	384	153
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	0	294	55	81	0	630	1352	0	562	1118	948
Arrive On Green	0.07	0.00	0.19	0.07	0.07	0.00	0.08	0.72	0.00	0.00	0.60	0.60
Sat Flow, veh/h	1781	0	1585	197	1097	0	1781	1870	0	1781	1870	1585
Grp Volume(v), veh/h	100	0	256	3	0	0	590	575	0	0	384	153
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1294	0	0	1781	1870	0	1781	1870	1585
Q Serve(g_s), s	6.0	0.0	18.8	0.0	0.0	0.0	9.5	14.8	0.0	0.0	12.5	5.2
Cycle Q Clear(g_c), s	6.0	0.0	18.8	5.5	0.0	0.0	9.5	14.8	0.0	0.0	12.5	5.2
Prop In Lane	1.00		1.00	0.33		0.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	285	0	294	136	0	0	630	1352	0	562	1118	948
V/C Ratio(X)	0.35	0.00	0.87	0.02	0.00	0.00	0.94	0.43	0.00	0.00	0.34	0.16
Avail Cap(c_a), veh/h	443	0	601	297	0	0	630	1352	0	702	1118	948
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(l)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	45.2	0.0	47.5	51.5	0.0	0.0	19.7	6.7	0.0	0.0	12.2	10.7
Incr Delay (d2), s/veh	0.7	0.0	7.9	0.1	0.0	0.0	21.7	1.0	0.0	0.0	0.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	7.8	0.1	0.0	0.0	12.8	4.7	0.0	0.0	4.9	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.0	0.0	55.3	51.6	0.0	0.0	41.4	7.6	0.0	0.0	13.0	11.1
LnGrp LOS	D	A	E	D	A	A	D	A	A	A	B	B
Approach Vol, veh/h	356				3				1165			
Approach Delay, s/veh	52.7				51.6				24.7			
Approach LOS	D				D				C			
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	77.2		27.8	0.0	92.2	13.4	14.4				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	48.5		45.5	9.5	48.5	18.5	21.5				
Max Q Clear Time (g_c+l1), s	11.5	14.5		20.8	0.0	16.8	8.0	7.5				
Green Ext Time (p_c), s	0.0	5.9		1.4	0.0	7.2	0.1	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	26.4											
HCM 6th LOS	C											

Intersection												
Int Delay, s/veh	8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔	↔	↔	↔	↔	↔	
Traffic Vol, veh/h	8	10	71	93	10	61	94	361	69	41	253	10
Future Vol, veh/h	8	10	71	93	10	61	94	361	69	41	253	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	150	-	-	150	135	-	75	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	9	11	77	101	11	66	102	392	75	45	275	11

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	1043	1042	281	1011	972	392	286	0	0	467	0	0
Stage 1	371	371	-	596	596	-	-	-	-	-	-	-
Stage 2	672	671	-	415	376	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	209	232	763	220	254	661	1288	-	-	1105	-	-
Stage 1	653	623	-	494	495	-	-	-	-	-	-	-
Stage 2	449	458	-	619	620	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	165	205	763	173	224	661	1288	-	-	1105	-	-
Mov Cap-2 Maneuver	165	205	-	173	224	-	-	-	-	-	-	-
Stage 1	601	597	-	455	456	-	-	-	-	-	-	-
Stage 2	363	422	-	524	595	-	-	-	-	-	-	-

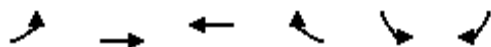
Approach	EB	WB	NB	SB
HCM Control Delay, s	13.5	38.7	1.4	1.1
HCM LOS	B	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1288	-	-	185	763	177	661	1105	-	-
HCM Lane V/C Ratio	0.079	-	-	0.106	0.101	0.633	0.1	0.04	-	-
HCM Control Delay (s)	8	-	-	26.7	10.2	55	11.1	8.4	-	-
HCM Lane LOS	A	-	-	D	B	F	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	0.3	0.3	3.6	0.3	0.1	-	-

Intersection												
Int Delay, s/veh	17.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔	↔	↔	↔	↔	↔	
Traffic Vol, veh/h	8	10	71	106	10	61	94	455	77	41	366	10
Future Vol, veh/h	8	10	71	106	10	61	94	455	77	41	366	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	150	-	-	150	135	-	75	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	9	11	77	115	11	66	102	495	84	45	398	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1274	1277	404	1237	1198	495	409	0	0	579	0	0
Stage 1	494	494	-	699	699	-	-	-	-	-	-	-
Stage 2	780	783	-	538	499	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	145	168	651	154	187	579	1161	-	-	1005	-	-
Stage 1	561	550	-	434	445	-	-	-	-	-	-	-
Stage 2	391	407	-	531	547	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	110	146	651	116	163	579	1161	-	-	1005	-	-
Mov Cap-2 Maneuver	110	146	-	116	163	-	-	-	-	-	-	-
Stage 1	512	525	-	396	406	-	-	-	-	-	-	-
Stage 2	307	371	-	438	522	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	16.8		115.2		1.3		0.9					
HCM LOS	C		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR		
Capacity (veh/h)	1161	-	-	127	651	119	579	1005	-	-		
HCM Lane V/C Ratio	0.088	-	-	0.154	0.119	1.06	0.115	0.044	-	-		
HCM Control Delay (s)	8.4	-	-	38.4	11.3	169.5	12	8.7	-	-		
HCM Lane LOS	A	-	-	E	B	F	B	A	-	-		
HCM 95th %tile Q(veh)	0.3	-	-	0.5	0.4	7.3	0.4	0.1	-	-		

Timings
12: SR 306 (Keith Bridge Rd) & Site Drwy 1

3b. Build 2027 PM - Improved
11/18/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	100	749	742	440	642	126
Future Volume (vph)	100	749	742	440	642	126
Lane Group Flow (vph)	109	814	807	478	698	137
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		4	
Permitted Phases	6			2		4
Detector Phase	1	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	6.0	6.0
Minimum Split (s)	15.0	21.5	21.5	21.5	21.5	21.5
Total Split (s)	17.0	80.0	63.0	63.0	40.0	40.0
Total Split (%)	14.2%	66.7%	52.5%	52.5%	33.3%	33.3%
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
v/c Ratio	0.40	0.66	0.80	0.46	0.82	0.29
Control Delay	12.5	16.4	29.7	6.3	51.0	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	16.4	29.7	6.3	51.0	10.7
Queue Length 50th (ft)	29	355	462	101	262	15
Queue Length 95th (ft)	56	548	#837	116	317	63
Internal Link Dist (ft)		666	919		741	
Turn Bay Length (ft)	150					150
Base Capacity (vph)	310	1230	1011	1030	986	534
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.66	0.80	0.46	0.71	0.26

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green

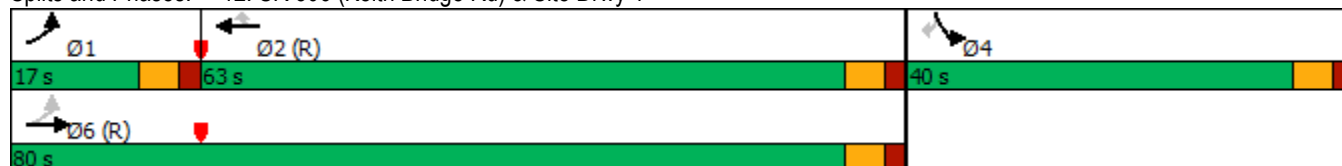
Natural Cycle: 90

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

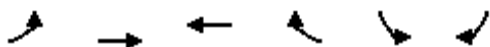
Queue shown is maximum after two cycles.

Splits and Phases: 12: SR 306 (Keith Bridge Rd) & Site Drwy 1



HCM 6th Signalized Intersection Summary
12: SR 306 (Keith Bridge Rd) & Site Drwy 1

3b. Build 2027 PM - Improved
11/18/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	100	749	742	440	642	126
Future Volume (veh/h)	100	749	742	440	642	126
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	109	814	807	478	698	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	387	1272	1110	941	790	
Arrive On Green	0.04	0.68	1.00	1.00	0.23	0.00
Sat Flow, veh/h	1781	1870	1870	1585	3456	1585
Grp Volume(v), veh/h	109	814	807	478	698	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1728	1585
Q Serve(g_s), s	2.7	29.6	0.0	0.0	23.4	0.0
Cycle Q Clear(g_c), s	2.7	29.6	0.0	0.0	23.4	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	387	1272	1110	941	790	
V/C Ratio(X)	0.28	0.64	0.73	0.51	0.88	
Avail Cap(c_a), veh/h	486	1272	1110	941	994	
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.56	0.56	1.00	0.00
Uniform Delay (d), s/veh	7.8	10.9	0.0	0.0	44.8	0.0
Incr Delay (d2), s/veh	0.4	2.5	2.4	1.1	8.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	10.8	0.7	0.3	11.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.2	13.4	2.4	1.1	52.8	0.0
LnGrp LOS	A	B	A	A	D	
Approach Vol, veh/h		923	1285		698	
Approach Delay, s/veh		12.8	1.9		52.8	
Approach LOS		B	A		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	10.4	76.7		32.9		87.1
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5
Max Green Setting (Gmax), s	11.5	57.5		34.5		74.5
Max Q Clear Time (g_c+I1), s	4.7	2.0		25.4		31.6
Green Ext Time (p_c), s	0.1	22.3		2.0		13.7

Intersection Summary

HCM 6th Ctrl Delay	17.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

Traffic Volume Worksheets

22-177 - North Park Mixed-Use Development - DRI (#3782)

Traffic Volumes

A&R Engineering
November 2022

1. SR 306 @ Freedom Pkwy

A.M. Peak Hour

Condition	Freedom Parkway Northbound				Ingles Driveway 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:	137	32	62	231	21	10	48	79	36	606	110	752	62	939	42	1043
Growth Factor (%):	1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2	
No-Build 2024 Volumes:	145	34	66	245	22	11	51	84	38	642	117	797	66	995	45	1106
Total New Trips (East Site):	45	0	0	45	0	0	0	0	0	23	23	46	0	45	0	45
Total New Trips (West Site):	4	0	0	4	0	0	0	0	0	9	9	18	0	4	0	4
Pass-by Trips (East Site):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	194	34	66	294	22	11	51	84	38	674	149	861	66	1044	45	1155

P.M. Peak Hour

Condition	Freedom Parkway Northbound				Ingles Driveway 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:	292	45	199	536	36	25	40	101	39	510	273	822	102	687	24	813
Growth Factor (%):	1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2	
No-Build 2024 Volumes:	310	48	211	569	38	27	42	107	41	541	289	871	108	728	25	861
Total New Trips (East Site):	31	0	0	31	0	0	0	0	0	47	47	94	0	31	0	31
Total New Trips (West Site):	10	0	0	10	0	0	0	0	0	8	8	16	0	10	0	10
Pass-by Trips (East Site):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	351	48	211	610	38	27	42	107	41	596	344	981	108	769	25	902

22-177 - North Park Mixed-Use Development - DRI (#3782)

Traffic Volumes

A&R Engineering
November 2022

2. SR 306 @ GA 400 NB Ramp

A.M. Peak Hour

Condition	GA 400/ US 19 NB Ramps				-				SR 306 (Keith Bridge Road)				SR 306 (Keith Bridge Road)			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	51	0	389	440	0	0	0	0	33	445	0	478	0	1152	51	1203
Growth Factor (%):	1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2	
No-Build 2024 Volumes:	54	0	412	466	0	0	0	0	35	472	0	507	0	1221	54	1275
Total New Trips (East Site):	407	0	0	407	0	0	0	0	87	46	0	133	0	91	0	91
Total New Trips (West Site):	36	0	0	36	0	0	0	0	32	17	0	49	0	8	0	8
Pass-by Trips (East Site):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	497	0	412	909	0	0	0	0	154	535	0	689	0	1320	54	1374

P.M. Peak Hour

Condition	GA 400/ US 19 NB Ramps				-				SR 306 (Keith Bridge Road)				SR 306 (Keith Bridge Road)			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	234	0	540	774	0	0	0	0	153	349	0	502	0	850	118	968
Growth Factor (%):	1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2	
No-Build 2024 Volumes:	248	0	572	820	0	0	0	0	162	370	0	532	0	901	125	1026
Total New Trips (East Site):	278	0	0	278	0	0	0	0	178	94	0	272	0	62	0	62
Total New Trips (West Site):	94	0	0	94	0	0	0	0	30	16	0	46	0	21	0	21
Pass-by Trips (East Site):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	620	0	572	1192	0	0	0	0	370	480	0	850	0	984	125	1109

22-177 - North Park Mixed-Use Development - DRI (#3782)

Traffic Volumes

A&R Engineering
November 2022

3. SR 306 @ GA 400 SB Ramp

A.M. Peak Hour

Condition	Road A Northbound						GA 400/ US 19 SB Ramps 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	L	T	R	Tot				
Existing 2022 Traffic Counts:	0	0	0	0	44	0	52	96	0	434	502	936	813	359	0	1172								
Growth Factor (%):	1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2					
No-Build 2024 Volumes:	0	0	0	0	47	0	55	102	0	460	532	992	862	381	0	1243								
Total New Trips (East Site):	0	0	0	0	0	0	172	172	0	133	206	339	0	498	0	498								
Total New Trips (West Site):	0	0	0	0	0	0	15	15	0	50	77	127	0	44	0	44								
Pass-by Trips (East Site):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Future 2024 Traffic Volumes:	0	0	0	0	47	0	242	289	0	643	815	1458	862	923	0	1785								

P.M. Peak Hour

Condition	Road A Northbound						GA 400/ US 19 SB Ramps 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	L	T	R	Tot				
Existing 2022 Traffic Counts:	0	0	0	0	65	0	37	102	0	437	109	546	0	437	109	546	560	500	0	1060				
Growth Factor (%):	1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2					
No-Build 2024 Volumes:	0	0	0	0	69	0	39	108	0	463	116	579	0	463	116	579	594	530	0	1124				
Total New Trips (East Site):	0	0	0	0	0	0	117	117	0	272	423	695	0	272	423	695	0	340	0	340				
Total New Trips (West Site):	0	0	0	0	0	0	40	40	0	46	71	117	0	46	71	117	0	115	0	115				
Pass-by Trips (East Site):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Future 2024 Traffic Volumes:	0	0	0	0	69	0	196	265	0	781	610	1391	0	781	610	1391	594	985	0	1579				

22-177 - North Park Mixed-Use Development - DRI (#3782) **Traffic Volumes**

A&R Engineering
November 2022

4. SR 306 @ State Barn Rd

A.M. Peak Hour

Condition	Vanderbilt Way Northbound				State Barn Road 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	2	16	18	537	1	18	556	7	383	1	391	2	315	94	411
Growth Factor (%):	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
No-Build 2024 Volumes:	0	2	17	19	569	1	19	589	7	406	1	414	2	334	100	436
Total New Trips (East Site):	0	0	9	9	51	0	37	88	72	63	0	135	5	32	100	137
Total New Trips (West Site):	0	1	0	1	127	2	26	155	12	0	0	12	0	0	59	59
Pass-by Trips (East Site):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	0	3	26	29	747	3	82	832	91	469	1	561	7	366	259	632

P.M. Peak Hour

Condition	Vanderbilt Way Northbound				State Barn Road 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:	3	2	16	21	185	2	22	209	11	345	5	361	5	243	289	537
Growth Factor (%):	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
No-Build 2024 Volumes:	3	2	17	22	196	2	23	221	12	366	5	383	5	258	306	569
Total New Trips (East Site):	0	0	6	6	104	0	75	179	49	43	0	92	9	66	69	144
Total New Trips (West Site):	0	2	0	2	117	2	24	143	31	0	0	31	0	0	155	155
Pass-by Trips (East Site):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	3	4	23	30	417	4	122	543	92	409	5	506	14	324	530	868

22-177 - North Park Mixed-Use Development - DRI (#3782)
Traffic Volumes

A&R Engineering
 November 2022

5. SR 306 @ Central Park Drwy

A.M. Peak Hour

Condition	Central Park Driveway					- Southbound					SR 306 (Keith Bridge Road)					SR 306 (Keith Bridge Road)				
	Northbound					Southbound					Eastbound					Westbound				
	L	T	R	Tot		L	T	R	Tot		L	T	R	Tot		L	T	R	Tot	
Existing 2022 Traffic Counts:	26	0	26	52		0	0	0	0		0	421	18	439		31	284	0	315	
Growth Factor (%):	1.2	1.2	1.2			1.2	1.2	1.2			1.2	1.2	1.2			1.2	1.2	1.2		
No-Build 2024 Volumes:	28	0	28	56		0	0	0	0		0	446	19	465		33	301	0	334	
Total New Trips (East Site):	0	0	9	9		0	0	0	0		0	127	0	127		5	64	0	69	
Total New Trips (West Site):	0	0	1	1		0	0	0	0		0	11	0	11		2	24	0	26	
Pass-by Trips (East Site):	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
Future 2024 Traffic Volumes:	28	0	38	66		0	0	0	0		0	584	19	603		40	389	0	429	

P.M. Peak Hour

Condition	Central Park Driveway					- Southbound					SR 306 (Keith Bridge Road)					SR 306 (Keith Bridge Road)				
	Northbound					Southbound					Eastbound					Westbound				
	L	T	R	Tot		L	T	R	Tot		L	T	R	Tot		L	T	R	Tot	
Existing 2022 Traffic Counts:	12	0	44	56		0	0	0	0		0	317	75	392		127	141	0	268	
Growth Factor (%):	1.2	1.2	1.2			1.2	1.2	1.2			1.2	1.2	1.2			1.2	1.2	1.2		
No-Build 2024 Volumes:	13	0	47	60		0	0	0	0		0	336	80	416		135	149	0	284	
Total New Trips (East Site):	0	0	6	6		0	0	0	0		0	87	0	87		9	131	0	140	
Total New Trips (West Site):	0	0	2	2		0	0	0	0		0	29	0	29		2	22	0	24	
Pass-by Trips (East Site):	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
Future 2024 Traffic Volumes:	13	0	55	68		0	0	0	0		0	452	80	532		146	302	0	448	

22-177 - North Park Mixed-Use Development - DRI (#3782)

Traffic Volumes

A&R Engineering
November 2022

6. SR 306 @ SR 9

A.M. Peak Hour

Condition	SR 9 (Dahlonega Highway)				SR 9 (Dahlonega Highway)				- Eastbound				SR 306 (Keith Bridge Road)			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	156	199	355	76	507	0	583	0	0	0	0	265	0	13	278
Growth Factor (%):	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
No-Build 2024 Volumes:	0	165	211	376	81	537	0	618	0	0	0	0	281	0	14	295
Total New Trips (East Site):	0	0	127	127	0	0	0	0	0	0	0	0	64	0	0	64
Total New Trips (West Site):	0	0	11	11	0	0	0	0	0	0	0	0	24	0	0	24
Pass-by Trips (East Site):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	0	165	349	514	81	537	0	618	0	0	0	0	369	0	14	383

P.M. Peak Hour

Condition	SR 9 (Dahlonega Highway)				SR 9 (Dahlonega Highway)				- Eastbound				SR 306 (Keith Bridge Road)			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	508	369	877	66	197	0	263	0	0	0	0	170	0	46	216
Growth Factor (%):	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
No-Build 2024 Volumes:	0	538	391	929	70	209	0	279	0	0	0	0	180	0	49	229
Total New Trips (East Site):	0	0	87	87	0	0	0	0	0	0	0	0	131	0	0	131
Total New Trips (West Site):	0	0	29	29	0	0	0	0	0	0	0	0	22	0	0	22
Pass-by Trips (East Site):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	0	538	507	1045	70	209	0	279	0	0	0	0	333	0	49	382

22-177 - North Park Mixed-Use Development - DRI (#3782) **Traffic Volumes**

A&R Engineering
November 2022

7. SR 9 @ State Barn Rd

A.M. Peak Hour

Condition	SR 9 (Dahlonega Highway)				SR 9 (Dahlonega Highway)				-				State Barn Road			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	154	10	164	541	533	0	1074	0	0	0	0	2	0	102	104
Growth Factor (%):	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
No-Build 2024 Volumes:	0	163	11	174	573	565	0	1138	0	0	0	0	2	0	108	110
Total New Trips (East Site):	0	0	0	0	91	0	0	91	0	0	0	0	0	0	46	46
Total New Trips (West Site):	0	0	0	0	8	0	0	8	0	0	0	0	0	0	17	17
Pass-by Trips (East Site):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	0	163	11	174	672	565	0	1237	0	0	0	0	2	0	171	173

P.M. Peak Hour

Condition	SR 9 (Dahlonega Highway)				SR 9 (Dahlonega Highway)				-				State Barn Road			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	513	5	518	183	270	0	453	0	0	0	0	9	0	326	335
Growth Factor (%):	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
No-Build 2024 Volumes:	0	544	5	549	194	286	0	480	0	0	0	0	10	0	346	356
Total New Trips (East Site):	0	0	0	0	62	0	0	62	0	0	0	0	0	0	94	94
Total New Trips (West Site):	0	0	0	0	21	0	0	21	0	0	0	0	0	0	16	16
Pass-by Trips (East Site):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	0	544	5	549	277	286	0	563	0	0	0	0	10	0	456	466

22-177 - North Park Mixed-Use Development - DRI (#3782) **Traffic Volumes**

A&R Engineering
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8. SR 9 @ Johnson Dr **A.M. Peak Hour**

Condition	SR 9 (Dahlonega Highway)				SR 9 (Dahlonega Highway)				Johnson Drive				-			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	4	258	0	262	0	1061	4	1065	3	0	4	7	0	0	0	0
Growth Factor (%):	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
No-Build 2024 Volumes:	4	273	0	277	0	1125	4	1129	3	0	4	7	0	0	0	0
Total New Trips (East Site):	5	41	0	46	0	81	0	81	0	0	9	9	0	0	0	0
Total New Trips (West Site):	2	15	0	17	0	7	0	7	0	0	1	1	0	0	0	0
Pass-by Trips (East Site):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	11	329	0	340	0	1213	4	1217	3	0	14	17	0	0	0	0

P.M. Peak Hour

Condition	SR 9 (Dahlonega Highway)				SR 9 (Dahlonega Highway)				Johnson Drive				-			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	10	824	0	834	0	460	2	462	4	0	5	9	0	0	0	0
Growth Factor (%):	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
No-Build 2024 Volumes:	11	873	0	884	0	488	2	490	4	0	5	9	0	0	0	0
Total New Trips (East Site):	9	85	0	94	0	56	0	56	0	0	6	6	0	0	0	0
Total New Trips (West Site):	2	14	0	16	0	19	0	19	0	0	2	2	0	0	0	0
Pass-by Trips (East Site):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	22	972	0	994	0	563	2	565	4	0	13	17	0	0	0	0

22-177 - North Park Mixed-Use Development - DRI (#3782)
Traffic Volumes

A&R Engineering
November 2022

9. SR 9 @ Spot Drive

A.M. Peak Hour

Condition	SR 9 (Dahlonega Highway)				SR 9 (Dahlonega Highway)				Spot Road Eastbound				Mark Heard Fuel Company Driveway Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	104	149	1	254	1	632	112	745	111	4	420	535	3	0	2	5
Growth Factor (%):	1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2	
No-Build 2024 Volumes:	110	158	1	269	1	670	119	790	118	4	445	567	3	0	2	5
Total New Trips (East Site):	18	23	0	41	0	45	0	45	0	0	36	36	0	0	0	0
Total New Trips (West Site):	7	9	0	16	0	4	0	4	0	0	3	3	0	0	0	0
Pass-by Trips (East Site):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	135	190	1	326	1	719	119	839	118	4	484	606	3	0	2	5

P.M. Peak Hour

Condition	SR 9 (Dahlonega Highway)				SR 9 (Dahlonega Highway)				Spot Road Eastbound				Mark Heard Fuel Company Driveway Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	454	431	0	885	0	284	128	412	84	0	184	268	1	2	0	3
Growth Factor (%):	1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2	
No-Build 2024 Volumes:	481	457	0	938	0	301	136	437	89	0	195	284	1	2	0	3
Total New Trips (East Site):	38	47	0	85	0	31	0	31	0	0	25	25	0	0	0	0
Total New Trips (West Site):	6	8	0	14	0	10	0	10	0	0	8	8	0	0	0	0
Pass-by Trips (East Site):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	525	512	0	1037	0	342	136	478	89	0	228	317	1	2	0	3

22-177 - North Park Mixed-Use Development - DRI (#3782)

Traffic Volumes

A&R Engineering
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10. State Barn Rd @ Drwy 4 & 5

A.M. Peak Hour

Condition	State Barn Road Northbound				State Barn Road Southbound				Site Driveway 4 (West Site) Eastbound				Site Driveway 5 (East Site) Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	103	0	103	0	556	0	556	0	0	0	0	0	0	0	0
Growth Factor (%):	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
No-Build 2024 Volumes:	0	109	0	109	0	589	0	589	0	0	0	0	0	0	0	0
Total New Trips (East Site):	0	23	80	103	45	45	0	90	0	10	0	10	41	10	23	74
Total New Trips (West Site):	36	9	0	45	0	4	4	8	9	0	77	86	0	0	0	0
Pass-by Trips (East Site):	0	-4	4	0	21	-21	0	0	0	0	0	0	21	0	4	25
Future 2024 Traffic Volumes:	36	137	84	257	66	617	4	687	9	10	77	96	62	10	27	99

P.M. Peak Hour

Condition	State Barn Road Northbound				State Barn Road Southbound				Site Driveway 4 (West Site) Eastbound				Site Driveway 5 (East Site) Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	302	0	302	0	209	0	209	0	0	0	0	0	0	0	0
Growth Factor (%):	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
No-Build 2024 Volumes:	0	320	0	320	0	222	0	222	0	0	0	0	0	0	0	0
Total New Trips (East Site):	0	47	55	102	31	31	0	62	0	0	0	0	83	0	47	130
Total New Trips (West Site):	94	8	0	102	0	10	10	20	8	10	71	89	0	10	0	10
Pass-by Trips (East Site):	0	-14	14	0	10	-10	0	0	0	0	0	0	10	0	14	24
Future 2024 Traffic Volumes:	94	361	69	524	41	253	10	304	8	10	71	89	93	10	61	164

22-177 - North Park Mixed-Use Development - DRI (#3782) Traffic Volumes

A&R Engineering
November 2022

11. State Barn Rd @ Drwy 2 & 3

A.M. Peak Hour

Condition	State Barn Road Northbound				State Barn Road Southbound				Site Driveway 2 (West Site) Eastbound				Site Driveway 5 (East Site) Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	103	0	103	0	556	0	556	0	0	0	0	0	0	0	0
Growth Factor (%):	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
No-Build 2024 Volumes:	0	109	0	109	0	589	0	589	0	0	0	0	0	0	0	0
Total New Trips (East Site):	0	80	93	173	45	41	0	86	0	10	0	10	47	10	23	80
Total New Trips (West Site):	36	36	0	72	0	77	4	81	9	0	77	86	0	0	0	0
Pass-by Trips (East Site):	0	-4	4	0	21	-21	0	0	0	0	0	0	21	0	4	25
Future 2024 Traffic Volumes:	36	221	97	354	66	686	4	756	9	10	77	96	68	10	27	105

P.M. Peak Hour

Condition	State Barn Road Northbound				State Barn Road Southbound				Site Driveway 2 (West Site) Eastbound				Site Driveway 5 (East Site) Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	302	0	302	0	209	0	209	0	0	0	0	0	0	0	0
Growth Factor (%):	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
No-Build 2024 Volumes:	0	320	0	320	0	222	0	222	0	0	0	0	0	0	0	0
Total New Trips (East Site):	0	55	63	118	31	83	0	114	0	0	0	0	96	0	47	143
Total New Trips (West Site):	94	94	0	188	0	71	10	81	8	10	71	89	0	10	0	10
Pass-by Trips (East Site):	0	-14	14	0	10	-10	0	0	0	0	0	0	10	0	14	24
Future 2024 Traffic Volumes:	94	455	77	626	41	366	10	417	8	10	71	89	106	10	61	177

22-177 - North Park Mixed-Use Development - DRI (#3782) **Traffic Volumes**

A&R Engineering
November 2022

12. SR 306 @ Drwy 1

A.M. Peak Hour

Condition	-				Site Driveway 1 (East Site)				SR 306 (Keith Bridge Road)				SR 306 (Keith Bridge Road)			
	Northbound				Southbound				Eastbound				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	936	0	936	0	411	0	411
Growth Factor (%):	1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2	
No-Build 2024 Volumes:	0	0	0	0	0	0	0	0	0	992	0	992	0	436	0	436
Total New Trips (East Site):	0	0	0	0	288	0	37	325	72	51	0	123	0	100	569	669
Total New Trips (West Site):	0	0	0	0	0	0	0	0	0	127	0	127	0	59	0	59
Pass-by Trips (East Site):	0	0	0	0	71	0	30	101	71	-71	0	0	0	-30	30	0
Future 2024 Traffic Volumes:	0	0	0	0	359	0	67	426	143	1099	0	1242	0	565	599	1164

P.M. Peak Hour

Condition	-				Site Driveway 1 (East Site)				SR 306 (Keith Bridge Road)				SR 306 (Keith Bridge Road)			
	Northbound				Southbound				Eastbound				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	537	0	537
Growth Factor (%):	1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2		1.2	1.2	1.2	
No-Build 2024 Volumes:	0	0	0	0	0	0	0	0	0	579	0	579	0	569	0	569
Total New Trips (East Site):	0	0	0	0	591	0	75	666	49	104	0	153	0	69	389	458
Total New Trips (West Site):	0	0	0	0	0	0	0	0	0	117	0	117	0	155	0	155
Pass-by Trips (East Site):	0	0	0	0	51	0	51	102	51	-51	0	0	0	-51	51	0
Future 2024 Traffic Volumes:	0	0	0	0	642	0	126	768	100	749	0	849	0	742	440	1182