DEVELOPMENT OF REGIONAL IMPACT
(DRI #2636)
TRAFFIC STUDY
FOR
LONGACRE INDUSTRIAL DEVELOPMENT

BUFORD, GEORGIA

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EXECUTIVE SUMMARY

Traffic impacts were evaluated for the added traffic from the proposed Longacre industrial development located on Roy Carlson Boulevard between SR 13 (Buford Highway) and I-985 in Buford, Georgia. The development will consist of:

- Warehousing: 947,520 square feet
- Industrial Park: 455,600 square feet
- Shopping Center: 40,000 square feet

The development proposes access via Roy Carlson Boulevard, and, for the purpose of this analysis, an additional right-in/right-out/left-out access point on Thompson Mill Road between Bryant Road and I-985. Existing and future operations after completion of the project were analyzed at the intersections of:

- SR 347 (Friendship Road) at I-985 Northbound Ramps
- SR 347 (Friendship Road) at I-985 Southbound Ramps
- SR 347 (Friendship Road) at SR 13 (Atlanta Highway)
- SR 13 (Buford Highway) at Roy Carlson Boulevard
- SR 13 (Buford Highway) at Thompson Mill Road
- SR 13 (Buford Highway) at S. Hill Street/Hamilton Mill Road
- Thompson Mill Road at Bryant Road
- Thompson Mill Road at N. Bogan Road

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 the analysis are listed below:

System Recommendations and 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. A summary of the system improvements, which address deficiencies that are found within the existing road network for the "No-Build" conditions, is provided below with more detailed information on each intersection in the following narratives.

Summary of Recommended System Improvements

- Construct a dedicated channelized right turn lane on the northbound, southbound, and eastbound approaches to the intersection of Thompson Mill Road at N. Bogan Road.

Thompson Mill Road at N. Bogan Road

Several approaches to the intersection of Thompson Mill Road at N. Bogan Road will begin to operate at a level-of-service "E" or "F" in the "No-Build" conditions. As traffic will increase over the next ten years, it is recommended that a dedicated right turn lane be installed per local standards on the northbound, southbound, and eastbound approaches.

Site Access Configuration

The following access configuration was utilized when modeling the proposed site driveway intersection.

- Site Driveway #1: Truck and employee access via Roy Carlson Boulevard
    - This intersection will be upgraded as part of GDOT project PI #132950 to include signalization as well as the relocation of Thunder Road to align with Roy Carlson Boulevard.
    - As access to SR 13 (Buford Highway) via Thunder Road and Bryant Road will be eliminated, the existing traffic at the intersection was shifted to the proposed signal at Roy Carlson Boulevard as part of the "No-Build" and "Build" analyses.
    - This driveway will consist of two entering lanes and two exiting lanes. The westbound (driveway) approach is assumed to operate with a dedicated left turn lane and shared through/right turn lane.
    - Entering left turn movements will be made from a dedicated southbound left turn lane. It is recommended the signal include a southbound protected + permissive phase for entering left turns (See Appendix).
    - Entering right turn movements will be made from a dedicated northbound right turn lane.
- Site Driveway #2: Right-in/right-out/left-out access on Thompson Mill Road
    - For the purpose of this study, this driveway will only be used by employee/car traffic. Truck traffic will be able to use this access only in emergency situations.
    - As this access geometry was agreed upon by Gwinnett County DOT for the purpose of this study, further discussions will need to take place on the final layout of the driveway.
    - This driveway will consist of one entering lane and one exiting lane.
    - Entering right turn movements will be made from a dedicated westbound right turn lane.
    - The intersection will be unsignalized with a STOP sign on the southbound approach.

Site Mitigation Recommendations and Improvements

Improvements that are identified as site mitigation improvements address deficiencies that are caused by site traffic and can be identified as related to the proposed development. A summary of the site mitigation improvements is provided below, with more detailed information in the following narrative.

Summary of Recommended Site Mitigation Improvements

- It is recommended a second westbound left turn lane be constructed using the existing striping at the intersection of SR 347 (Friendship Road) at SR 13 (Atlanta Highway).

SR 347 (Friendship Road) at SR 13 (Atlanta Highway)

After the addition of site traffic, the intersection of SR 347 (Friendship Road) at SR 13 (Atlanta Highway) will begin to operate at an overall level-of-service "E" during the AM and PM peak hours. Due to the added amount of westbound left turns at the intersection, it is recommended a second westbound left turn lane be installed using the existing striping and given protected signal phasing. With this improvement, the intersection will begin to operate at a level-of-service "D" in the AM and PM peak hours.

TABLE OF CONTENTS

LIST OF TABLES

Item **Page**

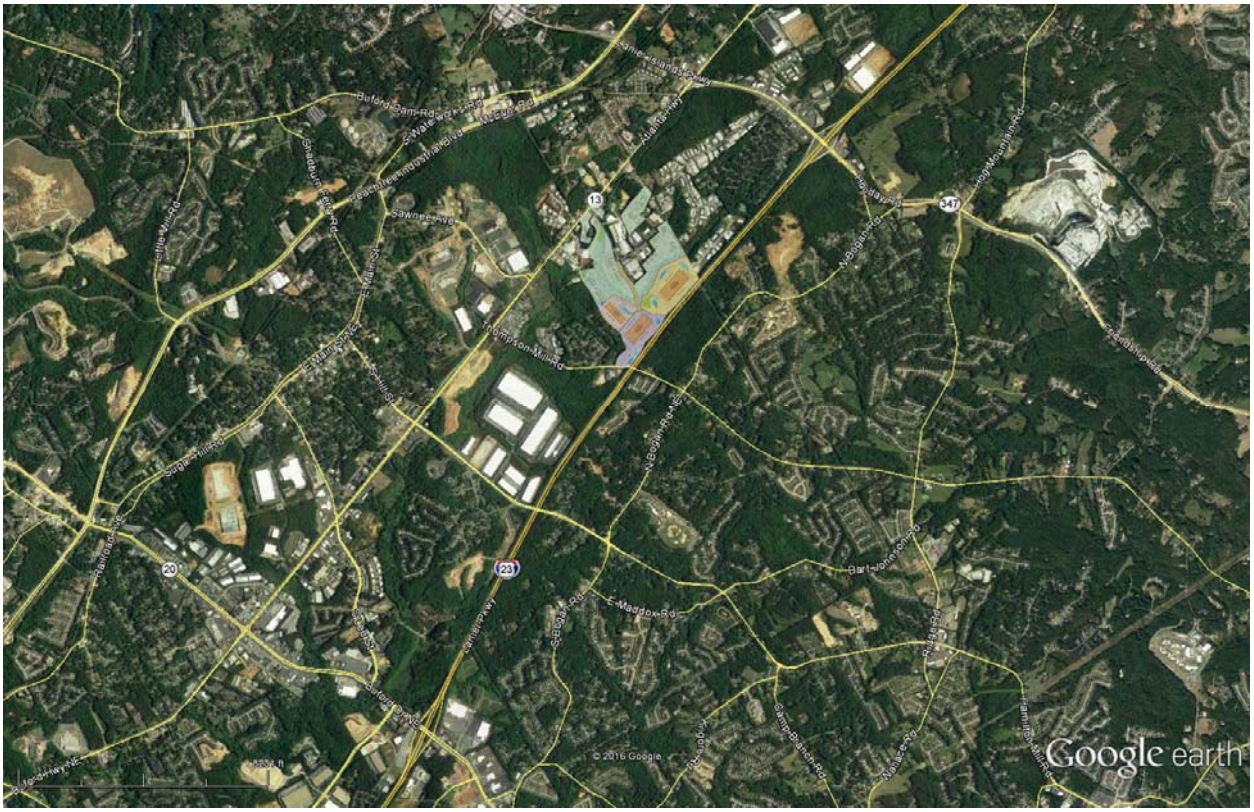
LIST OF FIGURES

Item **Page**

INTRODUCTION

The purpose of this study is to determine the traffic impact that will result from the proposed Longacre industrial development located on Roy Carlson Boulevard between SR 13 (Buford Highway) and I-985 in Buford, Georgia. The development will consist of:

- Warehousing: 947,520 square feet
- Industrial Park: 455,600 square feet
- Shopping Center: 40,000 square feet



The development proposes access via Roy Carlson Boulevard, and, for the purpose of this analysis, an additional right-in/right-out/left-out access point on Thompson Mill Road between Bryant Road and I-985. The AM and PM peak hours have been analyzed in this study. In addition to the site access point on Thompson Mill Road, this study includes the evaluation of traffic operations at the intersections of:

1. SR 347 (Friendship Road) at I-985 NB Ramps
2. SR 347 (Friendship Road) at I-985 SB Ramps
3. SR 347 (Friendship Road) at SR 13 (Atlanta Highway)
4. SR 13 (Buford Highway) at Roy Carlson Boulevard
5. SR 13 (Buford Highway) at Thompson Mill Road
6. SR 13 (Buford Highway) at S. Hill Street/Hamilton Mill Road
7. Thompson Mill Road at Bryant Road
8. Thompson Mill Road at N. Bogan 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, GDOT, Gwinnett County and the City of Buford:

1. SR 347 (Friendship Road) at I-985 NB Ramps
2. SR 347 (Friendship Road) at I-985 SB Ramps
3. SR 347 (Friendship Road) at SR 13 (Atlanta Highway)
4. SR 13 (Buford Highway) at Roy Carlson Boulevard
5. SR 13 (Buford Highway) at Thompson Mill Road
6. SR 13 (Buford Highway) at S. Hill Street / Hamilton Mill Road
7. Thompson Mill Road at Bryant Road
8. Thompson Mill Road at N. Bogan 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.

Existing Roadway Facilities

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

Interstate 985

Interstate 985 (I-985) is a north-south, four-lane, median-divided roadway with a posted speed limit of 70 mph in the vicinity of the site. GDOT traffic counts (Station IDs 1390407 & 1350269) indicate that the daily traffic volume on I-985 is 61,700 vehicles per day south of SR 347 (Friendship Road) and 61,700 vehicles per day north of Hamilton Mill Road.

SR 347 (Friendship Road)

SR 347 (Friendship Road) is an east-west, four-lane, median-divided roadway with a posted speed limit of 45 mph in the vicinity of the site. GDOT traffic counts (Station IDs 1390403, 1390405 & 1390487) indicate that the daily traffic volume on SR 347 (Friendship Road) is 16,300 vehicles per day west of SR 13 (Atlanta Highway), 19,200 vehicles per day west of I-985, and 14,900 vehicles per day east of I-985. GDOT classifies SR 347 (Friendship Road) as a Minor Arterial.

SR 13 (Buford Highway/Atlanta Highway)

SR 13 is a north-south roadway known as Atlanta Highway in Hall County and as Buford Highway in Gwinnett County. Atlanta Highway is a two-lane, undivided roadway with a posted speed limit of 45 mph in the vicinity of the site. Buford Highway is a two-lane, undivided roadway to the north of Sawnee Avenue and a four-lane, median-divided roadway to the south of Sawnee Avenue. Buford Highway has a posted speed limit of 45 mph to the north of Roy Carlson Boulevard and 50 mph to the south of Roy Carlson Boulevard.

GDOT traffic counts (Station IDs 1390165 & 1390163) indicate that the daily traffic volume on SR 13 (Atlanta Highway) is 10,600 vehicles per day north of SR 347 (Friendship Road) and 10,700 vehicles per day south of SR 347 (Friendship Road). GDOT traffic counts (Station IDs 1350101, 1350098 & 1350096) indicate that the daily traffic volume on SR 13 (Buford Highway) is 12,500 vehicles per day south of Thunder Road/Bryant Road, 20,100 vehicles per day north of Hamilton Mill Road, and 27,400 vehicles per day south of Hamilton Mill Road. GDOT classifies SR 13 (Buford Highway/Atlanta Highway) as a Minor Arterial roadway.

There is a planned GDOT project PI #132950 that will widen SR 13 (Buford Highway) from Sawnee Avenue in Gwinnett County to SR 347 (Friendship Road) in Hall County. The length of the project is approximately 1.53 miles and will widen SR 13 (Buford Highway) to a 4-lane urban facility with a 20-foot raised median, 4-foot bike lanes, curb and gutter and a 5-foot sidewalk on both sides. As this project is slated to be completed before buildout of the proposed Longacre development, the updates to the road network have been analyzed in the “No-Build” and “Build” conditions.

Roy Carlson Boulevard

Roy Carlson Boulevard is an east-west, four-lane, median-divided roadway with a posted speed limit of 25 mph in the vicinity of the site. GDOT traffic counts (Station ID 1358227) indicate that the daily traffic volume on Roy Carlson Boulevard is 1,670 vehicles per day east of SR 13 (Buford Highway). GDOT classifies Roy Carlson Boulevard as a Local roadway.

Thunder Road

Thunder Road is an east-west, two-lane, undivided roadway with a posted speed limit of 25 mph in the vicinity of the site. GDOT project PI #132950 will cul-de-sac the existing Thunder Road and relocate it to align with Roy Carlson Boulevard. Moreover, a traffic signal will be installed at the intersection and dedicated left and right turn lanes will be constructed on SR 13 (Buford Highway).

Thompson Mill Road

Thompson Mill Road is an east-west, two-lane, undivided roadway with a posted speed limit of 45 mph in the vicinity of the site. GDOT traffic counts (Station ID 1350474) indicate that the daily traffic volume on Thompson Mill Road is 7,580 vehicles per day east of SR 13 (Buford Highway). GDOT classifies Thompson Mill Road as a Major Collector roadway.

Hamilton Mill Road

Hamilton Mill Road is an east-west, four-lane, median-divided roadway with a posted speed limit of 45 mph in the vicinity of the site. GDOT traffic counts (Station ID 1350481) indicate that the daily traffic volume on Hamilton Mill Road is 20,600 vehicles per day east of SR 13 (Buford Highway). GDOT classifies Hamilton Mill Road as a Major Collector roadway.

S. Hill Street

S. Hill Street is an east-west, two-lane, undivided roadway with a posted speed limit of 25 mph in the vicinity of the site. GDOT traffic counts (Station ID 1350695) indicate that the daily traffic volume on S. Hill Street is 4,470 vehicles per day west of SR 13 (Buford Highway). GDOT classifies S. Hill Street as a Major Collector roadway.

N. Bogan Road

N. Bogan Road is a north-south, two-lane, undivided roadway with a posted speed limit of 40 mph in the vicinity of the site. GDOT traffic counts (Station IDs 1350492 & 1350489) indicate that the daily traffic volume on N. Bogan Road is 2,820 vehicles per day north of Thompson Mill Road and 10,700 vehicles per day south of Hamilton Mill Road. GDOT classifies N. Bogan Road as a Major Collector roadway.

Existing Bicycle and Pedestrian Facilities

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

Nearby local or regional trails

There is no trail located near the study area.

Bicycle paths or sidewalks

Sidewalks and pedestrian facilities are present along the following roadways in the study network:

- SR 13 (Atlanta Highway/Buford Highway): various points along the east and west sides of the road between S. Lee Street and SR 347 (Friendship Road).
- SR 347 (Friendship Road): north and south sides of the road between McEver Road and I-985.

Bike paths are present along the following roadways in the study network:

- SR 13 (Atlanta Highway/Buford Highway): GDOT Project PI #132950 plans to construct a 4-foot bike lane along SR 13 from Sawnee Avenue to SR 347 (Friendship Road).

Existing Transit Facilities

There is no public transit service near the site.

LOCATION MAP AND STUDY INTERSECTIONS

FIGURE 1

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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, 2000 edition (HCM 2000). Synchro software, which utilizes the HCM 2000 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 at which the side street or minor street is controlled by a stop sign, the criteria for evaluating traffic operations are the level-of-service (LOS) for the turning movements at the intersection and the level-of-service for the overall intersection. Level-of-service is based on the average controlled delay incurred at the intersection. Controlled delay for unsignalized intersections includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Several factors affect the controlled 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 safely, resulting in extremely long total delays and long queues. The level-of-service criteria for two-way stop-controlled and all-way stop-controlled (unsignalized) intersections are given in Table 1.

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

Level-of-service	Average Delay (sec)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Source: 2000 Highway Capacity Manual

Signalized Intersections

For signalized intersections, it is necessary to evaluate both capacity and level-of-service in order to evaluate the overall operation of the intersection. The capacity analysis of an intersection is performed by comparing the volume of traffic using the various lane groups at the intersection to the capacity of those lane groups. This results in a volume/capacity (v/c) ratio for each lane group. A v/c ratio greater than 1.0 indicates that the volume of traffic has exceeded the capacity available, resulting in a temporary excess of demand. Although the capacity of the entire intersection is not defined, a composite v/c ratio for the sum of the critical lane groups within the intersection is computed. This composite v/c ratio is an indication of the overall intersection sufficiency.

Level-of-service for a signalized intersection is defined in terms of average controlled delay per vehicle, which is composed of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The level-of-service criteria for signalized intersections, based on average controlled delay, are shown in Table 2. Level-of-service "A" indicates operations with very low controlled delay, while level-of-service "F" describes operations with extremely high average controlled delay. Level-of-service "E" is typically considered to be the limit of acceptable delay, and level-of-service "F" is considered unacceptable by most drivers.

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

Level-of-service	Average Control Delay (sec)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Source: 2000 Highway Capacity Manual

EXISTING TRAFFIC ANALYSIS

Existing traffic counts and intersection geometric data were obtained at the following study intersections:

1. SR 347 (Friendship Road) at I-985 NB Ramps
2. SR 347 (Friendship Road) at I-985 SB Ramps
3. SR 347 (Friendship Road) at SR 13 (Atlanta Highway)
4. SR 13 (Buford Highway) at Roy Carlson Boulevard
5. SR 13 (Buford Highway) at Thompson Mill Road
6. SR 13 (Buford Highway) at S. Hill Street/Hamilton Mill Road
7. Thompson Mill Road at Bryant Road
8. Thompson Mill Road at N. Bogan Road
9. SR 13 (Buford Highway) at Bryant Road/Thunder Road*

Turning movement counts for cars and trucks were collected on Wednesday, October 19, 2016. All turning movement counts were recorded during the AM and PM peak hours between 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m., respectively. The four consecutive 15-minute interval volumes that summed to produce the highest volume at the intersections were then determined. These volumes make up the peak hour traffic volumes for the intersections counted and are shown in Figure 2.

*It should be noted that turning movement counts were collected at this intersection in order to shift the existing traffic to the intersection of SR 13 (Buford Highway) at Roy Carlson Boulevard after completion of GDOT project PI #132950 that will realign Thunder Road across from Roy Carlson Boulevard. This intersection was not modeled in the analysis.

Existing Traffic Operations

Existing traffic operations were analyzed at the study intersections in accordance with the HCM methodology. A queue length analysis was also performed. The results of the analyses are shown in Tables 3 and 4. 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 Hour		PM Peak Hour		LOS Standard
			LOS (Delay)	v/c ratio	LOS (Delay)	v/c ratio	AM/PM
1	**SR 347 @ I-985 NB Ramps**	Signalized	**C (27.7)**	**0.68**	**C (32.1)**	**0.87**	**D/D**
	-Eastbound Approach		C (20.7)	-	C (21.1)	-	-
	-Westbound Approach		C (24.4)	-	D (43.7)	-	-
	-Northbound Approach		D (52.4)	-	D (45.4)	-	-
2	**SR 347 @ I-985 SB Ramps**	Signalized	**C (22.5)**	**0.77**	**B (19.2)**	**0.63**	**D/D**
	-Eastbound Approach		C (20.9)	-	B (10.3)	-	-
	-Westbound Approach		B (16.3)	-	B (18.4)	-	-
	-Southbound Approach		D (42.9)	-	D (41.9)	-	-
3	**SR 347 @ SR 13**	Signalized	**C (28.7)**	**0.76**	**C (33.3)**	**0.93**	**D/D**
	-Eastbound Approach		C (27.2)	-	C (34.9)	-	-
	-Westbound Approach		B (13.9)	-	C (26.7)	-	-
	-Northbound Approach		D (46.0)	-	C (30.7)	-	-
	-Southbound Approach		D (45.2)	-	D (52.1)	-	-
4	**SR 13 @ Roy Carlson Blvd**	Stop Controlled on WB Approach					
	-Westbound Approach		C (22.7)	-	E (40.9)	-	D/E
	-Southbound Through/Left		A (1.6)	-	A (0.3)	-	D/D
5	**SR 13 @ Thompson Mill Rd**	Signalized	**C (20.6)**	**0.55**	**B (18.2)**	**0.60**	**D/D**
	-Eastbound Approach		C (20.7)	-	C (31.1)	-	-
	-Westbound Approach		C (32.6)	-	D (45.9)	-	-
	-Northbound Approach		B (18.4)	-	B (10.3)	-	-
	-Southbound Approach		B (12.5)	-	B (11.9)	-	-
6	**SR 13 @ S. Hill St/Hamilton Mill Rd**	Signalized	**C (29.6)**	**0.76**	**C (32.5)**	**0.90**	**D/D**
	-Eastbound Approach		D (46.4)	-	D (44.2)	-	-
	-Westbound Approach		D (49.9)	-	E (62.6)	-	-
	-Northbound Approach		B (14.7)	-	B (17.0)	-	-
	-Southbound Approach		B (17.2)	-	C (28.6)	-	-
7	**Thompson Mill Rd @ Bryant Rd**	Stop Controlled on NB & SB Approaches					
	-Eastbound Approach		A (0.5)	-	A (0.4)	-	D/D
	-Westbound Approach		A (0.0)	-	A (0.0)	-	D/D
	-Northbound Approach		A (0.0)	-	A (0.0)	-	D/D
	-Southbound Approach		C (18.7)	-	C (20.6)	-	D/D
8	**Thompson Mill Rd @ N. Bogan Rd**	All-Way Stop Controlled					
	-Eastbound Approach		C (19.0)	-	F (118.1)	-	D/E
	-Westbound Approach		E (43.1)	-	C (21.4)	-	E/D
	-Northbound Approach		C (18.6)	-	D (30.5)	-	D/D
	-Southbound Approach		C (17.8)	-	C (22.5)	-	D/D

**v/c ratio is not calculated for unsignalized intersections*

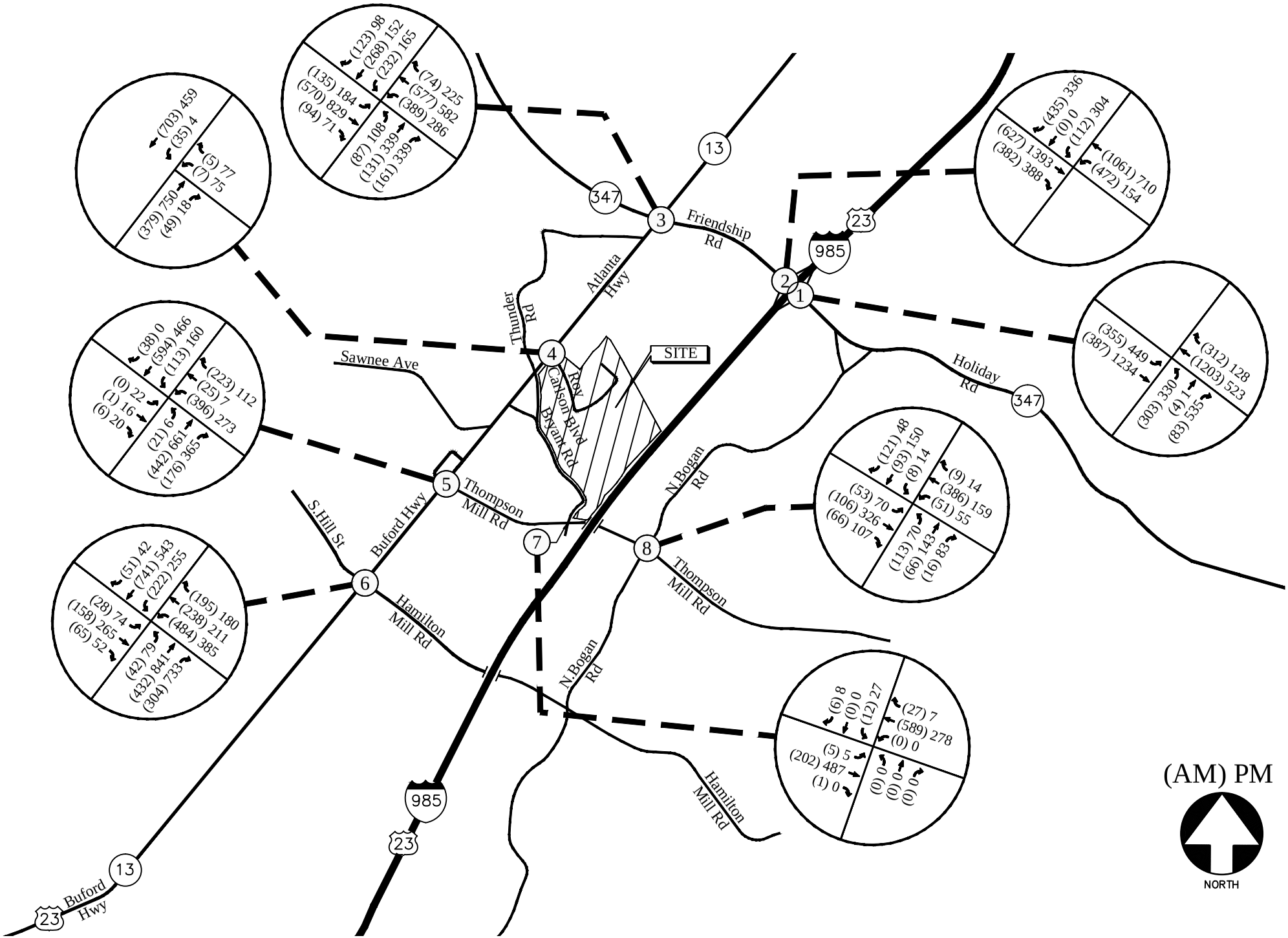
Table 4 – Existing Intersection 95th Percentile Queues				
	Intersection	Available Storage	AM Peak: feet	PM Peak: feet
1	**SR 347 @ I-985 NB Ramps**			
	-Eastbound Left	-	401	435
	-Eastbound Through	-	147	506
	-Westbound Through	-	368	184
	-Westbound Right	840’	23	37
	-Northbound Left	-	207	165
	-Northbound Through/Left	-	112	43
	-Northbound Right	510’	25	598
2	**SR 347 @ I-985 SB Ramps**			
	-Eastbound Through	-	117	188
	-Eastbound Right	375’	37	1
	-Westbound Left	380’	184	85
	-Westbound Through	-	427	376
	-Southbound Left	-	101	281
	-Southbound Right	-	371	207
3	**SR 347 @ SR 13**			
	-Eastbound Left	250’	89	126
	-Eastbound Through	-	275	412
	-Eastbound Right	370’	0	3
	-Westbound Left	300’	258	341
	-Westbound Through	-	141	203
	-Westbound Right	310’	0	13
	-Northbound Left	240’	85	73
	-Northbound Through	-	150	208
	-Northbound Right	250’	96	68
	-Southbound Left	300’	200	185
	-Southbound Through	-	284	155
	-Southbound Right	215’	12	22
4	**SR 13 @ Roy Carlson Blvd**			
	-Westbound Left	-	9	91
	-Westbound Right	-	1	42
	-Southbound Approach	-	5	1
5	**SR 13 @ Thompson Mill Rd**			
	-Eastbound Through/Left	-	2	30
	-Eastbound Right	105’	0	5
	-Westbound Through/Left	-	243	123
	-Westbound Right	250’	42	30
	-Northbound Left	230’	30	7
	-Northbound Through	-	194	190
	-Northbound Right	230’	98	41
	-Southbound Left	200’	92	138
	-Southbound Through	-	199	164
	-Southbound Right	185’	11	0

Table Continued on Next Page…

	Intersection	Available Storage	AM Peak: feet	PM Peak: feet
6	**SR 13 @ S. Hill St/Hamilton Mill Rd**			
	-Eastbound Left	180’	40	96
	-Eastbound Through	-	164	259
	-Eastbound Right	300’	0	0
	-Westbound Left	250’	306	268
	-Westbound Through/Right	-	349	316
	-Northbound Left	240’	39	58
	-Northbound Through	-	197	404
	-Northbound Right	1,000’	0	0
	-Southbound Left	400’	125	277
	-Southbound Through	-	215	218
	-Southbound Right	280’	0	0
7	**Thompson Mill Rd @ Bryant Rd**			
	-Eastbound Approach	-	1	1
	-Westbound Approach	-	0	0
	-Northbound Approach	-	0	0
	-Southbound Approach	-	8	18
8	**Thompson Mill Rd @ N. Bogan Rd***			
	-Eastbound Approach	-	101	191
	-Westbound Approach	-	193	102
	-Northbound Approach	-	61	76
	-Southbound Approach	-	71	75

**95th percentile queue generated from SimTraffic model*

The results of existing traffic operations analysis indicate that the side-street approaches to the intersection of Thompson Mill Road at N. Bogan Road are currently operating at a level-of-service “E” or “F” during the AM and PM peak hours. These areas are addressed in the Future Traffic Operations section.



EXISTING WEEKDAY PEAK HOUR VOLUMES

FIGURE 2

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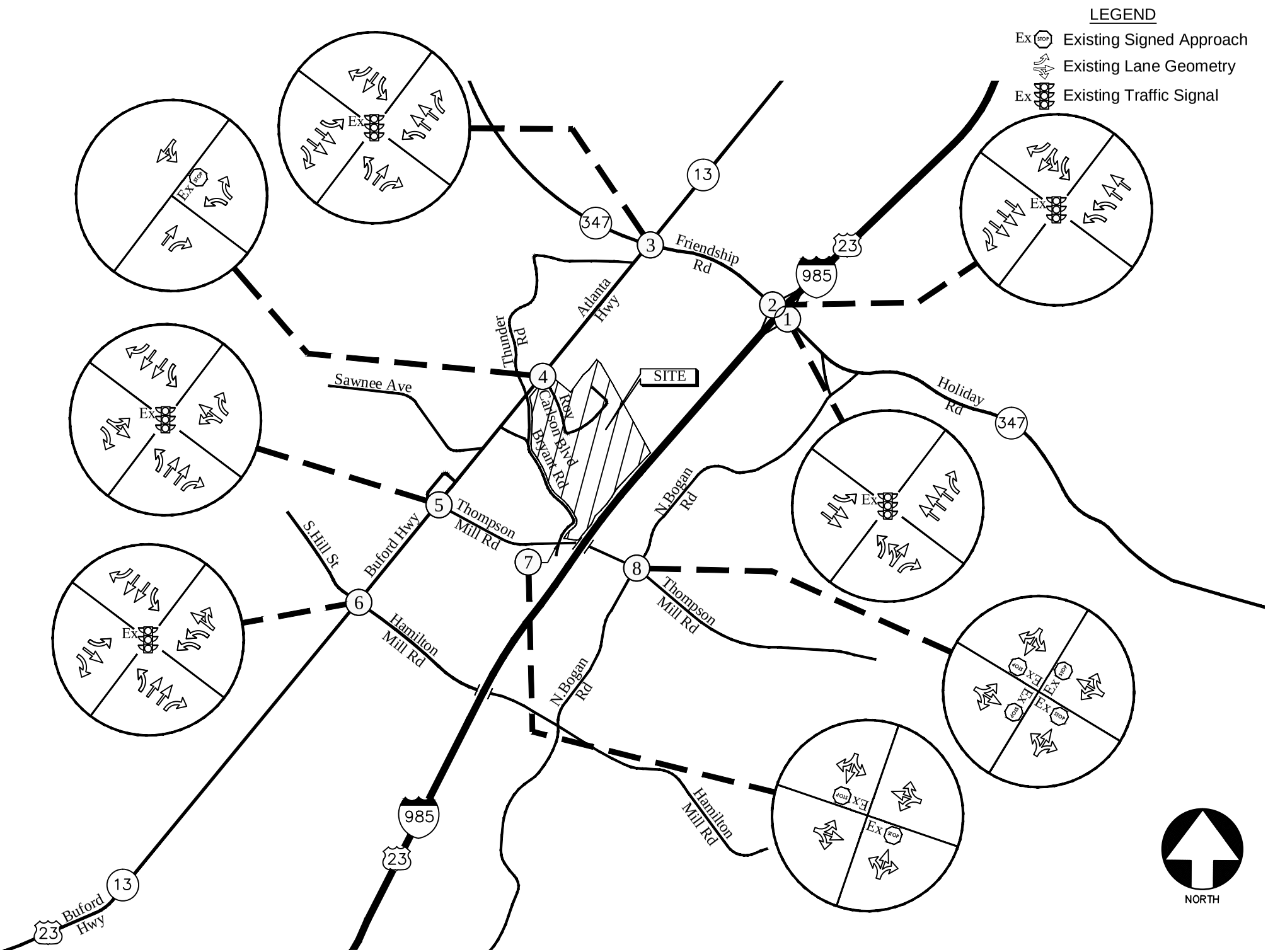

EXISTING TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 3

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PROJECT DESCRIPTION

The proposed site will be located on Roy Carlson Boulevard between SR 13 (Buford Highway) and I-985 in Buford, Georgia. The development will consist of:

- Warehousing: 947,520 square feet
- Industrial Park: 455,600 square feet
- Shopping Center: 40,000 square feet

The development proposes access via Roy Carlson Boulevard, and, for the purpose of this analysis, an additional right-in/right-out/left-out access point on Thompson Mill Road between Bryant Road and I-985.

Site Plan

A site plan is shown in Figure 4. A larger size drawing and a digital copy of the site plan are also provided with this report.

Planned Bicycle and Pedestrian Facilities

The on and/or off-site provisions for non-motorized travel included in the planned construction of the proposed development are as follows:

- The convenience and flexibility of the site benefit from public access to adjacent streets and internal connectivity between some of the parcels.

Planned Transit Facilities

There is no public transit service near the site.

Consistency with Adopted Comprehensive Plan

The following is an explanation as to how the proposed DRI relates to the local government's Comprehensive Plan in particular the transportation and capital improvements element, and any transportation improvements listed in the Short-Term Work Program(s) within the vicinity of the DRI. The City of Buford 2030 Comprehensive Plan lists the project area not within the City of Rest Haven as an Industrial Commercial Area in their Future Development Map.

Project Phasing

For the purpose of this analysis, the project has been evaluated for the complete build-out of the development in 2026.

Trip Generation

Trip generation estimates for the project were based on the rates and equations published in the 9th 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: *130 – Industrial Park*, *150 – Warehousing* and *820 – Shopping Center*. Due to

the nature of the development, pass-by and mixed-use reductions have been applied per ITE standards. The calculated total trip generation for the proposed development is shown in Table 5.

TABLE 5 – TRIP GENERATION

Land Use	Size	AM Peak Hour			PM Peak Hour			24-Hour
		Enter	Exit	Total	Enter	Exit	Total	Two-way
ITE 150 – Warehousing	947,520 sf	225	59	284	63	188	251	3,409
Mixed-Use Reduction		*-1*	*-1*	*-2*	*-3*	*-2*	*-5*	*-70*
ITE 130 – Industrial Park	455,600 sf	257	56	313	81	305	386	2,952
Mixed-Use Reduction		*0*	*0*	*0*	*-2*	*-1*	*-3*	*-61*
ITE 820 – Shopping Center	40,000 sf	55	34	89	156	168	324	3,743
Mixed-Use Reduction		*-1*	*-1*	*-2*	*-3*	*-5*	*-8*	*-131*
Pass-by Trips (0%) 34%		*0*	*0*	*0*	*-52*	*-55*	*-107*	*-1,070*
Total Trips (without Reductions)		537	149	686	300	661	961	10,104
New External Trips (with Reductions)		**535**	**147**	**682**	**240**	**598**	**838**	**8,772**

**pass-by trips (AM) PM; 24 Hour pass-by trips estimated by considering PM pass-by as 10% of daily*

Per ITE manual it was assumed that 20% of Land Use 150 trips would be trucks, and 13% of Land Use 130 trips would be trucks. The distribution of the new external trips separated into vehicular trips and truck trips is shown below in Table 6.

TABLE 6 – NEW EXTERNAL TRIPS DISTRIBUTED INTO CARS AND TRUCKS

Trip Type	AM Peak Hour			PM Peak Hour			24-Hour
	Enter	Exit	Total	Enter	Exit	Total	Two-way
Warehousing Cars	179	46	225	48	149	197	2,671
Warehousing Trucks (20%)	45	12	57	12	37	49	668
Industrial Park Cars	224	49	273	69	264	333	2,515
Industrial Park Trucks (13%)	33	7	40	10	40	50	376
Shopping Center Cars	54	33	87	101	108	209	2,542
Industrial Cars	**403**	**95**	**498**	**117**	**413**	**530**	**5,186**
Industrial Trucks	**78**	**19**	**97**	**22**	**77**	**99**	**1,044**
Retail Cars	**54**	**33**	**87**	**101**	**108**	**209**	**2,542**

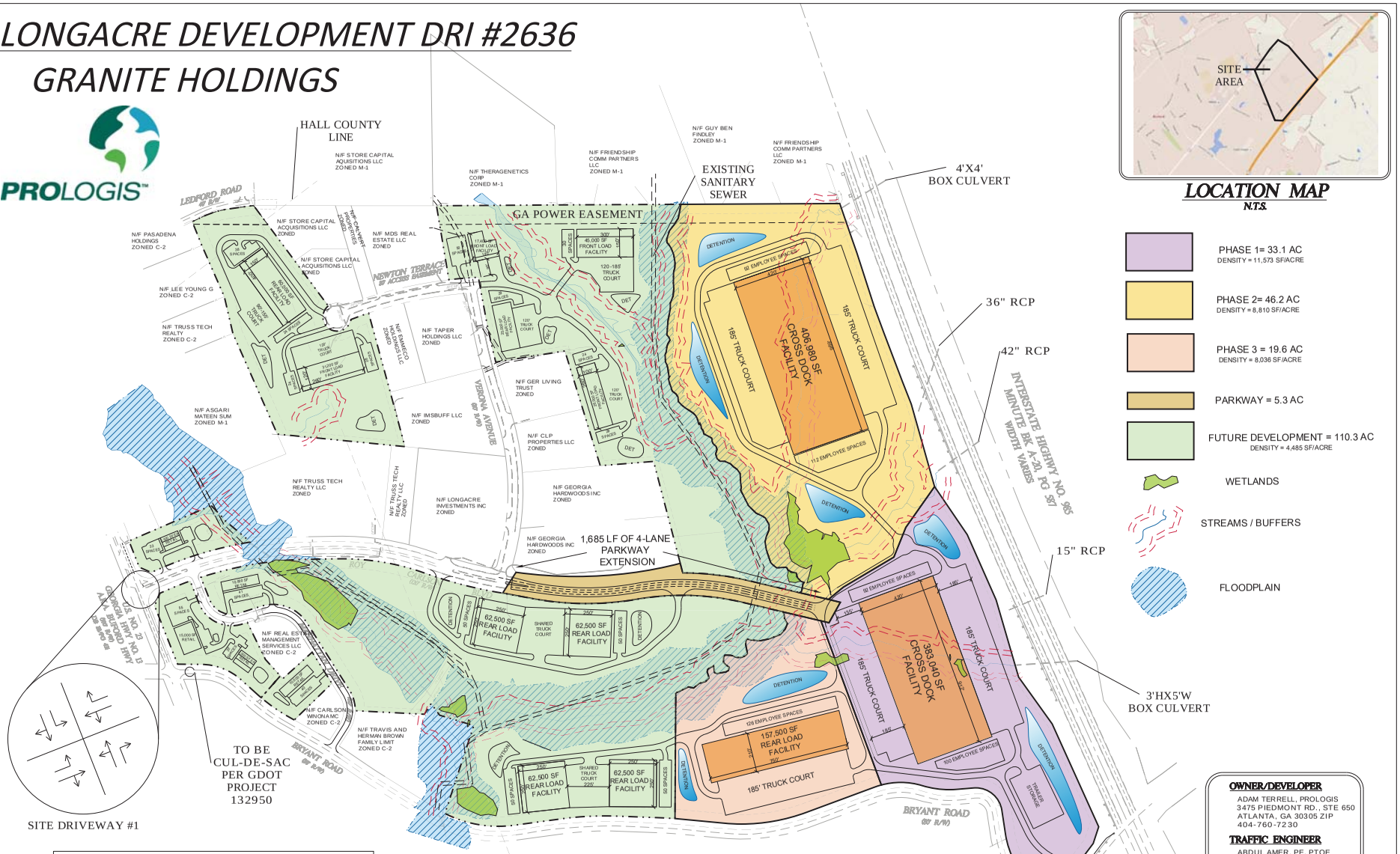
Trip Distribution

The trip distribution describes how traffic arrives and departs from the site. An overall trip distribution was developed for the site based on a review of the existing travel patterns in the area and the locations of major roadways and highways that will serve the development. Separate trip distributions were developed for car and truck traffic. The site-generated peak hour traffic volumes, shown in Table 5, were assigned to the study area intersections based on these separate distributions. The outer-leg distribution and AM and PM peak hour new traffic generated by the site are shown in Figure 5 (Industrial Vehicular Traffic), Figure 6 (Industrial Truck Traffic) and Figure 7 (Retail Vehicular Traffic).

LONGACRE DEVELOPMENT DRI #2636

GRANITE HOLDINGS

PROLOGIS™



LOCATION MAP
N.T.S.

- PHASE 1= 33.1 AC — DENSITY = 11,573 SF/ACRE
- PHASE 2= 46.2 AC — DENSITY = 8,810 SF/ACRE
- PHASE 3 = 19.6 AC — DENSITY = 8,036 SF/ACRE
- PARKWAY = 5.3 AC
- FUTURE DEVELOPMENT = 110.3 AC — DENSITY = 4,485 SF/ACRE
- WETLANDS
- STREAMS / BUFFERS
- FLOODPLAIN

DEVELOPMENT TYPE SUMMARY

LIGHT INDUSTRIAL USE	1,403,120 SF
COMMERCIAL / RETAIL USE	40,000 SF
EXISTING ZONING M-1	

GRAPHIC SCALE
100 0 100 200 400 600
(IN FEET)
1 inch = 200 ft.

OWNER/DEVELOPER
ADAM TERRELL, PROLOGIS
3475 PIEDMONT RD., STE 650
ATLANTA, GA 30305 ZIP
404-760-7230

TRAFFIC ENGINEER
ABDUL AMER, PE, PTOE
A&R ENGINEERING
2160 KINGSTON COURT,
SUITE O
MARIETTA, GA 30067
770-690-9255

SITE PLANNER
BRIAN BRUMFIELD, P.E.
EBERLY AND ASSOCIATES
1852 CENTURY PL
ATLANTA GA 30345
770-452-7849

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LAND PLANNING
CIVIL ENGINEERING
LANDSCAPE ARCHITECTURE

PROJECT: LONGACRE DEVELOPMENT
GWINNETT COUNTY, GEORGIA
CITY OF BUFORD

REVISIONS:

8/16/16	PROLOGIS COMMENTS
11/9/16	DRI COMMENTS

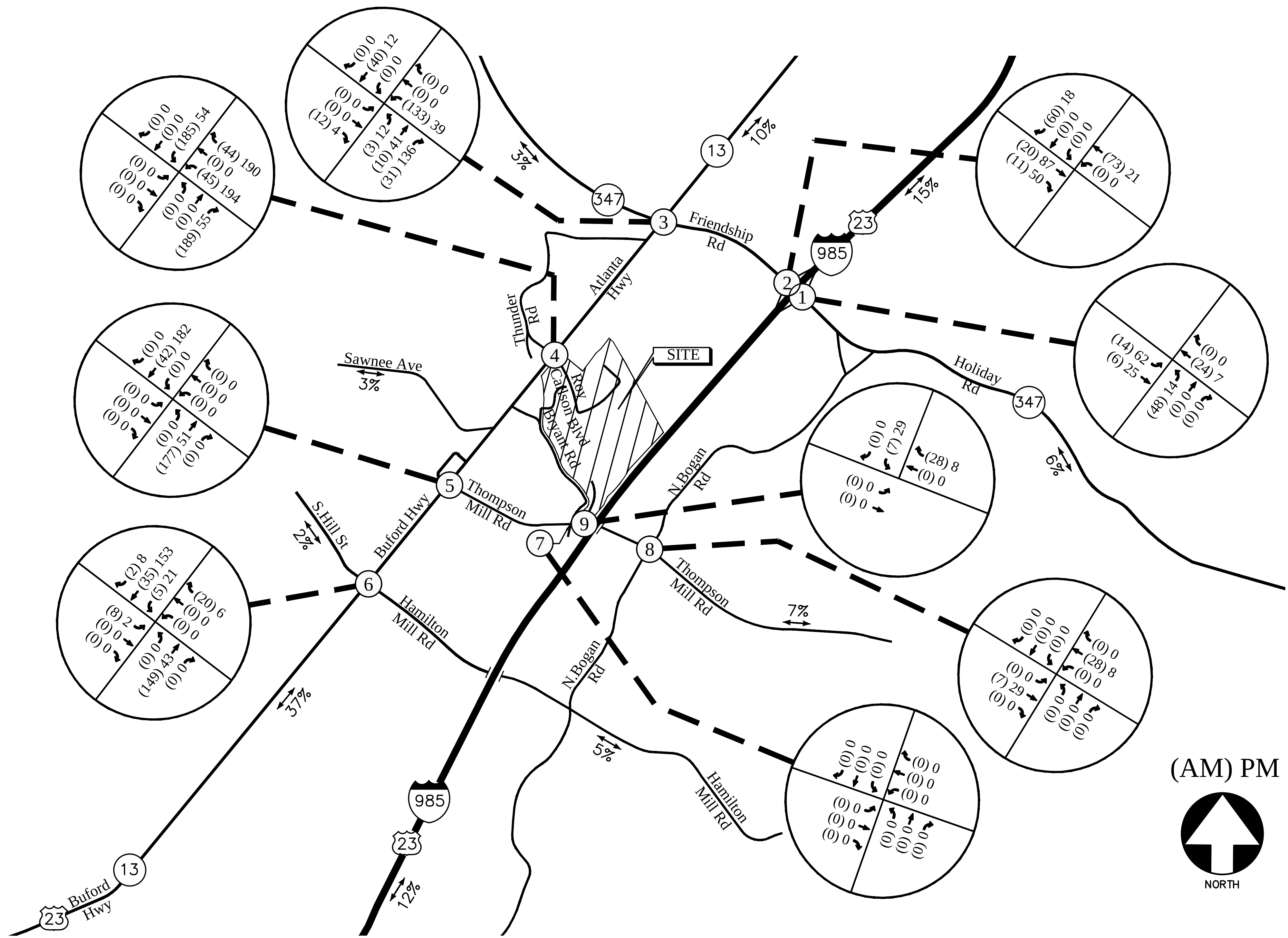
MASTER PLAN

SCALE:	1" = 200'
DATE:	07/21/16
DRAWN BY:	SLG
PROJECT MANAGER:	SLG
QA/QC CHECK:	XXXXX

PROJECT NO.
16-018

SHEET NO.
C1.0

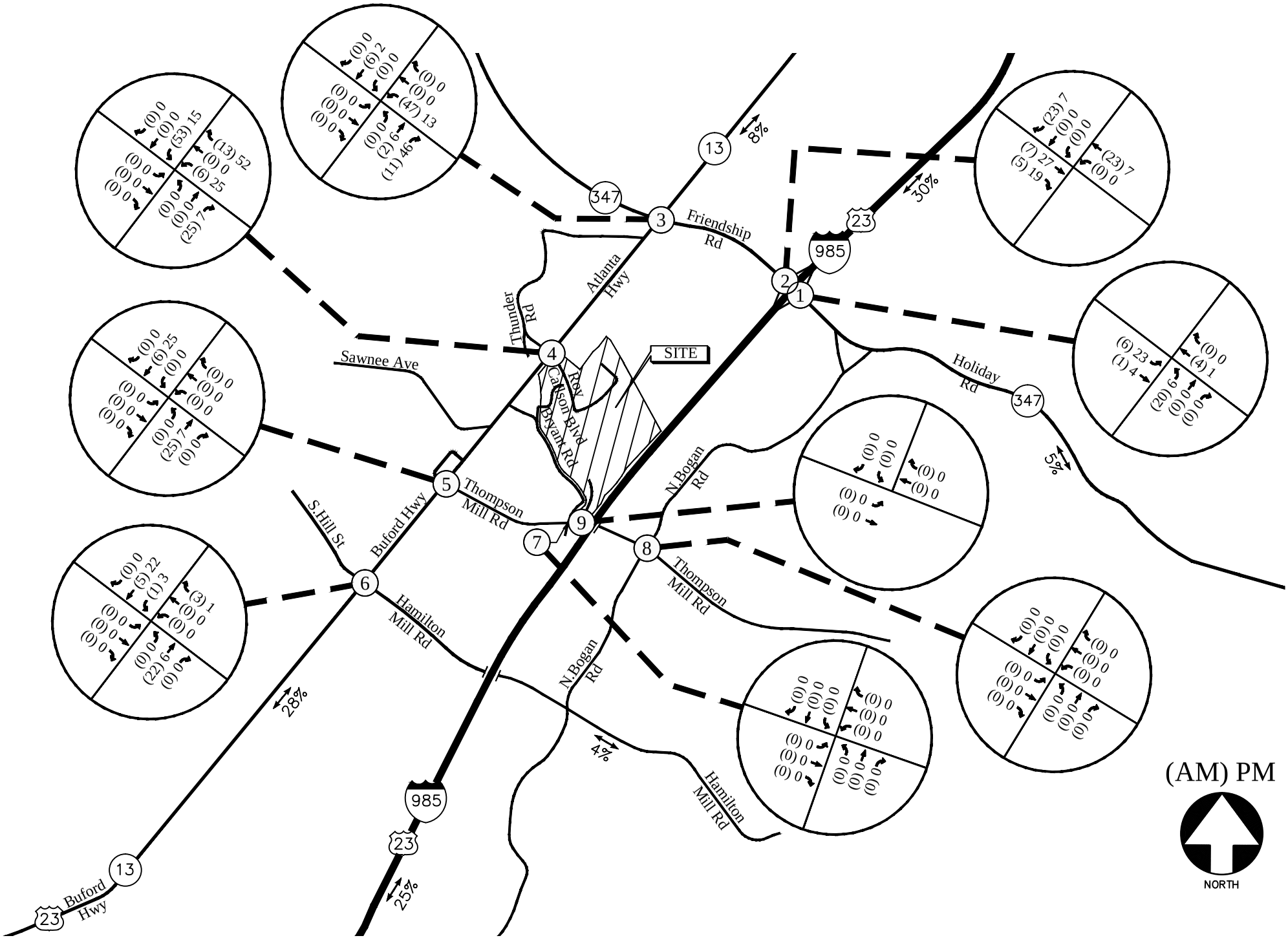
G:\PROJECTS\2016\16-096 Prologis Longacre Development Buford Georgia\Drawing\16-096base.dwg November 18, 2016



OUTER LEG TRIP DISTRIBUTION AND SITE-GENERATED PEAK HOUR VOLUMES
(INDUSTRIAL CARS)

FIGURE 5

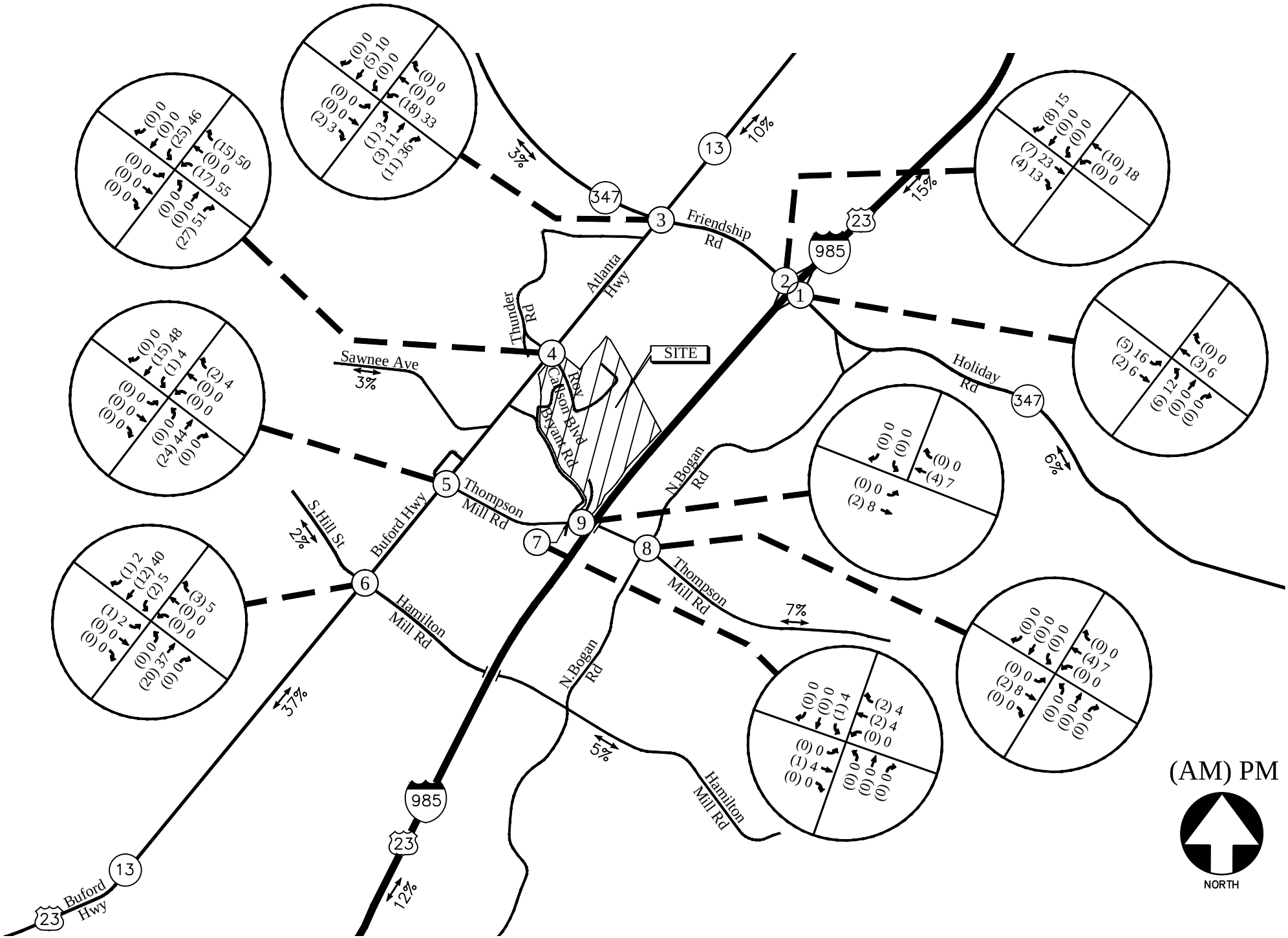
A&R Engineering Inc.



OUTER LEG TRIP DISTRIBUTION AND SITE-GENERATED PEAK HOUR VOLUMES
(INDUSTRIAL TRUCKS)

FIGURE 6

A&R Engineering Inc.



OUTER LEG TRIP DISTRIBUTION AND SITE-GENERATED PEAK HOUR VOLUMES
(RETAIL CARS)

FIGURE 7

A&R Engineering Inc.

FUTURE TRAFFIC ANALYSIS

The future 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. AS GDOT Project PI #132950 will be completed before construction of the proposed development, shifts in traffic from the intersection of SR 13 (Buford Highway) at Thunder Road/Bryant Road to the intersection of SR 13 (Buford Highway) at Roy Carlson Boulevard were included in the Future "No-Build" volumes. The Future "No-Build" volumes consist of the existing traffic volumes (Figure 2) plus increases for annual growth of through traffic and shifts in existing traffic due to the GDOT project on SR 13 (Buford Highway).

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 five years at four count locations revealed growth of approximately 0.5% in the area. This growth factor was applied to the existing traffic volumes between collector and arterial roadways in order 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.

Planned and Programmed Improvements in Study Area

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

TABLE 7 – PLANNED AND PROGRAMMED IMPROVEMENTS				
ARC#/GDOT#/ County#	Project	Type of Improvement	Network Year	Source
132950/ GW-099C	Widening of SR 13 from Sawnee Avenue to Friendship Road.	Reconstruction/ Rehabilitation	2020	GDOT
M005567	Bridge Rehabilitation of Thompson Mill Road over I-985	Bridges	2019	GDOT
0010242/ GW-356	Sidewalk/Streetscape Improvements from S. Lee St to W. Moreno St	Enhancement	2018	GDOT
0004430/ GW-020A1	Widening of SR 20 from W. Mountain Ridge Rd to Peachtree Ind. Blvd	Reconstruction/ Rehabilitation	2017	GDOT
M005451	Restriping of I-985	Maintenance	2017	GDOT

Projects included in the model for the Future conditions include:

GDOT Project PI #132950: This project will widen SR 13 (Buford Highway) from Sawnee Avenue in Gwinnett County to SR 347 (Friendship Road) in Hall County. The length of the project is approximately 1.53 miles. The proposed project will widen SR 13 (Buford Highway) to a four-lane urban facility with a twenty foot raised median, four-foot bike lanes, curb and gutter and a five-foot sidewalk on both sides. Construction of the project is slated to open in the year 2020.

Recommendations for System 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. A summary of the system improvements, which address deficiencies that are found within the existing road network for the "No-Build" conditions, is provided below with more detailed information on each intersection in the following narratives.

Summary of Recommended System Improvements

- Construct a dedicated channelized right turn lane on the northbound, southbound, and eastbound approaches to the intersection of Thompson Mill Road at N. Bogan Road.

Thompson Mill Road at N. Bogan Road

Several approaches to the intersection of Thompson Mill Road at N. Bogan Road will begin to operate at a level-of-service "E" or "F" in the "No-Build" conditions. As traffic will increase over the next ten years, it is recommended that a dedicated right turn lane be installed per local standards on the northbound, southbound, and eastbound approaches.

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 Tables 8 and 9 below. The results of the analyses including the recommendations for system improvements are discussed in the next section.

TABLE 8 – FUTURE "NO-BUILD" INTERSECTION OPERATIONS

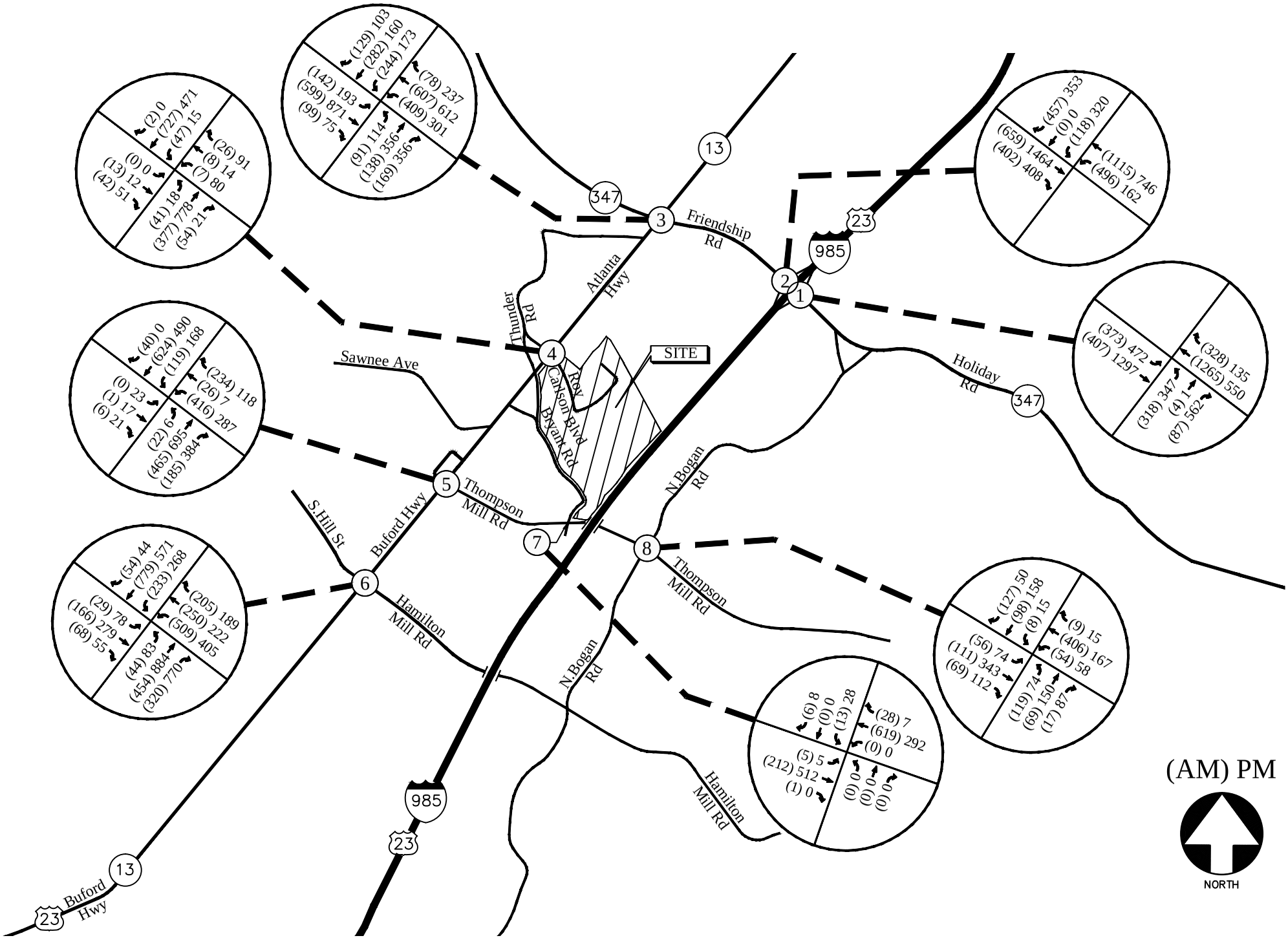
	Intersection	Traffic Control	No-Build 2026		No-Build 2026 Improved		LOS STD
			AM Peak	PM Peak	AM Peak	PM Peak	AM/PM
1	**SR 347 @ I-985 NB Ramps**	Signalized	**C (31.3)**	**D (38.8)**	**C (31.3)**	**D (38.8)**	**D/D**
	-Eastbound Approach		C (22.2)	C (27.1)	C (22.2)	C (27.1)	-
	-Westbound Approach		C (28.1)	D (51.1)	C (28.1)	D (51.1)	-
	-Northbound Approach		E (58.9)	D (53.0)	E (58.9)	D (53.0)	-
2	**SR 347 @ I-985 SB Ramps**	Signalized	**C (25.3)**	**C (21.7)**	**C (25.3)**	**C (21.7)**	**D/D**
	-Eastbound Approach		C (23.1)	B (12.8)	C (23.1)	B (12.7)	-
	-Westbound Approach		B (18.6)	B (18.7)	B (18.6)	B (18.7)	-
	-Southbound Approach		D (48.5)	D (47.0)	D (48.5)	D (47.0)	-
3	**SR 347 @ SR 13**	Signalized	**C (33.2)**	**D (47.3)**	**C (33.2)**	**D (47.1)**	**D/D**
	-Eastbound Approach		C (31.5)	D (42.4)	C (31.5)	D (42.4)	-
	-Westbound Approach		C (20.8)	D (44.0)	C (20.8)	D (44.0)	-
	-Northbound Approach		D (42.2)	D (44.8)	D (42.2)	D (44.0)	-
	-Southbound Approach		D (51.3)	E (75.6)	D (51.3)	E (75.6)	-
4	**SR 13 @ Roy Carlson Blvd**	Signalized	**A (6.7)**	**B (11.2)**	**A (6.7)**	**B (11.2)**	**D/D**
	-Eastbound Approach		E (55.4)	D (46.9)	E (55.4)	D (46.9)	-
	-Westbound Approach		E (55.2)	D (51.4)	E (55.2)	D (51.4)	-
	-Northbound Approach		A (1.0)	A (0.8)	A (1.0)	A (0.8)	-
	-Southbound Approach		A (2.4)	A (5.1)	A (2.4)	A (5.1)	-
5	**SR 13 @ Thompson Mill Rd**	Signalized	**C (23.0)**	**B (15.2)**	**C (23.0)**	**B (15.3)**	**D/D**
	-Eastbound Approach		C (20.9)	C (31.6)	C (20.9)	C (31.6)	-
	-Westbound Approach		D (35.6)	D (51.3)	D (35.6)	D (51.3)	-
	-Northbound Approach		C (21.8)	A (4.4)	C (21.8)	A (4.3)	-
	-Southbound Approach		B (13.6)	A (8.2)	B (13.6)	A (8.6)	-
6	**SR 13 @ S. Hill St/Hamilton Mill Rd**	Signalized	**D (37.2)**	**D (41.6)**	**D (37.2)**	**D (41.6)**	**D/D**
	-Eastbound Approach		D (49.8)	D (50.3)	D (49.8)	D (50.3)	-
	-Westbound Approach		E (70.1)	E (68.2)	E (70.1)	E (68.2)	-
	-Northbound Approach		B (16.2)	C (21.8)	B (16.2)	C (21.8)	-
	-Southbound Approach		B (19.4)	D (49.8)	B (19.4)	D (49.8)	-
7	**Thompson Mill Rd @ Bryant Rd**	Stop Controlled on NB & SB Approaches					
	-Eastbound Approach		A (0.5)	A (0.4)	A (0.5)	A (0.4)	D/D
	-Westbound Approach		A (0.0)	A (0.0)	A (0.0)	A (0.0)	D/D
	-Northbound Approach		A (0.0)	A (0.0)	A (0.0)	A (0.0)	D/D
	-Southbound Approach		C (20.0)	C (22.3)	C (20.0)	C (22.3)	D/D
8	**Thompson Mill Rd @ N. Bogan Rd**	All-Way Stop Controlled					
	-Eastbound Approach		C (22.9)	F (166.2)	B (10.8)	D (28.8)	D/E
	-Westbound Approach		F (65.5)	C (24.3)	D (26.0)	C (17.4)	E/D
	-Northbound Approach		C (21.8)	E (37.0)	B (13.7)	B (14.6)	D/D
	-Southbound Approach		C (21.1)	D (25.7)	A (8.8)	B (14.3)	D/D

TABLE 9 – FUTURE "NO-BUILD" INTERSECTION 95TH PERCENTILE QUEUES						
	Intersection	Available Storage	No-Build 2026		No-Build 2026 Improved	
			AM Peak	PM Peak	AM Peak	PM Peak
1	**SR 347 @ I-985 NB Ramps**					
	-Eastbound Left	-	421	565	421	565
	-Eastbound Through	-	166	617	166	617
	-Westbound Through	-	409	199	409	199
	-Westbound Right	840'	23	38	23	38
	-Northbound Left	-	220	174	220	174
	-Northbound Through/Left	-	118	47	118	47
	-Northbound Right	510'	25	673	25	673
2	**SR 347 @ I-985 SB Ramps**					
	-Eastbound Through	-	136	201	136	201
	-Eastbound Right	375'	34	1	34	1
	-Westbound Left	380'	206	91	206	91
	-Westbound Through	-	478	394	478	394
	-Southbound Left	-	108	310	108	310
	-Southbound Right	-	412	252	412	252
3	**SR 347 @ SR 13**					
	-Eastbound Left	250'	101	141	101	141
	-Eastbound Through	-	310	451	310	451
	-Eastbound Right	370'	0	5	0	5
	-Westbound Left	300'	405	419	405	419
	-Westbound Through	-	181	303	181	303
	-Westbound Right	310'	1	23	1	23
	-Northbound Left	240'	54	88	54	88
	-Northbound Through	-	168	405	168	405
	-Northbound Right	250'	103	254	103	252
	-Southbound Left	300'	212	230	212	230
	-Southbound Through	-	300	168	300	168
	-Southbound Right	215'	17	27	17	27
4	**SR 13 @ Roy Carlson Blvd**					
	-Eastbound Approach	-	53	49	53	49
	-Westbound Through/Left	-	17	112	17	112
	-Westbound Right	-	52	73	52	73
	-Northbound Left	375'	4	2	4	2
	-Northbound Through	-	12	18	12	19
	-Northbound Right	375'	0	0	0	0
	-Southbound Left	200'	14	8	14	8
	-Southbound Through	-	81	84	81	84
	-Southbound Left	200'	0	0	0	0

Table Continued on Next Page…

	Intersection	Available Storage	No-Build 2026		No-Build 2026 Improved	
			AM Peak	PM Peak	AM Peak	PM Peak
5	**SR 13 @ Thompson Mill Rd**					
	-Eastbound Through/Left	-	2	33	2	33
	-Eastbound Right	105’	0	4	0	4
	-Westbound Through/Left	-	262	131	262	131
	-Westbound Right	250’	63	31	63	31
	-Northbound Left	230’	34	2	34	2
	-Northbound Through	-	218	68	218	65
	-Northbound Right	230’	109	4	109	4
	-Southbound Left	200’	119	216	119	216
	-Southbound Through	-	224	74	224	73
	-Southbound Right	185’	6	0	6	0
6	**SR 13 @ S. Hill St/Hamilton Mill Rd**					
	-Eastbound Left	180’	41	105	41	105
	-Eastbound Through	-	173	290	173	290
	-Eastbound Right	300’	0	0	0	0
	-Westbound Left	250’	353	292	353	292
	-Westbound Through/Right	-	380	350	380	350
	-Northbound Left	240’	44	69	44	69
	-Northbound Through	-	218	525	218	525
	-Northbound Right	1,000’	0	0	0	0
	-Southbound Left	400’	158	365	158	365
	-Southbound Through	-	216	295	216	295
	-Southbound Right	280’	0	7	0	5
7	**Thompson Mill Rd @ Bryant Rd**					
	-Eastbound Approach	-	1	1	1	1
	-Westbound Approach	-	0	0	0	0
	-Northbound Approach	-	0	0	0	0
	-Southbound Approach	-	9	20	9	20
8	**Thompson Mill Rd @ N. Bogan Rd***					
	-Eastbound Approach	-	48	171	78	96
	-Westbound Approach	-	281	82	146	75
	-Northbound Approach	-	67	125	62	64
	-Southbound Approach	-	77	76	49	55

**95th percentile queue generated from SimTraffic model*



FUTURE (NO-BUILD) PEAK HOUR VOLUMES

FIGURE 8

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, 6, and 7) 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 (Figure 9) were used to evaluate the "Build" condition, which includes the projected site traffic. The results of the "Build" operations analyses with the assumed site access configuration are shown in Tables 10 and 11.

Site Access Configuration

The following access configuration was utilized when modeling the proposed site driveway intersection.

- Site Driveway #1: Truck and employee access via Roy Carlson Boulevard
    - This intersection will be upgraded as part of GDOT project PI #132950 to include signalization as well as the relocation of Thunder Road to align with Roy Carlson Boulevard.
    - As access to SR 13 (Buford Highway) via Thunder Road and Bryant Road will be eliminated, the existing traffic at the intersection was shifted to the proposed signal at Roy Carlson Boulevard as part of the "No-Build" and "Build" analyses.
    - This driveway will consist of two entering lanes and two exiting lanes. The westbound (driveway) approach is assumed to operate with a dedicated left turn lane and shared through/right turn lane.
    - Entering left turn movements will be made from a dedicated southbound left turn lane. It is recommended the signal include a southbound protected + permissive phase for entering left turns (See Appendix).
    - Entering right turn movements will be made from a dedicated northbound right turn lane.
- Site Driveway #2: Right-in/right-out/left-out access on Thompson Mill Road
    - For the purpose of this study, this driveway will only be used by employee/car traffic. Truck traffic will be able to use this access only in emergency situations.
    - As this access geometry was agreed upon by Gwinnett County DOT for the purpose of this study, further discussions will need to take place on the final layout of the driveway.
    - This driveway will consist of one entering lane and one exiting lane.
    - Entering right turn movements will be made from a dedicated westbound right turn lane.
    - The intersection will be unsignalized with a STOP sign on the southbound approach.

Future "Build" Traffic Operations

The "Build" conditions are evaluated to determine effectiveness of the recommended system and site mitigation improvements. Recommendations on traffic control and lane geometry are shown graphically in Figure 10.

TABLE 10 – FUTURE "BUILD" INTERSECTION OPERATIONS							
	Intersection	Traffic Control	Build 2026 No Improvements		Build 2026 Improved		LOS STD
			AM Peak	PM Peak	AM Peak	PM Peak	AM/PM
1	**SR 347 @ I-985 NB Ramps**	Signalized	**D (35.8)**	**D (49.4)**	**D (35.9)**	**D (48.8)**	**D/D**
	-Eastbound Approach		C (25.9)	C (31.4)	C (26.0)	C (30.4)	-
	-Westbound Approach		C (33.1)	D (51.2)	C (33.1)	D (51.2)	-
	-Northbound Approach		E (60.6)	F (84.9)	E (60.6)	F (84.9)	-
2	**SR 347 @ I-985 SB Ramps**	Signalized	**D (37.0)**	**C (23.9)**	**D (36.3)**	**C (24.2)**	**D/D**
	-Eastbound Approach		D (48.1)	B (13.4)	D (45.9)	B (13.7)	-
	-Westbound Approach		C (24.6)	C (23.1)	C (24.6)	C (24.0)	-
	-Southbound Approach		D (51.4)	D (51.5)	D (51.4)	D (51.5)	-
3	**SR 347 @ SR 13**	Signalized	**E (71.6)**	**E (66.5)**	**D (46.1)**	**D (49.6)**	**D/D**
	-Eastbound Approach		C (34.4)	E (72.9)	C (34.4)	E (58.7)	-
	-Westbound Approach		F (113.1)	E (57.2)	D (46.0)	D (44.0)	-
	-Northbound Approach		E (58.5)	D (53.7)	E (62.2)	D (47.0)	-
	-Southbound Approach		D (49.7)	F (108.4)	D (49.7)	D (47.5)	-
4	**SR 13 @ Roy Carlson Blvd**	Signalized	**B (10.9)**	**C (24.5)**	**B (13.1)**	**C (25.4)**	**D/D**
	-Eastbound Approach		D (48.3)	C (23.4)	D (48.3)	C (23.4)	-
	-Westbound Approach		D (52.3)	D (40.9)	D (52.3)	D (40.9)	-
	-Northbound Approach		B (11.9)	B (19.3)	B (17.7)	C (22.4)	-
	-Southbound Approach		A (1.4)	B (12.5)	A (1.7)	B (11.1)	-
5	**SR 13 @ Thompson Mill Rd**	Signalized	**C (20.7)**	**B (15.2)**	**B (18.6)**	**B (14.4)**	**D/D**
	-Eastbound Approach		C (22.6)	C (32.3)	C (22.6)	C (32.3)	-
	-Westbound Approach		D (42.1)	E (55.1)	D (42.1)	E (55.1)	-
	-Northbound Approach		B (11.3)	A (4.2)	B (11.1)	A (4.2)	-
	-Southbound Approach		B (13.6)	A (9.6)	A (8.0)	A (7.4)	-
6	**SR 13 @ S. Hill St/Hamilton Mill Rd**	Signalized	**D (48.5)**	**D (49.9)**	**D (48.1)**	**D (49.8)**	**D/D**
	-Eastbound Approach		D (48.7)	D (51.8)	D (48.7)	D (51.8)	-
	-Westbound Approach		F (93.9)	D (52.3)	F (93.9)	D (52.3)	-
	-Northbound Approach		C (20.9)	C (25.6)	C (20.9)	C (25.6)	-
	-Southbound Approach		C (33.1)	F (84.2)	C (31.7)	F (83.8)	-
7	**Thompson Mill Rd @ Bryant Rd**	Stop Controlled on NB & SB Approaches					
	-Eastbound Approach		A (0.5)	A (0.4)	A (0.5)	A (0.4)	D/D
	-Westbound Approach		A (0.0)	A (0.0)	A (0.0)	A (0.0)	D/D
	-Northbound Approach		A (0.0)	A (0.0)	A (0.0)	A (0.0)	D/D
	-Southbound Approach		C (20.2)	C (23.6)	C (20.2)	C (23.6)	D/D
8	**Thompson Mill Rd @ N. Bogan Rd**	All-Way Stop Controlled					
	-Eastbound Approach		C (23.1)	F (213.4)	B (11.3)	E (42.2)	D/E
	-Westbound Approach		F (84.7)	D (27.0)	D (32.3)	C (19.8)	E/D
	-Northbound Approach		C (21.2)	E (39.0)	B (14.2)	C (15.6)	D/D
	-Southbound Approach		C (20.6)	D (26.8)	A (8.9)	C (15.3)	D/D
9	**Thompson Mill Rd @ Site Drwy 2**	Stop Controlled on SB					
	-Westbound Right		A (0.0)	A (0.0)	A (0.0)	A (0.0)	D/D
	-Southbound Approach		C (18.0)	C (20.3)	C (18.0)	C (20.3)	D/D

Table 11 – Future "Build" Intersection 95th Percentile Queues						
	Intersection	Available Storage	Build 2026		Build 2026 Improved	
			AM Peak	PM Peak	AM Peak	PM Peak
1	**SR 347 @ I-985 NB Ramps**					
	-Eastbound Left	-	471	702	471	699
	-Eastbound Through	-	213	300	213	103
	-Westbound Through	-	430	201	430	201
	-Westbound Right	840'	24	38	24	38
	-Northbound Left	-	277	207	277	207
	-Northbound Through/Left	-	137	54	137	54
	-Northbound Right	510'	24	733	24	733
2	**SR 347 @ I-985 SB Ramps**					
	-Eastbound Through	-	198	258	193	230
	-Eastbound Right	375'	135	0	124	1
	-Westbound Left	380'	258	97	258	97
	-Westbound Through	-	541	440	541	443
	-Southbound Left	-	101	310	101	310
	-Southbound Right	-	582	320	582	320
3	**SR 347 @ SR 13**					
	-Eastbound Left	250'	103	138	103	146
	-Eastbound Through	-	314	507	314	482
	-Eastbound Right	370'	3	12	3	0
	-Westbound Left	300'	754	566	347	267
	-Westbound Through	-	202	130	202	297
	-Westbound Right	310'	2	19	1	26
	-Northbound Left	240'	46	55	44	57
	-Northbound Through	-	193	482	184	388
	-Northbound Right	250'	181	517	170	151
	-Southbound Left	300'	208	288	208	232
	-Southbound Through	-	357	191	357	191
	-Southbound Right	215'	17	27	17	27
4	**SR 13 @ Roy Carlson Blvd**					
	-Eastbound Approach	-	49	33	49	33
	-Westbound Through/Left	-	110	437	110	437
	-Westbound Right	-	60	210	60	210
	-Northbound Left	375'	51	15	54	18
	-Northbound Through	-	155	378	163	396
	-Northbound Right	375'	182	20	210	38
	-Southbound Left	200'	28	58	64	83
	-Southbound Through	-	32	88	21	90
	-Southbound Left	200'	0	0	0	0

Table Continued on Next Page…

	Intersection	Available Storage	Build 2026		Build 2026 Improved	
			AM Peak	PM Peak	AM Peak	PM Peak
5	**SR 13 @ Thompson Mill Rd**					
	-Eastbound Through/Left	-	3	34	3	34
	-Eastbound Right	105’	0	4	0	4
	-Westbound Through/Left	-	300	138	300	138
	-Westbound Right	250’	122	49	122	49
	-Northbound Left	230’	13	2	13	2
	-Northbound Through	-	107	101	110	101
	-Northbound Right	230’	8	0	8	0
	-Southbound Left	200’	94	219	75	123
	-Southbound Through	-	215	138	151	106
	-Southbound Right	185’	11	0	5	0
6	**SR 13 @ S. Hill St/Hamilton Mill Rd**					
	-Eastbound Left	180’	51	112	51	112
	-Eastbound Through	-	164	296	164	296
	-Eastbound Right	300’	0	0	0	0
	-Westbound Left	250’	376	270	376	270
	-Westbound Through/Right	-	396	366	396	366
	-Northbound Left	240’	45	69	45	69
	-Northbound Through	-	335	596	335	596
	-Northbound Right	1,000’	0	0	0	0
	-Southbound Left	400’	232	462	230	462
	-Southbound Through	-	425	418	364	406
	-Southbound Right	280’	3	7	4	5
7	**Thompson Mill Rd @ Bryant Rd**					
	-Eastbound Approach	-	1	1	1	1
	-Westbound Approach	-	0	0	0	0
	-Northbound Approach	-	0	0	0	0
	-Southbound Approach	-	10	24	10	24
8	**Thompson Mill Rd @ N. Bogan Rd***					
	-Eastbound Approach	-	121	201	59	210
	-Westbound Approach	-	200	107	143	83
	-Northbound Approach	-	62	85	31	78
	-Southbound Approach	-	75	73	58	82
9	**Thompson Mill Rd @ Site Drwy 2**					
	-Westbound Right	150’	0	0	0	0
	-Southbound Approach	-	2	10	2	10

**95th percentile queue generated from SimTraffic model*

Recommendations for Site Mitigation Improvements

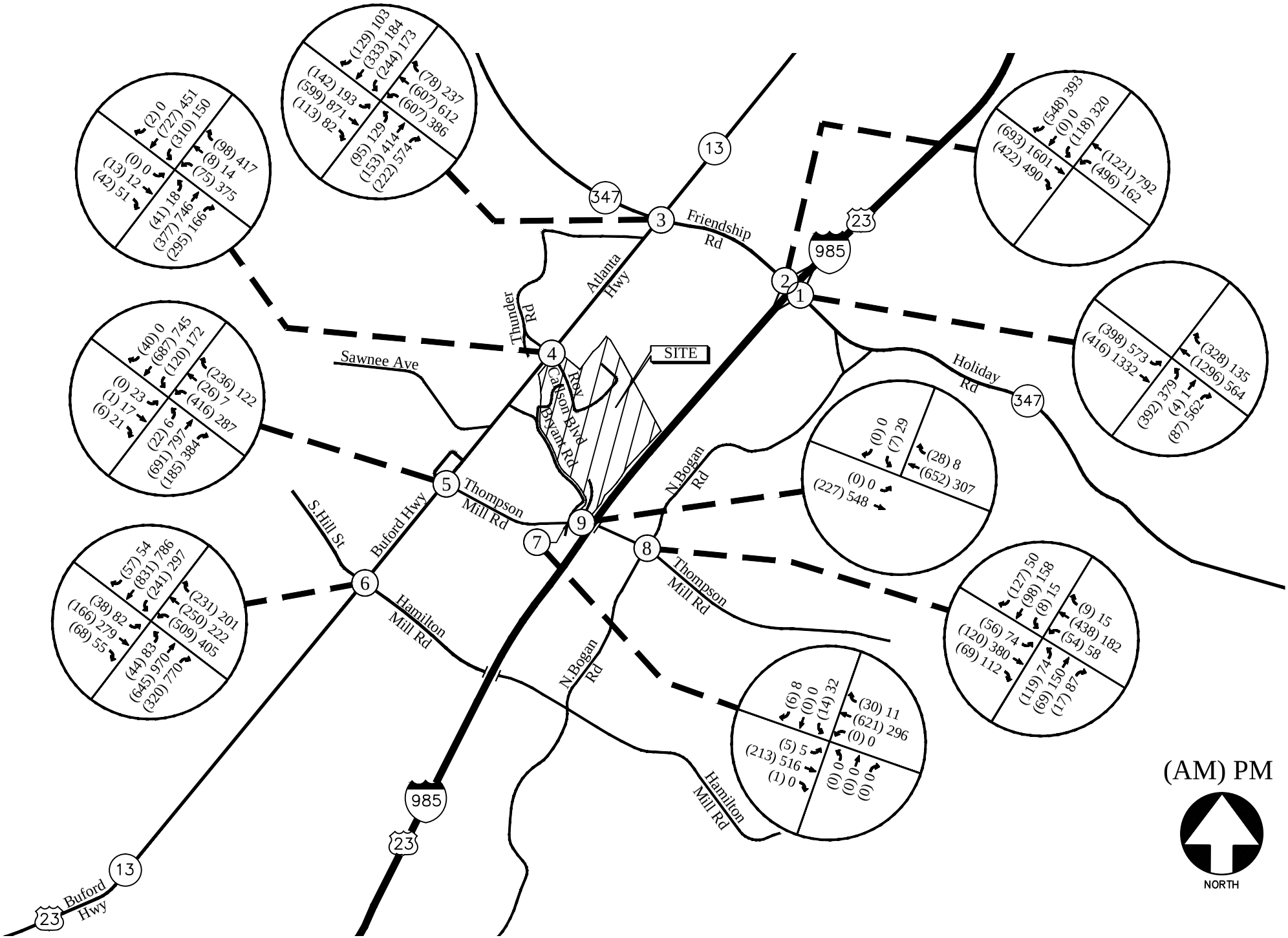
Improvements that are identified as site mitigation improvements address deficiencies that are caused by site traffic and can be identified as related to the proposed development. A summary of the site mitigation improvements is provided below, with more detailed information on each intersection in the following narratives.

Summary of Recommended Site Mitigation Improvements

- It is recommended a second westbound left turn lane be constructed using the existing striping at the intersection of SR 347 (Friendship Road) at SR 13 (Atlanta Highway).

SR 347 (Friendship Road) at SR 13 (Atlanta Highway)

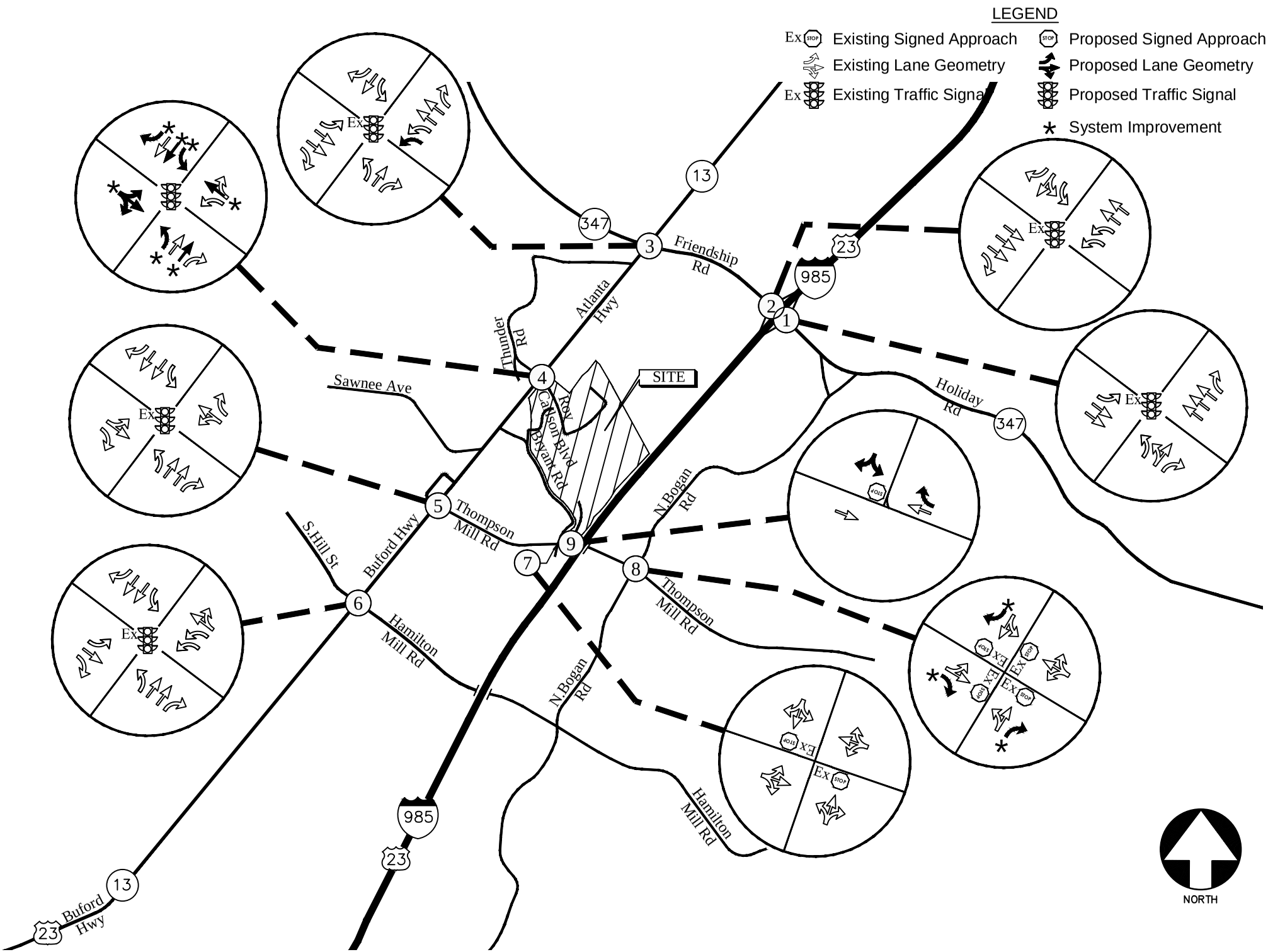
After the addition of site traffic, the intersection of SR 347 (Friendship Road) at SR 13 (Atlanta Highway) will begin to operate at an overall level-of-service "E" during the AM and PM peak hours. Due to the added amount of westbound left turns at the intersection, it is recommended a second westbound left turn lane be installed using the existing striping and given protected signal phasing. With this improvement, the intersection will begin to operate at a level-of-service "D" in the AM and PM peak hours.



FUTURE (BUILD) PEAK HOUR VOLUMES

FIGURE 9

A&R Engineering Inc.



FUTURE TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 10

A&R Engineering Inc.

CONCLUSIONS AND RECOMMENDATIONS

Traffic impacts were evaluated for the added traffic from the proposed Longacre industrial development located on Roy Carlson Boulevard between SR 13 (Buford Highway) and I-985 in Buford, Georgia. The development will consist of:

- Warehousing: 947,520 square feet
- Industrial Park: 455,600 square feet
- Shopping Center: 40,000 square feet

The development proposes access via Roy Carlson Boulevard, and, for the purpose of this analysis, an additional right-in/right-out/left-out access point on Thompson Mill Road between Bryant Road and I-985. Existing and future operations after completion of the project were analyzed at the intersections of:

- SR 347 (Friendship Road) at I-985 NB Ramps
- SR 347 (Friendship Road) at I-985 SB Ramps
- SR 347 (Friendship Road) at SR 13 (Atlanta Highway)
- SR 13 (Buford Highway) at Roy Carlson Boulevard
- SR 13 (Buford Highway) at Thompson Mill Road
- SR 13 (Buford Highway) at S. Hill Street/Hamilton Mill Road
- Thompson Mill Road at Bryant Road
- Thompson Mill Road at N. Bogan Road

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 the analysis are listed below:

System Recommendations and 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. A summary of the system improvements, which address deficiencies that are found within the existing road network for the “No-Build” conditions, is provided below with more detailed information on each intersection in the following narratives.

Summary of Recommended System Improvements

- Construct a dedicated channelized right turn lane on the northbound, southbound, and eastbound approaches to the intersection of Thompson Mill Road at N. Bogan Road.

Thompson Mill Road at N. Bogan Road

Several approaches to the intersection of Thompson Mill Road at N. Bogan Road will begin to operate at a level-of-service “E” or “F” in the “No-Build” conditions. As traffic will increase over the next ten years, it is recommended that a dedicated right turn lane be installed per local standards on the northbound, southbound, and eastbound approaches.

Site Access Configuration

The following access configuration was utilized when modeling the proposed site driveway intersection.

- Site Driveway #1: Truck and employee access via Roy Carlson Boulevard
    - This intersection will be upgraded as part of GDOT project PI #132950 to include signalization as well as the relocation of Thunder Road to align with Roy Carlson Boulevard.
    - As access to SR 13 (Buford Highway) via Thunder Road and Bryant Road will be eliminated, the existing traffic at the intersection was shifted to the proposed signal at Roy Carlson Boulevard as part of the "No-Build" and "Build" analyses.
    - This driveway will consist of two entering lanes and two exiting lanes. The westbound (driveway) approach is assumed to operate with a dedicated left turn lane and shared through/right turn lane.
    - Entering left turn movements will be made from a dedicated southbound left turn lane. It is recommended the signal include a southbound protected + permissive phase for entering left turns (See Appendix).
    - Entering right turn movements will be made from a dedicated northbound right turn lane.
- Site Driveway #2: Right-in/right-out/left-out access on Thompson Mill Road
    - For the purpose of this study, this driveway will only be used by employee/car traffic. Truck traffic will be able to use this access only in emergency situations.
    - As this access geometry was agreed upon by Gwinnett County DOT for the purpose of this study, further discussions will need to take place on the final layout of the driveway.
    - This driveway will consist of one entering lane and one exiting lane.
    - Entering right turn movements will be made from a dedicated westbound right turn lane.
    - The intersection will be unsignalized with a STOP sign on the southbound approach.

Site Mitigation Improvements

Improvements that are identified as site mitigation improvements address deficiencies that are caused by site traffic and can be identified as related to the proposed development. A summary of the site mitigation improvements is provided below, with more detailed information on each intersection in the following narratives.

Summary of Recommended Site Mitigation Improvements

- It is recommended a second westbound left turn lane be constructed using the existing striping at the intersection of SR 347 (Friendship Road) at SR 13 (Atlanta Highway).

SR 347 (Friendship Road) at SR 13 (Atlanta Highway)

After the addition of site traffic, the intersection of SR 347 (Friendship Road) at SR 13 (Atlanta Highway) will begin to operate at an overall level-of-service "E" during the AM and PM peak hours. Due to the added amount of westbound left turns at the intersection, it is recommended a second westbound left turn lane be installed using the existing striping and given protected signal phasing. With this improvement, the intersection will begin to operate at a level-of-service "D" in the AM and PM peak hours.

Appendix

Existing Intersection Traffic Counts

Reliable Traffic Data Services, LLC

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TMC Data
Friendship Rd (SR347) @ I-985 NB Ramps
Buford, GA
7-9am I 4-6pm

File Name : 39230001
Site Code : 39230001
Start Date : 10/19/2016
Page No : 1

Groups Printed- Cars and Buses - Trucks

	I-985 NB Off-Ramp Northbound					Southbound					Friendship Rd (SR347) Eastbound					Friendship Rd (SR347) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	70	1	24	0	95	0	0	0	0	0	58	86	0	0	144	0	290	39	0	329	568
07:15 AM	63	2	17	0	82	0	0	0	0	0	81	87	0	0	168	0	295	67	0	362	612
07:30 AM	76	1	21	0	98	0	0	0	0	0	104	97	0	0	201	0	289	102	0	391	690
07:45 AM	88	1	16	0	105	0	0	0	0	0	98	100	0	0	198	0	350	85	0	435	738
Total	297	5	78	0	380	0	0	0	0	0	341	370	0	0	711	0	1224	293	0	1517	2608
08:00 AM	76	0	29	0	105	0	0	0	0	0	72	103	0	0	175	0	269	58	0	327	607
08:15 AM	58	0	18	0	76	0	0	0	0	0	72	130	0	0	202	0	273	52	0	325	603
08:30 AM	69	0	24	0	93	0	0	0	0	0	62	91	0	0	153	0	220	55	0	275	521
08:45 AM	65	0	20	0	85	0	0	0	0	0	60	81	0	0	141	0	169	32	0	201	427
Total	268	0	91	0	359	0	0	0	0	0	266	405	0	0	671	0	931	197	0	1128	2158
*** BREAK ***																					
04:00 PM	75	0	80	0	155	0	0	0	0	0	93	230	0	0	323	0	99	27	0	126	604
04:15 PM	68	1	75	0	144	0	0	0	0	0	89	237	0	0	326	0	116	29	0	145	615
04:30 PM	87	2	71	0	160	0	0	0	0	0	104	274	0	0	378	0	117	41	0	158	696
04:45 PM	85	0	103	0	188	0	0	0	0	0	105	246	0	0	351	0	126	42	0	168	707
Total	315	3	329	0	647	0	0	0	0	0	391	987	0	0	1378	0	458	139	0	597	2622
05:00 PM	64	0	109	0	173	0	0	0	0	0	117	281	0	0	398	0	127	41	0	168	739
05:15 PM	96	0	135	0	231	0	0	0	0	0	136	348	0	0	484	0	129	34	0	163	878
05:30 PM	98	0	144	0	242	0	0	0	0	0	98	326	0	0	424	0	135	23	0	158	824
05:45 PM	72	1	147	0	220	0	0	0	0	0	98	279	0	0	377	0	132	30	0	162	759
Total	330	1	535	0	866	0	0	0	0	0	449	1234	0	0	1683	0	523	128	0	651	3200
Grand Total	1210	9	1033	0	2252	0	0	0	0	0	1447	2996	0	0	4443	0	3136	757	0	3893	10588
Apprch %	53.7	0.4	45.9	0		0	0	0	0		32.6	67.4	0	0		0	80.6	19.4	0		
Total %	11.4	0.1	9.8	0	21.3	0	0	0	0	0	13.7	28.3	0	0	42	0	29.6	7.1	0	36.8	
Cars and Buses	1191	9	1026	0	2226	0	0	0	0	0	1431	2986	0	0	4417	0	3118	752	0	3870	10513
% Cars and Buses	98.4	100	99.3	0	98.8	0	0	0	0	0	98.9	99.7	0	0	99.4	0	99.4	99.3	0	99.4	99.3
Trucks	19	0	7	0	26	0	0	0	0	0	16	10	0	0	26	0	18	5	0	23	75
% Trucks	1.6	0	0.7	0	1.2	0	0	0	0	0	1.1	0.3	0	0	0.6	0	0.6	0.7	0	0.6	0.7

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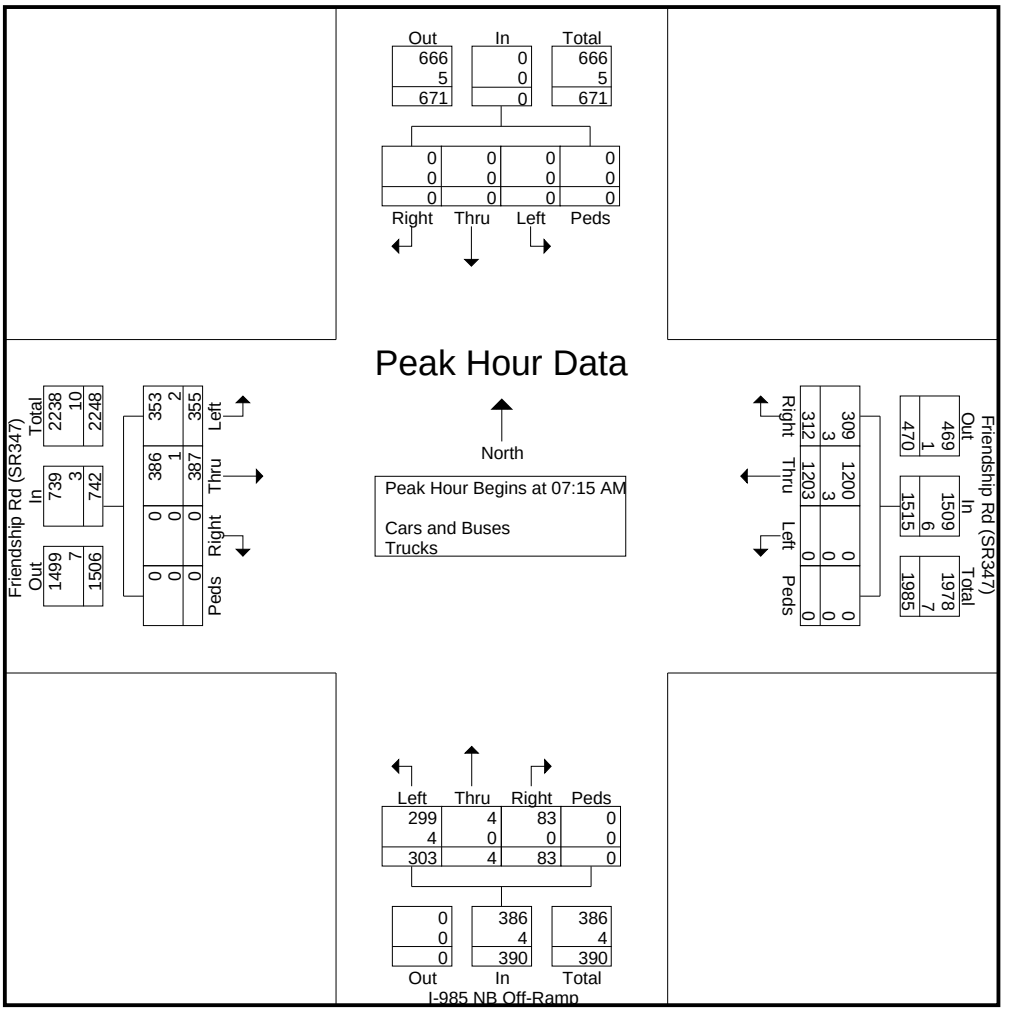
TMC Data
Friendship Rd (SR347) @ I-985 NB Ramps
Buford, GA
7-9am I 4-6pm

File Name : 39230001
Site Code : 39230001
Start Date : 10/19/2016
Page No : 2

	I-985 NB Off-Ramp Northbound					Southbound					Friendship Rd (SR347) Eastbound					Friendship Rd (SR347) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	63	**2**	17	0	82	0	0	0	0	0	81	87	0	0	168	0	295	67	0	362	612
07:30 AM	76	1	21	0	98	0	0	0	0	0	**104**	97	0	0	**201**	0	289	**102**	0	391	690
07:45 AM	**88**	1	16	0	**105**	0	0	0	0	0	98	100	0	0	198	0	**350**	85	0	**435**	**738**
08:00 AM	76	0	**29**	0	105	0	0	0	0	0	72	**103**	0	0	175	0	269	58	0	327	607
Total Volume	303	4	83	0	390	0	0	0	0	0	355	387	0	0	742	0	1203	312	0	1515	2647
% App. Total	77.7	1	21.3	0		0	0	0	0		47.8	52.2	0	0		0	79.4	20.6	0		
PHF	.861	.500	.716	.000	.929	.000	.000	.000	.000	.000	.853	.939	.000	.000	.923	.000	.859	.765	.000	.871	.897
Cars and Buses	299	4	83	0	386	0	0	0	0	0	353	386	0	0	739	0	1200	309	0	1509	2634
% Cars and Buses	98.7	100	100	0	99.0	0	0	0	0	0	99.4	99.7	0	0	99.6	0	99.8	99.0	0	99.6	99.5
Trucks	4	0	0	0	4	0	0	0	0	0	2	1	0	0	3	0	3	3	0	6	13
% Trucks	1.3	0	0	0	1.0	0	0	0	0	0	0.6	0.3	0	0	0.4	0	0.2	1.0	0	0.4	0.5



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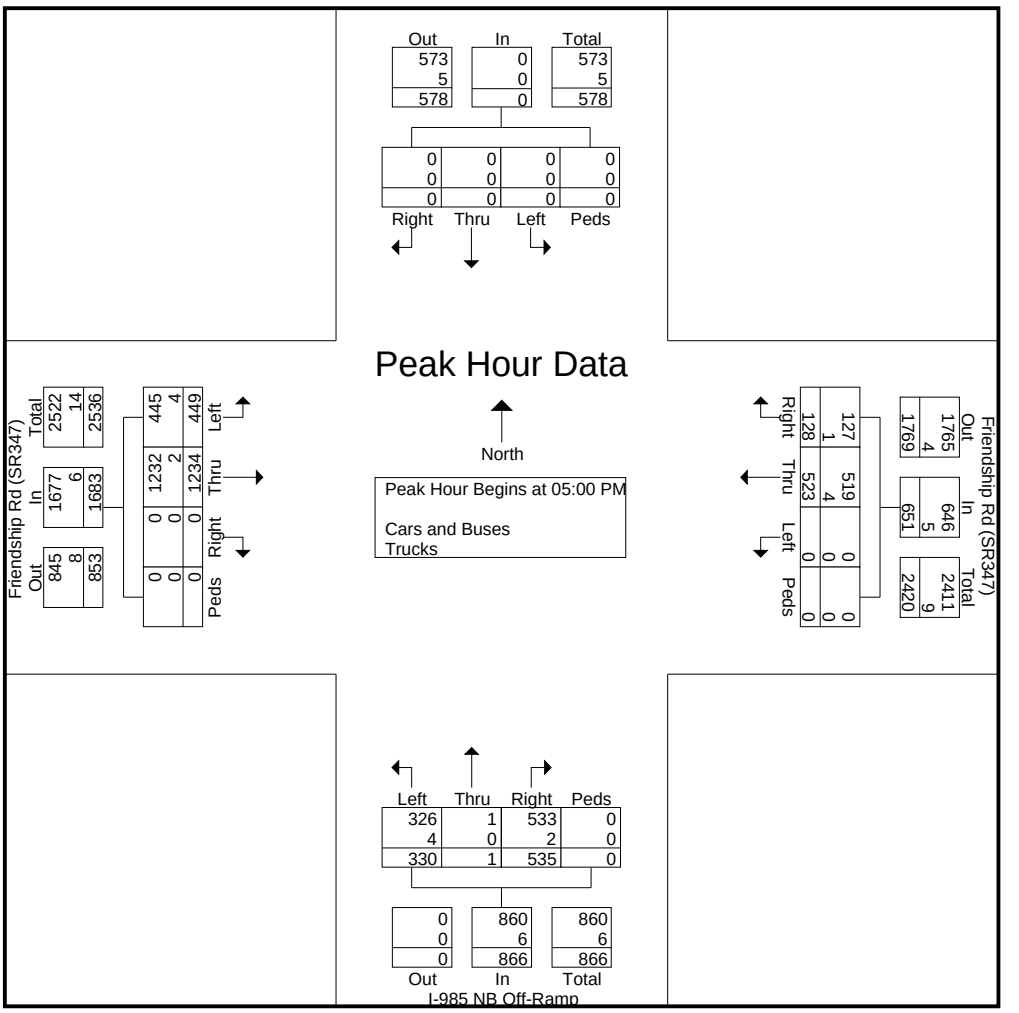
TMC Data
Friendship Rd (SR347) @ I-985 NB Ramps
Buford, GA
7-9am I 4-6pm

File Name : 39230001
Site Code : 39230001
Start Date : 10/19/2016
Page No : 3

	I-985 NB Off-Ramp Northbound					Southbound					Friendship Rd (SR347) Eastbound					Friendship Rd (SR347) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	64	0	109	0	173	0	0	0	0	0	117	281	0	0	398	0	127	**41**	0	**168**	739
05:15 PM	96	0	135	0	231	0	0	0	0	0	**136**	**348**	0	0	**484**	0	129	34	0	163	**878**
05:30 PM	**98**	0	144	0	**242**	0	0	0	0	0	98	326	0	0	424	0	**135**	23	0	158	824
05:45 PM	72	**1**	**147**	0	220	0	0	0	0	0	98	279	0	0	377	0	132	30	0	162	759
Total Volume	330	1	535	0	866	0	0	0	0	0	449	1234	0	0	1683	0	523	128	0	651	3200
% App. Total	38.1	0.1	61.8	0		0	0	0	0		26.7	73.3	0	0		0	80.3	19.7	0		
PHF	.842	.250	.910	.000	.895	.000	.000	.000	.000	.000	.825	.886	.000	.000	.869	.000	.969	.780	.000	.969	.911
Cars and Buses	326	1	533	0	860	0	0	0	0	0	445	1232	0	0	1677	0	519	127	0	646	3183
% Cars and Buses	98.8	100	99.6	0	99.3	0	0	0	0	0	99.1	99.8	0	0	99.6	0	99.2	99.2	0	99.2	99.5
Trucks	4	0	2	0	6	0	0	0	0	0	4	2	0	0	6	0	4	1	0	5	17
% Trucks	1.2	0	0.4	0	0.7	0	0	0	0	0	0.9	0.2	0	0	0.4	0	0.8	0.8	0	0.8	0.5



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TMC Data
Friendship Rd (SR347) @ I-985 SB Ramps
Buford, GA
7-9am I 4-6pm

File Name : 39230002
Site Code : 39230002
Start Date : 10/19/2016

Groups Printed- Cars and Buses - Trucks

	Northbound					I-985 SB Off-Ramp Southbound					Friendship Rd (SR347) Eastbound					Friendship Rd (SR347) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	24	0	102	0	126	0	119	83	0	202	89	239	0	0	328	656
07:15 AM	0	0	0	0	0	33	0	103	0	136	0	132	96	0	228	105	243	0	0	348	712
07:30 AM	0	0	0	0	0	28	0	113	0	141	0	183	92	0	275	119	248	0	0	367	783
07:45 AM	0	0	0	0	0	19	0	129	0	148	0	158	88	0	246	136	322	0	0	458	852
Total	0	0	0	0	0	104	0	447	0	551	0	592	359	0	951	449	1052	0	0	1501	3003
08:00 AM	0	0	0	0	0	32	0	90	0	122	0	154	106	0	260	112	248	0	0	360	742
08:15 AM	0	0	0	0	0	22	1	95	0	118	0	131	80	0	211	120	211	0	0	331	660
08:30 AM	0	0	0	0	0	25	0	97	0	122	0	153	73	0	226	76	194	0	0	270	618
08:45 AM	0	0	0	0	0	29	0	86	0	115	0	117	65	0	182	55	184	0	0	239	536
Total	0	0	0	0	0	108	1	368	0	477	0	555	324	0	879	363	837	0	0	1200	2556
*** BREAK ***																					
04:00 PM	0	0	0	0	0	62	0	87	0	149	0	260	78	0	338	26	157	0	0	183	670
04:15 PM	0	0	0	0	0	59	0	72	0	131	0	280	68	0	348	31	166	0	0	197	676
04:30 PM	0	0	0	0	0	64	0	59	0	123	0	310	99	0	409	32	171	0	0	203	735
04:45 PM	0	0	0	0	0	55	0	99	0	154	0	273	91	0	364	30	174	0	0	204	722
Total	0	0	0	0	0	240	0	317	0	557	0	1123	336	0	1459	119	668	0	0	787	2803
05:00 PM	0	0	0	0	0	50	0	77	0	127	0	367	119	0	486	33	163	0	0	196	809
05:15 PM	0	0	0	0	0	92	0	100	0	192	0	367	94	0	461	43	195	0	0	238	891
05:30 PM	0	0	0	0	0	100	0	87	0	187	0	343	98	0	441	31	184	0	0	215	843
05:45 PM	0	0	0	0	0	62	0	72	0	134	0	316	77	0	393	47	168	0	0	215	742
Total	0	0	0	0	0	304	0	336	0	640	0	1393	388	0	1781	154	710	0	0	864	3285
Grand Total	0	0	0	0	0	756	1	1468	0	2225	0	3663	1407	0	5070	1085	3267	0	0	4352	11647
Apprch %	0	0	0	0		34	0	66	0		0	72.2	27.8	0		24.9	75.1	0	0		
Total %	0	0	0	0	0	6.5	0	12.6	0	19.1	0	31.5	12.1	0	43.5	9.3	28.1	0	0	37.4	
Cars and Buses	0	0	0	0	0	754	1	1448	0	2203	0	3634	1381	0	5015	1072	3240	0	0	4312	11530
% Cars and Buses	0	0	0	0	0	99.7	100	98.6	0	99	0	99.2	98.2	0	98.9	98.8	99.2	0	0	99.1	99
Trucks	0	0	0	0	0	2	0	20	0	22	0	29	26	0	55	13	27	0	0	40	117
% Trucks	0	0	0	0	0	0.3	0	1.4	0	1	0	0.8	1.8	0	1.1	1.2	0.8	0	0	0.9	1

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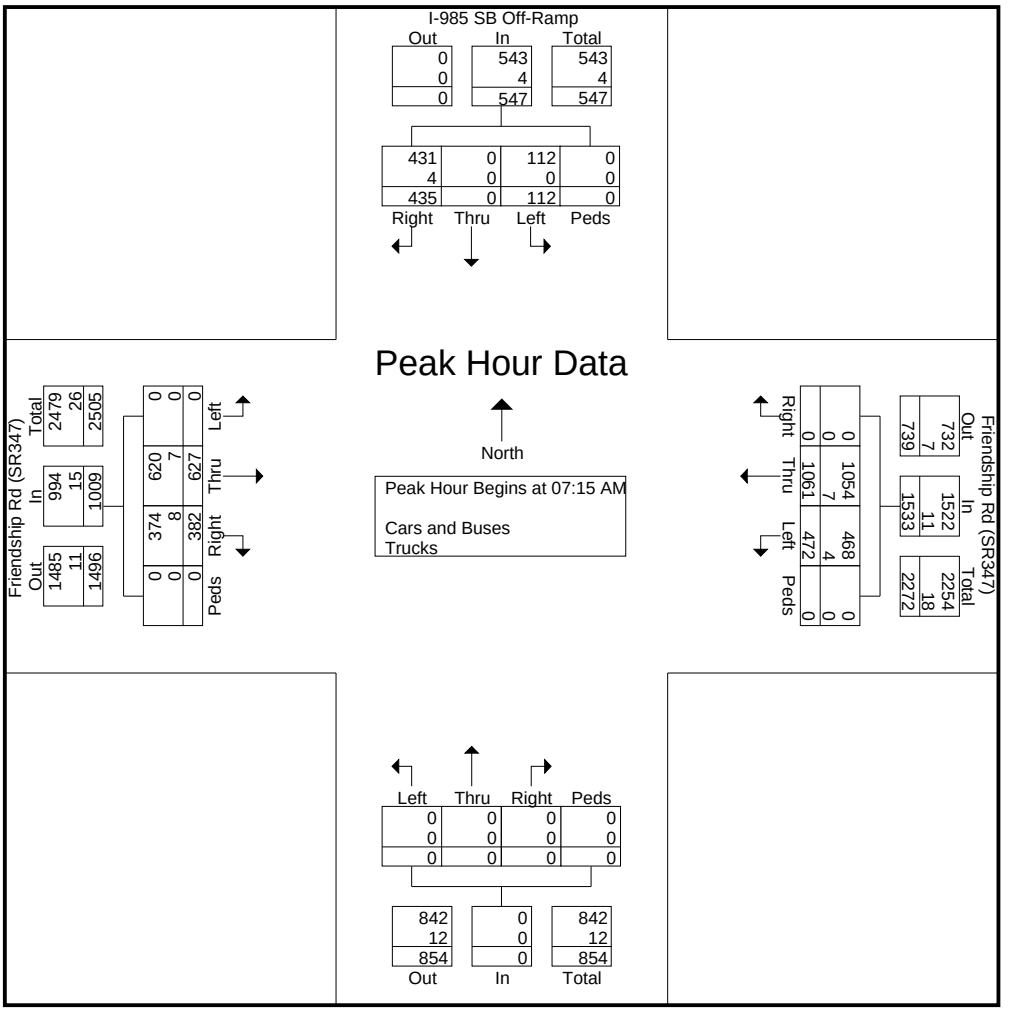
TMC Data
Friendship Rd (SR347) @ I-985 SB Ramps
Buford, GA
7-9am I 4-6pm

File Name : 39230002
Site Code : 39230002
Start Date : 10/19/2016

	Northbound					I-985 SB Off-Ramp Southbound					Friendship Rd (SR347) Eastbound					Friendship Rd (SR347) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	0	0	0	0	0	**33**	0	103	0	136	0	132	96	0	228	105	243	0	0	348	712
07:30 AM	0	0	0	0	0	28	0	113	0	141	0	**183**	92	0	**275**	119	248	0	0	367	783
07:45 AM	0	0	0	0	0	19	0	**129**	0	**148**	0	158	88	0	246	**136**	**322**	0	0	**458**	**852**
08:00 AM	0	0	0	0	0	32	0	90	0	122	0	154	**106**	0	260	112	248	0	0	360	742
Total Volume	0	0	0	0	0	112	0	435	0	547	0	627	382	0	1009	472	1061	0	0	1533	3089
% App. Total	0	0	0	0		20.5	0	79.5	0		0	62.1	37.9	0		30.8	69.2	0	0		
PHF	.000	.000	.000	.000	.000	.848	.000	.843	.000	.924	.000	.857	.901	.000	.917	.868	.824	.000	.000	.837	.906
Cars and Buses	0	0	0	0	0	112	0	431	0	543	0	620	374	0	994	468	1054	0	0	1522	3059
% Cars and Buses	0	0	0	0	0	100	0	99.1	0	99.3	0	98.9	97.9	0	98.5	99.2	99.3	0	0	99.3	99.0
Trucks	0	0	0	0	0	0	0	4	0	4	0	7	8	0	15	4	7	0	0	11	30
% Trucks	0	0	0	0	0	0	0	0.9	0	0.7	0	1.1	2.1	0	1.5	0.8	0.7	0	0	0.7	1.0



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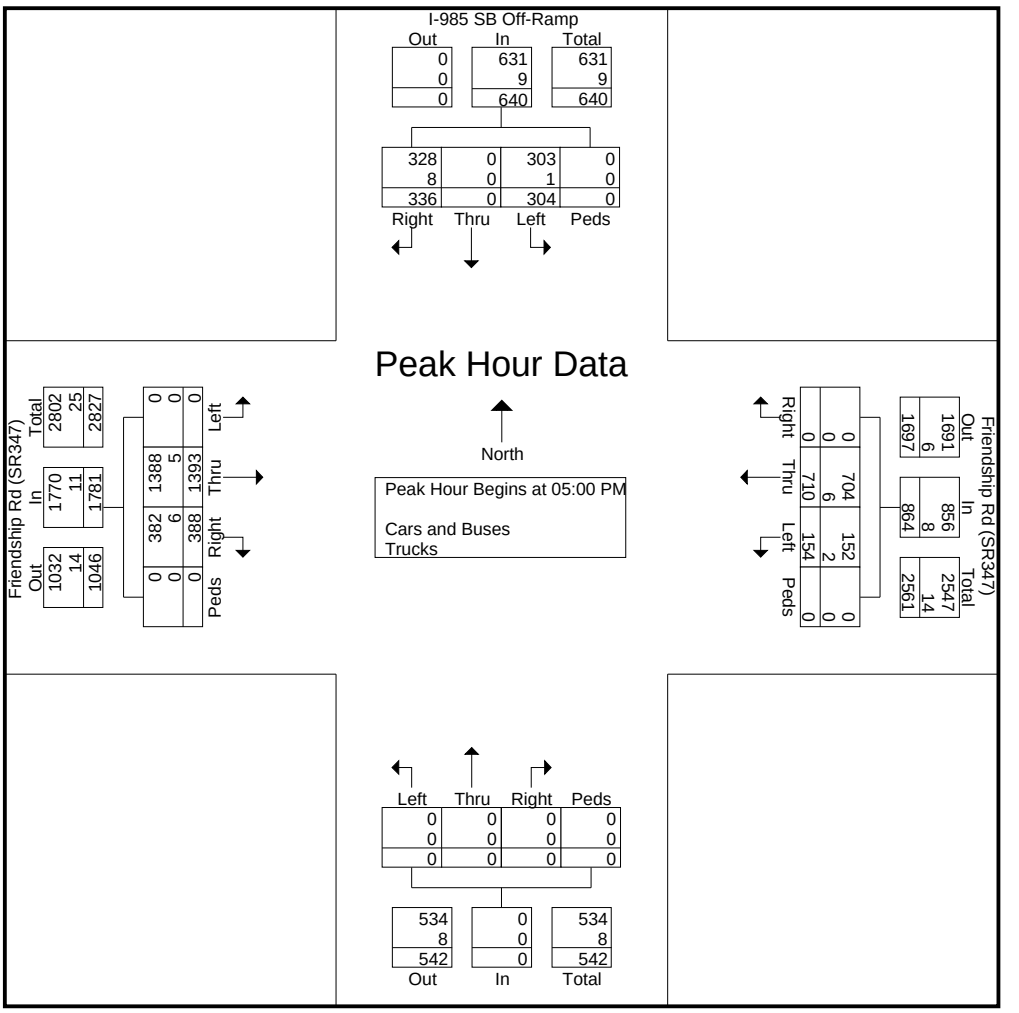
TMC Data
Friendship Rd (SR347) @ I-985 SB Ramps
Buford, GA
7-9am I 4-6pm

File Name : 39230002
Site Code : 39230002
Start Date : 10/19/2016
Page No : 3

	Northbound					I-985 SB Off-Ramp Southbound					Friendship Rd (SR347) Eastbound					Friendship Rd (SR347) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	0	0	0	0	0	50	0	77	0	127	0	**367**	**119**	0	**486**	33	163	0	0	196	809
05:15 PM	0	0	0	0	0	92	0	**100**	0	**192**	0	367	94	0	461	43	**195**	0	0	**238**	**891**
05:30 PM	0	0	0	0	0	**100**	0	87	0	187	0	343	98	0	441	31	184	0	0	215	843
05:45 PM	0	0	0	0	0	62	0	72	0	134	0	316	77	0	393	**47**	168	0	0	215	742
Total Volume	0	0	0	0	0	304	0	336	0	640	0	1393	388	0	1781	154	710	0	0	864	3285
% App. Total	0	0	0	0		47.5	0	52.5	0		0	78.2	21.8	0		17.8	82.2	0	0		
PHF	.000	.000	.000	.000	.000	.760	.000	.840	.000	.833	.000	.949	.815	.000	.916	.819	.910	.000	.000	.908	.922
Cars and Buses	0	0	0	0	0	303	0	328	0	631	0	1388	382	0	1770	152	704	0	0	856	3257
% Cars and Buses	0	0	0	0	0	99.7	0	97.6	0	98.6	0	99.6	98.5	0	99.4	98.7	99.2	0	0	99.1	99.1
Trucks	0	0	0	0	0	1	0	8	0	9	0	5	6	0	11	2	6	0	0	8	28
% Trucks	0	0	0	0	0	0.3	0	2.4	0	1.4	0	0.4	1.5	0	0.6	1.3	0.8	0	0	0.9	0.9



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TMC Data
Lanier Islands Pkwy (SR347) @
Atlanta Hwy (SR13), Buford, GA
7-9am I 4-6pm

File Name : 39230003
Site Code : 39230003
Start Date : 10/19/2016
Page No : 1

Groups Printed- Cars and Buses - Trucks

	Atlanta Hwy (SR13) Northbound					Atlanta Hwy (SR13) Southbound					Lanier Islands Pkwy (SR347) Eastbound					Lanier Islands Pkwy (SR347) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	25	31	17	0	73	56	93	28	0	177	10	108	22	0	140	93	135	15	0	243	633
07:15 AM	20	38	26	0	84	39	76	12	0	127	20	114	30	0	164	91	136	12	0	239	614
07:30 AM	25	37	42	0	104	55	78	26	0	159	32	142	22	0	196	100	145	26	0	271	730
07:45 AM	28	37	47	0	112	58	61	33	0	152	39	164	31	0	234	106	171	19	0	296	794
Total	98	143	132	0	373	208	308	99	0	615	101	528	105	0	734	390	587	72	0	1049	2771
08:00 AM	15	33	31	0	79	59	72	38	0	169	35	140	21	0	196	98	129	12	0	239	683
08:15 AM	19	24	41	0	84	60	57	26	0	143	29	124	20	0	173	85	132	17	0	234	634
08:30 AM	20	33	21	0	74	36	53	18	0	107	22	108	29	0	159	74	104	20	0	198	538
08:45 AM	30	33	24	0	87	27	58	17	0	102	22	107	18	0	147	89	130	25	0	244	580
Total	84	123	117	0	324	182	240	99	0	521	108	479	88	0	675	346	495	74	0	915	2435
*** BREAK ***																					
04:00 PM	35	66	73	0	174	33	52	13	0	98	35	153	19	0	207	68	131	35	0	234	713
04:15 PM	31	77	76	0	184	30	48	19	0	97	23	178	18	0	219	67	115	40	0	222	722
04:30 PM	39	85	84	0	208	35	38	17	0	90	37	193	23	0	253	66	122	52	0	240	791
04:45 PM	27	75	61	0	163	44	35	26	0	105	33	179	16	0	228	69	126	49	0	244	740
Total	132	303	294	0	729	142	173	75	0	390	128	703	76	0	907	270	494	176	0	940	2966
05:00 PM	23	82	101	0	206	40	41	26	0	107	53	257	18	0	328	58	167	66	0	291	932
05:15 PM	29	106	95	0	230	42	46	24	0	112	51	192	21	0	264	79	144	55	0	278	884
05:30 PM	29	76	82	0	187	39	30	22	0	91	47	201	16	0	264	80	145	55	0	280	822
05:45 PM	20	72	42	0	134	40	49	16	0	105	45	183	26	0	254	64	111	67	0	242	735
Total	101	336	320	0	757	161	166	88	0	415	196	833	81	0	1110	281	567	243	0	1091	3373
Grand Total	415	905	863	0	2183	693	887	361	0	1941	533	2543	350	0	3426	1287	2143	565	0	3995	11545
Apprch %	19	41.5	39.5	0		35.7	45.7	18.6	0		15.6	74.2	10.2	0		32.2	53.6	14.1	0		
Total %	3.6	7.8	7.5	0	18.9	6	7.7	3.1	0	16.8	4.6	22	3	0	29.7	11.1	18.6	4.9	0	34.6	
Cars and Buses	410	891	850	0	2151	672	868	354	0	1894	529	2536	341	0	3406	1265	2133	549	0	3947	11398
% Cars and Buses	98.8	98.5	98.5	0	98.5	97	97.9	98.1	0	97.6	99.2	99.7	97.4	0	99.4	98.3	99.5	97.2	0	98.8	98.7
Trucks	5	14	13	0	32	21	19	7	0	47	4	7	9	0	20	22	10	16	0	48	147
% Trucks	1.2	1.5	1.5	0	1.5	3	2.1	1.9	0	2.4	0.8	0.3	2.6	0	0.6	1.7	0.5	2.8	0	1.2	1.3

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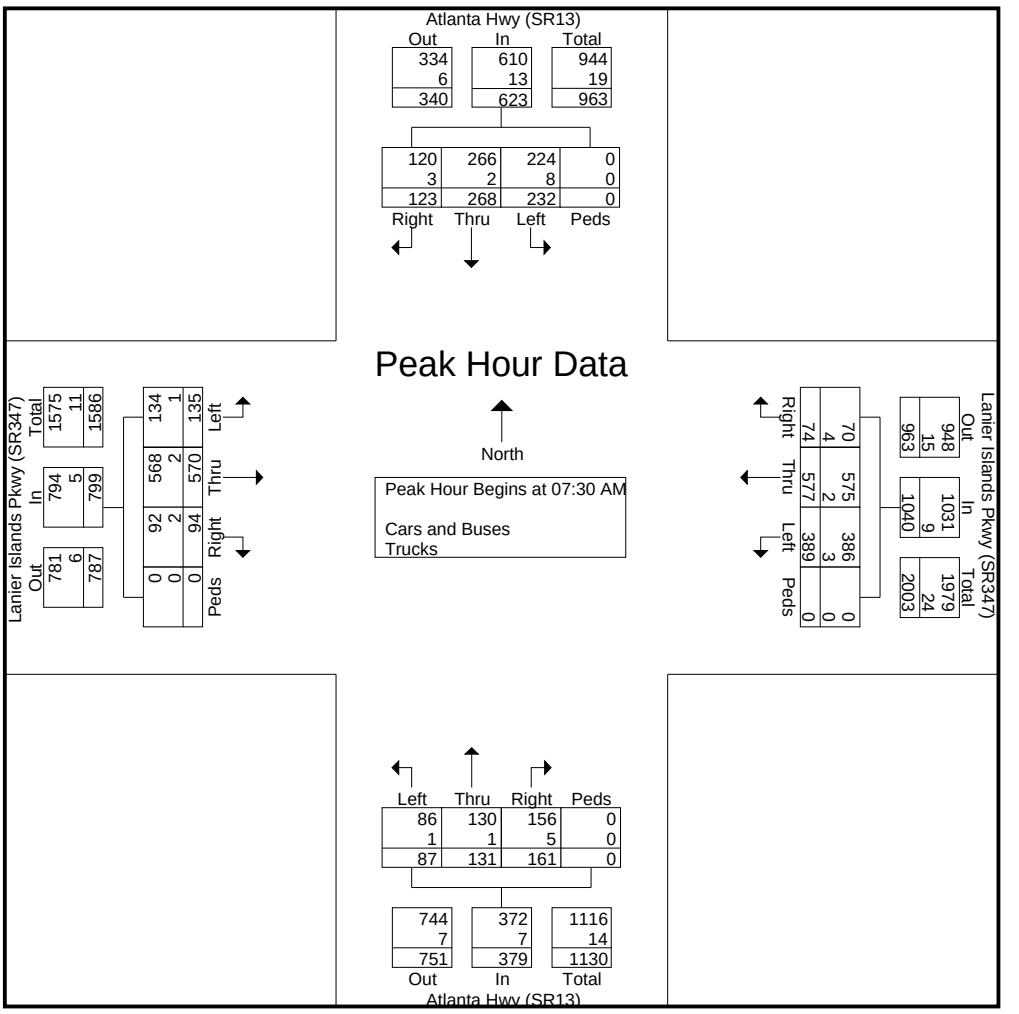
TMC Data
Lanier Islands Pkwy (SR347) @
Atlanta Hwy (SR13), Buford, GA
7-9am I 4-6pm

File Name : 39230003
Site Code : 39230003
Start Date : 10/19/2016
Page No : 2

	Atlanta Hwy (SR13) Northbound					Atlanta Hwy (SR13) Southbound					Lanier Islands Pkwy (SR347) Eastbound					Lanier Islands Pkwy (SR347) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	**37**	42	0	104	55	**78**	26	0	159	32	142	22	0	196	100	145	**26**	0	271	730
07:45 AM	**28**	37	**47**	0	**112**	58	61	33	0	152	**39**	**164**	**31**	0	**234**	**106**	**171**	19	0	**296**	**794**
08:00 AM	15	33	31	0	79	59	72	**38**	0	**169**	35	140	21	0	196	98	129	12	0	239	683
08:15 AM	19	24	41	0	84	**60**	57	26	0	143	29	124	20	0	173	85	132	17	0	234	634
Total Volume	87	131	161	0	379	232	268	123	0	623	135	570	94	0	799	389	577	74	0	1040	2841
% App. Total	23	34.6	42.5	0		37.2	43	19.7	0		16.9	71.3	11.8	0		37.4	55.5	7.1	0		
PHF	.777	.885	.856	.000	.846	.967	.859	.809	.000	.922	.865	.869	.758	.000	.854	.917	.844	.712	.000	.878	.895
Cars and Buses	86	130	156	0	372	224	266	120	0	610	134	568	92	0	794	386	575	70	0	1031	2807
% Cars and Buses	98.9	99.2	96.9	0	98.2	96.6	99.3	97.6	0	97.9	99.3	99.6	97.9	0	99.4	99.2	99.7	94.6	0	99.1	98.8
Trucks	1	1	5	0	7	8	2	3	0	13	1	2	2	0	5	3	2	4	0	9	34
% Trucks	1.1	0.8	3.1	0	1.8	3.4	0.7	2.4	0	2.1	0.7	0.4	2.1	0	0.6	0.8	0.3	5.4	0	0.9	1.2



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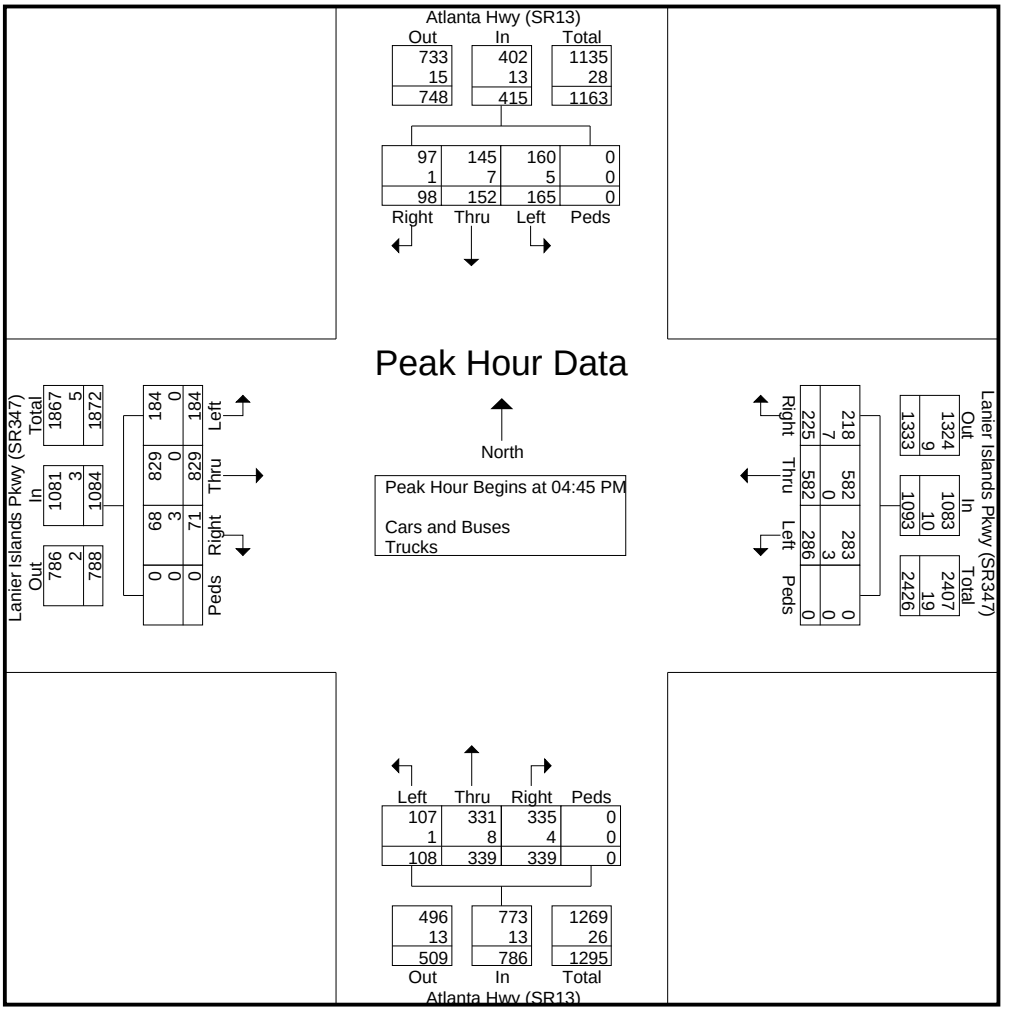
TMC Data
Lanier Islands Pkwy (SR347) @
Atlanta Hwy (SR13), Buford, GA
7-9am I 4-6pm

File Name : 39230003
Site Code : 39230003
Start Date : 10/19/2016
Page No : 3

	Atlanta Hwy (SR13) Northbound					Atlanta Hwy (SR13) Southbound					Lanier Islands Pkwy (SR347) Eastbound					Lanier Islands Pkwy (SR347) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	27	75	61	0	163	**44**	35	**26**	0	105	33	179	16	0	228	69	126	49	0	244	740
05:00 PM	23	82	**101**	0	206	40	41	26	0	107	**53**	**257**	18	0	**328**	58	**167**	**66**	0	**291**	**932**
05:15 PM	**29**	**106**	95	0	**230**	42	**46**	24	0	**112**	51	192	**21**	0	264	79	144	55	0	278	884
05:30 PM	29	76	82	0	187	39	30	22	0	91	47	201	16	0	264	**80**	145	55	0	280	822
Total Volume	108	339	339	0	786	165	152	98	0	415	184	829	71	0	1084	286	582	225	0	1093	3378
% App. Total	13.7	43.1	43.1	0		39.8	36.6	23.6	0		17	76.5	6.5	0		26.2	53.2	20.6	0		
PHF	.931	.800	.839	.000	.854	.938	.826	.942	.000	.926	.868	.806	.845	.000	.826	.894	.871	.852	.000	.939	.906
Cars and Buses	107	331	335	0	773	160	145	97	0	402	184	829	68	0	1081	283	582	218	0	1083	3339
% Cars and Buses	99.1	97.6	98.8	0	98.3	97.0	95.4	99.0	0	96.9	100	100	95.8	0	99.7	99.0	100	96.9	0	99.1	98.8
Trucks	1	8	4	0	13	5	7	1	0	13	0	0	3	0	3	3	0	7	0	10	39
% Trucks	0.9	2.4	1.2	0	1.7	3.0	4.6	1.0	0	3.1	0	0	4.2	0	0.3	1.0	0	3.1	0	0.9	1.2



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TMC Data
Buford Hwy (SR13) @ Roy Carlson Blvd
Buford, GA
7-9am I 4-6pm

File Name : 39230004
Site Code : 39230004
Start Date : 10/19/2016
Page No : 1

Groups Printed- Cars and Buses - Trucks

	Buford Hwy (SR13) Northbound					Buford Hwy (SR13) Southbound					Eastbound					Roy Carlson Blvd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	80	12	0	92	6	174	0	0	180	0	0	0	0	0	1	0	3	0	4	276
07:15 AM	0	87	7	0	94	5	204	0	0	209	0	0	0	0	0	1	0	1	0	2	305
07:30 AM	0	107	13	0	120	7	171	0	0	178	0	0	0	0	0	1	0	0	0	1	299
07:45 AM	0	105	17	0	122	17	154	0	0	171	0	0	0	0	0	4	0	1	0	5	298
Total	0	379	49	0	428	35	703	0	0	738	0	0	0	0	0	7	0	5	0	12	1178
08:00 AM	0	86	13	0	99	10	157	0	0	167	0	0	0	0	0	1	0	2	0	3	269
08:15 AM	0	92	9	0	101	11	135	0	0	146	0	0	0	0	0	0	0	5	0	5	252
08:30 AM	0	56	20	0	76	5	127	0	0	132	0	0	0	0	0	5	0	7	0	12	220
08:45 AM	0	84	12	0	96	5	138	0	0	143	0	0	0	0	0	5	0	2	0	7	246
Total	0	318	54	0	372	31	557	0	0	588	0	0	0	0	0	11	0	16	0	27	987
*** BREAK ***																					
04:00 PM	0	173	4	0	177	6	125	0	0	131	0	0	0	0	0	9	0	12	0	21	329
04:15 PM	0	162	2	0	164	5	105	0	0	110	0	0	0	0	0	8	0	3	0	11	285
04:30 PM	0	166	4	0	170	2	111	0	0	113	0	0	0	0	0	23	0	34	0	57	340
04:45 PM	0	164	6	0	170	0	99	0	0	99	0	0	0	0	0	15	0	7	0	22	291
Total	0	665	16	0	681	13	440	0	0	453	0	0	0	0	0	55	0	56	0	111	1245
05:00 PM	0	206	3	0	209	1	105	0	0	106	0	0	0	0	0	19	0	21	0	40	355
05:15 PM	0	214	5	0	219	1	144	0	0	145	0	0	0	0	0	18	0	15	0	33	397
05:30 PM	0	150	6	0	156	2	111	0	0	113	0	0	0	0	0	5	0	4	0	9	278
05:45 PM	0	128	2	0	130	1	118	0	0	119	0	0	0	0	0	7	0	9	0	16	265
Total	0	698	16	0	714	5	478	0	0	483	0	0	0	0	0	49	0	49	0	98	1295
Grand Total	0	2060	135	0	2195	84	2178	0	0	2262	0	0	0	0	0	122	0	126	0	248	4705
Apprch %	0	93.8	6.2	0		3.7	96.3	0	0		0	0	0	0		49.2	0	50.8	0		
Total %	0	43.8	2.9	0	46.7	1.8	46.3	0	0	48.1	0	0	0	0	0	2.6	0	2.7	0	5.3	
Cars and Buses	0	2028	130	0	2158	80	2127	0	0	2207	0	0	0	0	0	114	0	121	0	235	4600
% Cars and Buses	0	98.4	96.3	0	98.3	95.2	97.7	0	0	97.6	0	0	0	0	0	93.4	0	96	0	94.8	97.8
Trucks	0	32	5	0	37	4	51	0	0	55	0	0	0	0	0	8	0	5	0	13	105
% Trucks	0	1.6	3.7	0	1.7	4.8	2.3	0	0	2.4	0	0	0	0	0	6.6	0	4	0	5.2	2.2

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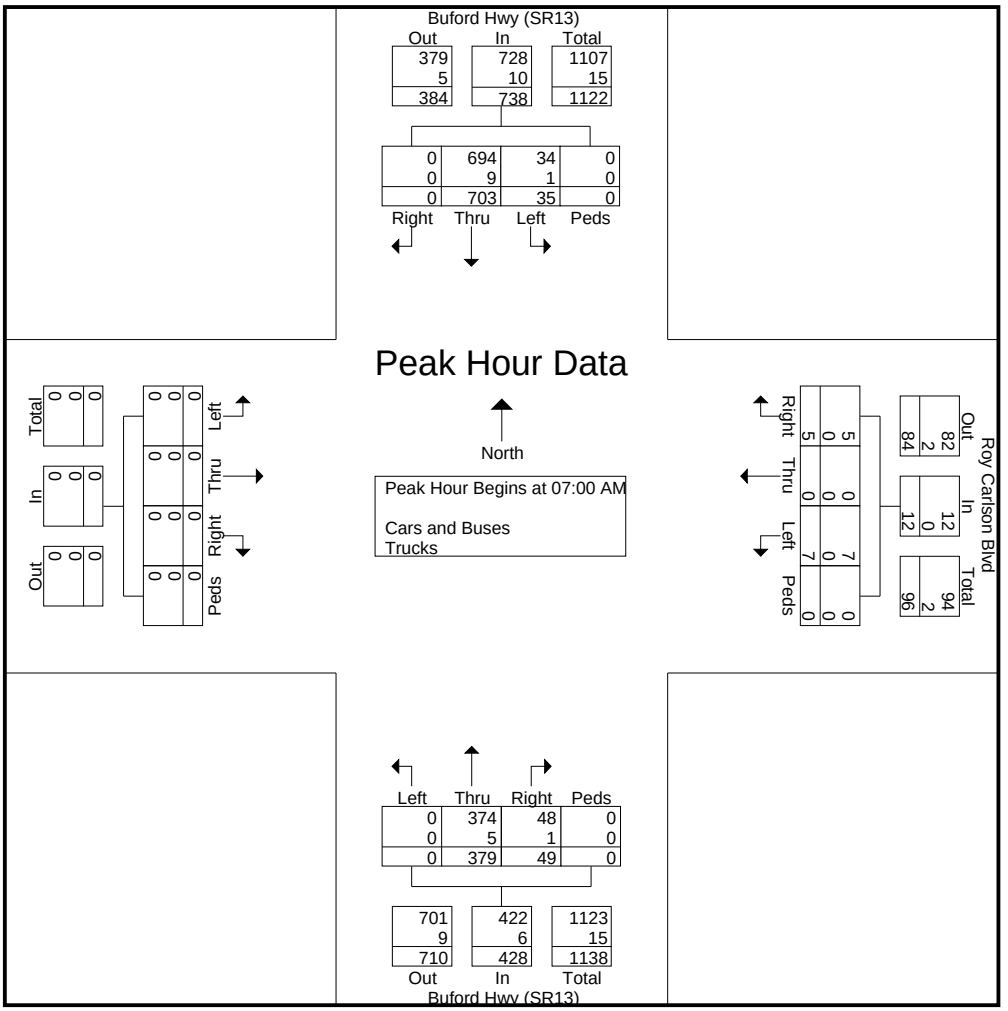
TMC Data
Buford Hwy (SR13) @ Roy Carlson Blvd
Buford, GA
7-9am I 4-6pm

File Name : 39230004
Site Code : 39230004
Start Date : 10/19/2016
Page No : 2

	Buford Hwy (SR13) Northbound					Buford Hwy (SR13) Southbound					Eastbound					Roy Carlson Blvd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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 07:00 AM																					
07:00 AM	0	80	12	0	92	6	174	0	0	180	0	0	0	0	0	1	0	**3**	0	4	276
07:15 AM	0	87	7	0	94	5	**204**	0	0	**209**	0	0	0	0	0	1	0	1	0	2	**305**
07:30 AM	0	**107**	13	0	120	7	171	0	0	178	0	0	0	0	0	1	0	0	0	1	299
07:45 AM	0	105	**17**	0	**122**	**17**	154	0	0	171	0	0	0	0	0	**4**	0	1	0	**5**	298
Total Volume	0	379	49	0	428	35	703	0	0	738	0	0	0	0	0	7	0	5	0	12	1178
% App. Total	0	88.6	11.4	0		4.7	95.3	0	0		0	0	0	0		58.3	0	41.7	0		
PHF	.000	.886	.721	.000	.877	.515	.862	.000	.000	.883	.000	.000	.000	.000	.000	.438	.000	.417	.000	.600	.966
Cars and Buses	0	374	48	0	422	34	694	0	0	728	0	0	0	0	0	7	0	5	0	12	1162
% Cars and Buses	0	98.7	98.0	0	98.6	97.1	98.7	0	0	98.6	0	0	0	0	0	100	0	100	0	100	98.6
Trucks	0	5	1	0	6	1	9	0	0	10	0	0	0	0	0	0	0	0	0	0	16
% Trucks	0	1.3	2.0	0	1.4	2.9	1.3	0	0	1.4	0	0	0	0	0	0	0	0	0	0	1.4



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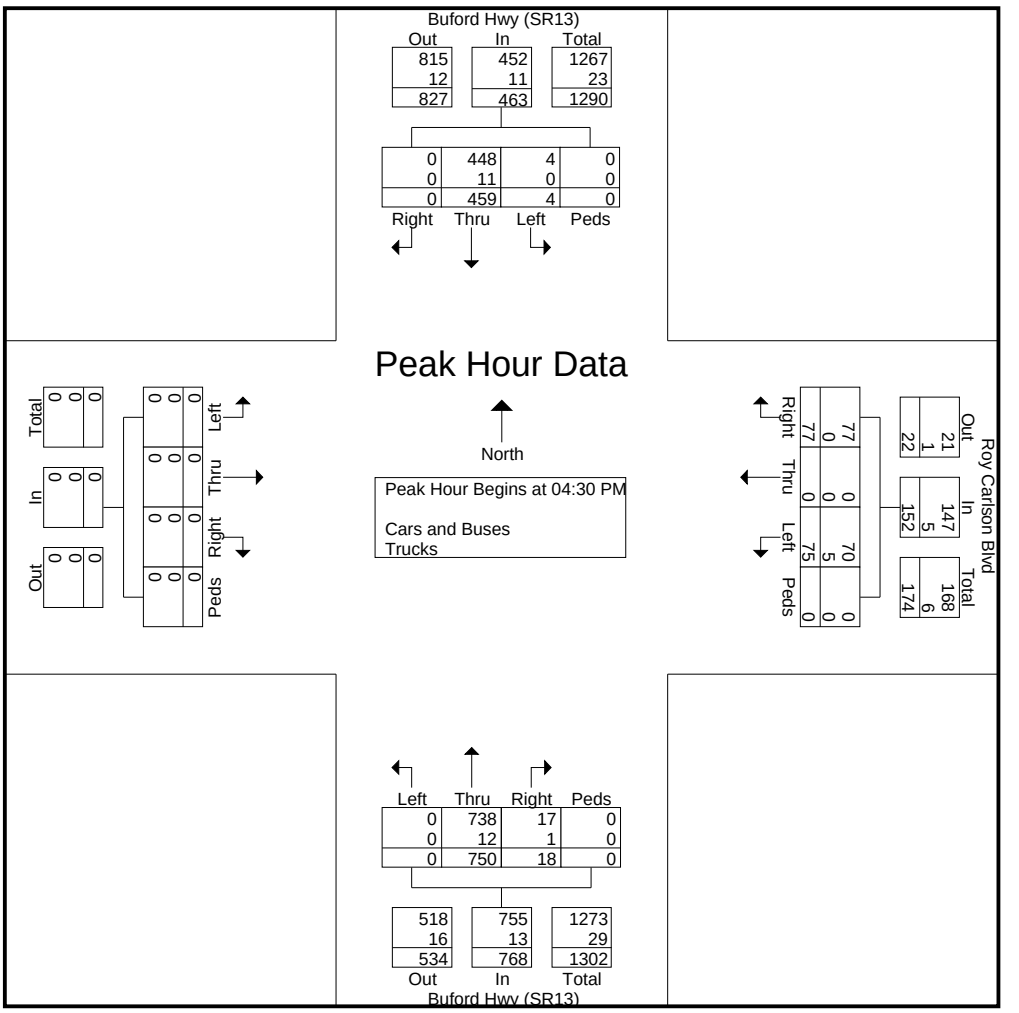
TMC Data
Buford Hwy (SR13) @ Roy Carlson Blvd
Buford, GA
7-9am I 4-6pm

File Name : 39230004
Site Code : 39230004
Start Date : 10/19/2016
Page No : 3

	Buford Hwy (SR13) Northbound					Buford Hwy (SR13) Southbound					Eastbound					Roy Carlson Blvd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	166	4	0	170	**2**	111	0	0	113	0	0	0	0	0	**23**	0	**34**	0	**57**	340
04:45 PM	0	164	**6**	0	170	0	99	0	0	99	0	0	0	0	0	15	0	7	0	22	291
05:00 PM	0	206	3	0	209	1	105	0	0	106	0	0	0	0	0	19	0	21	0	40	355
05:15 PM	0	**214**	5	0	**219**	1	**144**	0	0	**145**	0	0	0	0	0	18	0	15	0	33	**397**
Total Volume	0	750	18	0	768	4	459	0	0	463	0	0	0	0	0	75	0	77	0	152	1383
% App. Total	0	97.7	2.3	0		0.9	99.1	0	0		0	0	0	0		49.3	0	50.7	0		
PHF	.000	.876	.750	.000	.877	.500	.797	.000	.000	.798	.000	.000	.000	.000	.000	.815	.000	.566	.000	.667	.871
Cars and Buses	0	738	17	0	755	4	448	0	0	452	0	0	0	0	0	70	0	77	0	147	1354
% Cars and Buses	0	98.4	94.4	0	98.3	100	97.6	0	0	97.6	0	0	0	0	0	93.3	0	100	0	96.7	97.9
Trucks	0	12	1	0	13	0	11	0	0	11	0	0	0	0	0	5	0	0	0	5	29
% Trucks	0	1.6	5.6	0	1.7	0	2.4	0	0	2.4	0	0	0	0	0	6.7	0	0	0	3.3	2.1



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TMC Data
Buford Hwy (SR13) @ Bryant Rd/Thunder Rd
Buford, GA
7-9am I 4-6pm

File Name : 39230005
Site Code : 39230005
Start Date : 10/19/2016
Page No : 1

Groups Printed- Cars and Buses - Trucks

	Buford Hwy (SR13) Northbound					Buford Hwy (SR13) Southbound					Thunder Rd Eastbound					Bryant Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	3	80	0	0	83	2	177	0	0	179	0	1	6	0	7	0	0	3	1	4	273
07:15 AM	9	92	0	0	101	3	202	0	0	205	0	1	14	0	15	0	0	3	0	3	324
07:30 AM	14	109	2	0	125	4	162	1	0	167	0	6	10	0	16	0	4	4	0	8	316
07:45 AM	12	104	0	0	116	2	159	0	0	161	0	2	6	0	8	0	1	10	0	11	296
Total	38	385	2	0	425	11	700	1	0	712	0	10	36	0	46	0	5	20	1	26	1209
08:00 AM	6	102	0	0	108	1	156	1	0	158	0	4	12	0	16	0	3	4	0	7	289
08:15 AM	9	97	0	0	106	2	139	0	0	141	0	4	6	0	10	0	3	3	0	6	263
08:30 AM	6	87	1	0	94	2	128	1	0	131	2	3	4	0	9	0	0	4	0	4	238
08:45 AM	7	82	1	0	90	1	135	1	0	137	1	4	11	0	16	0	0	2	0	2	245
Total	28	368	2	0	398	6	558	3	0	567	3	15	33	0	51	0	6	13	0	19	1035
*** BREAK ***																					
04:00 PM	7	172	0	0	179	4	117	0	0	121	0	7	12	0	19	0	3	4	1	8	327
04:15 PM	7	167	2	0	176	1	112	1	0	114	1	6	10	0	17	0	2	4	0	6	313
04:30 PM	9	164	1	0	174	2	115	0	0	117	1	3	9	0	13	0	2	2	0	4	308
04:45 PM	1	167	0	0	168	4	108	0	0	112	0	4	12	0	16	0	5	2	0	7	303
Total	24	670	3	0	697	11	452	1	0	464	2	20	43	0	65	0	12	12	1	25	1251
05:00 PM	9	203	1	0	213	2	105	0	0	107	0	4	18	0	22	0	3	1	0	4	346
05:15 PM	2	208	1	0	211	4	143	0	0	147	0	2	8	0	10	0	2	3	0	5	373
05:30 PM	6	167	0	0	173	1	124	0	0	125	0	2	13	0	15	1	4	4	0	9	322
05:45 PM	3	129	0	0	132	5	116	0	0	121	0	6	2	0	8	0	1	1	0	2	263
Total	20	707	2	0	729	12	488	0	0	500	0	14	41	0	55	1	10	9	0	20	1304
Grand Total	110	2130	9	0	2249	40	2198	5	0	2243	5	59	153	0	217	1	33	54	2	90	4799
Apprch %	4.9	94.7	0.4	0		1.8	98	0.2	0		2.3	27.2	70.5	0		1.1	36.7	60	2.2		
Total %	2.3	44.4	0.2	0	46.9	0.8	45.8	0.1	0	46.7	0.1	1.2	3.2	0	4.5	0	0.7	1.1	0	1.9	
Cars and Buses	110	2130	9	0	2249	40	2198	5	0	2243	5	3	153	0	161	1	1	54	2	58	4711
% Cars and Buses	100	100	100	0	100	100	100	100	0	100	100	5.1	100	0	74.2	100	3	100	100	64.4	98.2
Trucks	0	0	0	0	0	0	0	0	0	0	0	56	0	0	56	0	32	0	0	32	88
% Trucks	0	0	0	0	0	0	0	0	0	0	0	94.9	0	0	25.8	0	97	0	0	35.6	1.8

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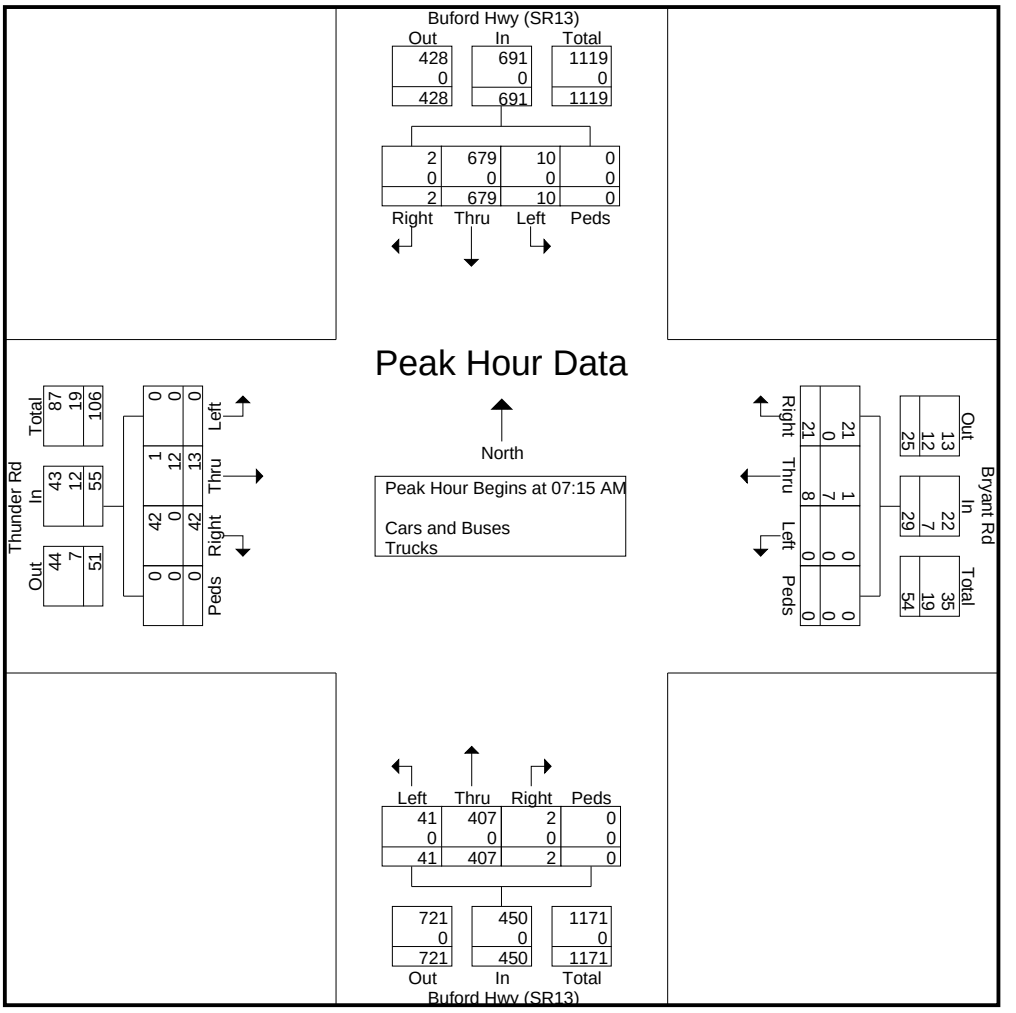
TMC Data
Buford Hwy (SR13) @ Bryant Rd/Thunder Rd
Buford, GA
7-9am I 4-6pm

File Name : 39230005
Site Code : 39230005
Start Date : 10/19/2016

	Buford Hwy (SR13) Northbound					Buford Hwy (SR13) Southbound					Thunder Rd Eastbound					Bryant Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	9	92	0	0	101	3	**202**	0	0	**205**	0	1	**14**	0	15	0	0	3	0	3	**324**
07:30 AM	**14**	**109**	**2**	0	**125**	**4**	162	**1**	0	167	0	**6**	10	0	**16**	0	**4**	4	0	8	316
07:45 AM	12	104	0	0	116	2	159	0	0	161	0	2	6	0	8	0	1	**10**	0	**11**	296
08:00 AM	6	102	0	0	108	1	156	1	0	158	0	4	12	0	16	0	3	4	0	7	289
Total Volume	41	407	2	0	450	10	679	2	0	691	0	13	42	0	55	0	8	21	0	29	1225
% App. Total	9.1	90.4	0.4	0		1.4	98.3	0.3	0		0	23.6	76.4	0		0	27.6	72.4	0		
PHF	.732	.933	.250	.000	.900	.625	.840	.500	.000	.843	.000	.542	.750	.000	.859	.000	.500	.525	.000	.659	.945
Cars and Buses	41	407	2	0	450	10	679	2	0	691	0	1	42	0	43	0	1	21	0	22	1206
% Cars and Buses	100	100	100	0	100	100	100	100	0	100	0	7.7	100	0	78.2	0	12.5	100	0	75.9	98.4
Trucks	0	0	0	0	0	0	0	0	0	0	0	12	0	0	12	0	7	0	0	7	19
% Trucks	0	0	0	0	0	0	0	0	0	0	0	92.3	0	0	21.8	0	87.5	0	0	24.1	1.6



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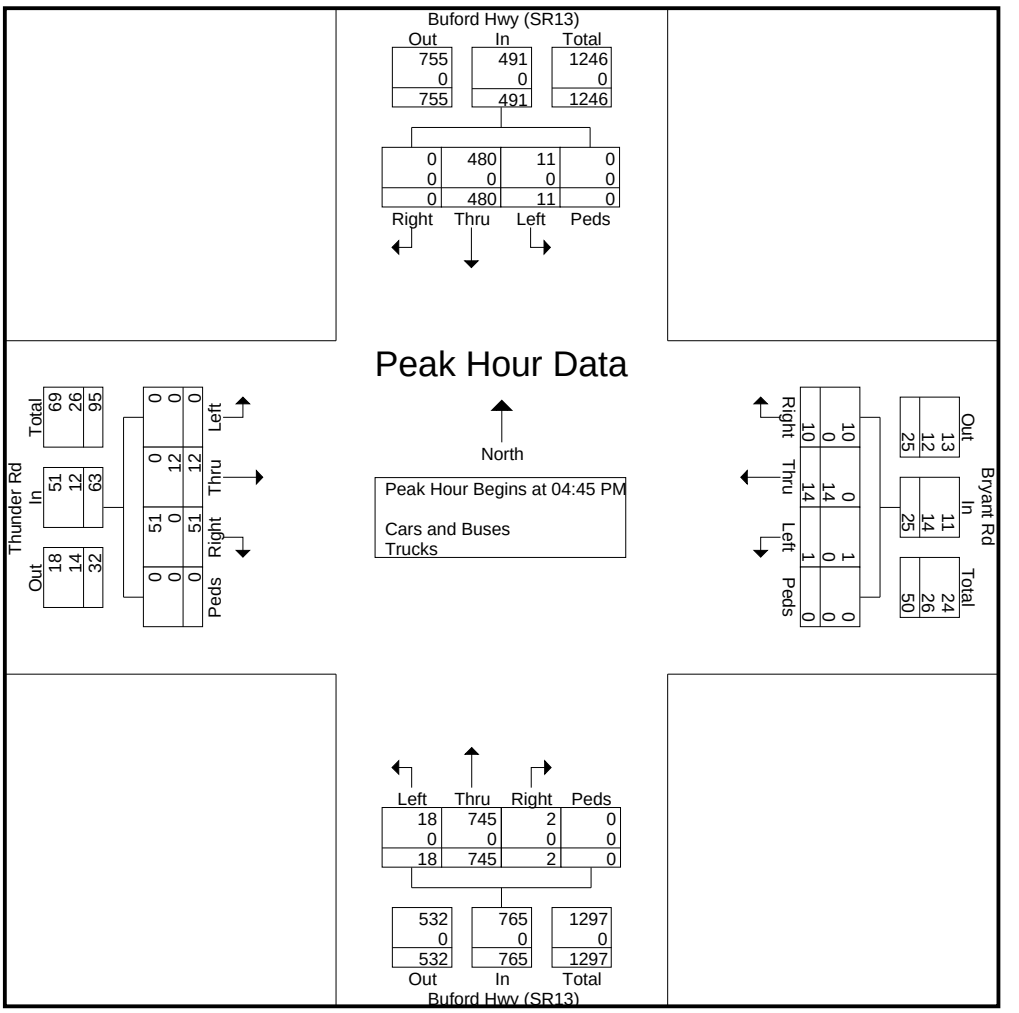
TMC Data
Buford Hwy (SR13) @ Bryant Rd/Thunder Rd
Buford, GA
7-9am I 4-6pm

File Name : 39230005
Site Code : 39230005
Start Date : 10/19/2016
Page No : 3

	Buford Hwy (SR13) Northbound					Buford Hwy (SR13) Southbound					Thunder Rd Eastbound					Bryant Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	167	0	0	168	**4**	108	0	0	112	0	**4**	12	0	16	0	**5**	2	0	7	303
05:00 PM	**9**	203	**1**	0	**213**	2	105	0	0	107	0	4	**18**	0	**22**	0	3	1	0	4	346
05:15 PM	2	**208**	1	0	211	4	**143**	0	0	**147**	0	2	8	0	10	0	2	3	0	5	**373**
05:30 PM	6	167	0	0	173	1	124	0	0	125	0	2	13	0	15	**1**	4	**4**	0	**9**	322
Total Volume	18	745	2	0	765	11	480	0	0	491	0	12	51	0	63	1	14	10	0	25	1344
% App. Total	2.4	97.4	0.3	0		2.2	97.8	0	0		0	19	81	0		4	56	40	0		
PHF	.500	.895	.500	.000	.898	.688	.839	.000	.000	.835	.000	.750	.708	.000	.716	.250	.700	.625	.000	.694	.901
Cars and Buses	18	745	2	0	765	11	480	0	0	491	0	0	51	0	51	1	0	10	0	11	1318
% Cars and Buses	100	100	100	0	100	100	100	0	0	100	0	0	100	0	81.0	100	0	100	0	44.0	98.1
Trucks	0	0	0	0	0	0	0	0	0	0	0	12	0	0	12	0	14	0	0	14	26
% Trucks	0	0	0	0	0	0	0	0	0	0	0	100	0	0	19.0	0	100	0	0	56.0	1.9



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TMC Data
Buford Hwy (SR13) @ Thompson Mill Rd
Buford, GA
7-9am I 4-6pm

File Name : 39230006
Site Code : 39230006
Start Date : 10/19/2016
Page No : 1

Groups Printed- Cars and Buses - Trucks

	Buford Hwy (SR13) Northbound					Buford Hwy (SR13) Southbound					Makita Co Drwy Eastbound					Thompson Mill Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	3	92	24	0	119	14	112	3	0	129	0	0	0	0	0	71	1	42	0	114	362
07:15 AM	3	97	31	0	131	14	136	6	0	156	0	0	1	0	1	85	2	55	0	142	430
07:30 AM	2	107	39	0	148	23	150	10	0	183	0	0	1	0	1	87	6	56	0	149	481
07:45 AM	7	110	45	0	162	38	166	8	0	212	0	0	3	0	3	102	8	63	0	173	550
Total	15	406	139	0	560	89	564	27	0	680	0	0	5	0	5	345	17	216	0	578	1823
08:00 AM	9	108	44	0	161	22	149	13	0	184	0	0	1	0	1	107	9	58	0	174	520
08:15 AM	3	117	48	0	168	30	129	7	0	166	0	1	1	0	2	100	2	46	0	148	484
08:30 AM	4	105	43	0	152	19	121	4	0	144	1	0	0	0	1	87	1	23	0	111	408
08:45 AM	4	109	34	0	147	13	136	4	0	153	0	0	1	0	1	96	2	26	0	124	425
Total	20	439	169	0	628	84	535	28	0	647	1	1	3	0	5	390	14	153	0	557	1837
*** BREAK ***																					
04:00 PM	3	161	81	1	246	41	118	1	0	160	9	6	10	0	25	52	0	31	0	83	514
04:15 PM	5	148	85	0	238	41	92	0	0	133	2	0	2	0	4	53	0	32	0	85	460
04:30 PM	1	147	90	0	238	36	114	0	0	150	8	10	10	0	28	61	2	26	0	89	505
04:45 PM	2	137	87	0	226	37	81	0	0	118	5	1	2	0	8	69	4	18	0	91	443
Total	11	593	343	1	948	155	405	1	0	561	24	17	24	0	65	235	6	107	0	348	1922
05:00 PM	0	198	92	0	290	46	127	0	0	173	6	5	7	0	18	68	0	35	0	103	584
05:15 PM	3	179	96	0	278	41	144	0	0	185	3	0	1	0	4	75	1	33	0	109	576
05:30 PM	0	159	91	0	250	21	119	0	0	140	1	5	4	0	10	50	0	27	0	77	477
05:45 PM	0	111	90	0	201	41	95	0	0	136	0	0	1	0	1	59	2	15	0	76	414
Total	3	647	369	0	1019	149	485	0	0	634	10	10	13	0	33	252	3	110	0	365	2051
Grand Total	49	2085	1020	1	3155	477	1989	56	0	2522	35	28	45	0	108	1222	40	586	0	1848	7633
Apprch %	1.6	66.1	32.3	0		18.9	78.9	2.2	0		32.4	25.9	41.7	0		66.1	2.2	31.7	0		
Total %	0.6	27.3	13.4	0	41.3	6.2	26.1	0.7	0	33	0.5	0.4	0.6	0	1.4	16	0.5	7.7	0	24.2	
Cars and Buses	48	2051	1017	1	3117	476	1943	56	0	2475	35	28	43	0	106	1222	40	586	0	1848	7546
% Cars and Buses	98	98.4	99.7	100	98.8	99.8	97.7	100	0	98.1	100	100	95.6	0	98.1	100	100	100	0	100	98.9
Trucks	1	34	3	0	38	1	46	0	0	47	0	0	2	0	2	0	0	0	0	0	87
% Trucks	2	1.6	0.3	0	1.2	0.2	2.3	0	0	1.9	0	0	4.4	0	1.9	0	0	0	0	0	1.1

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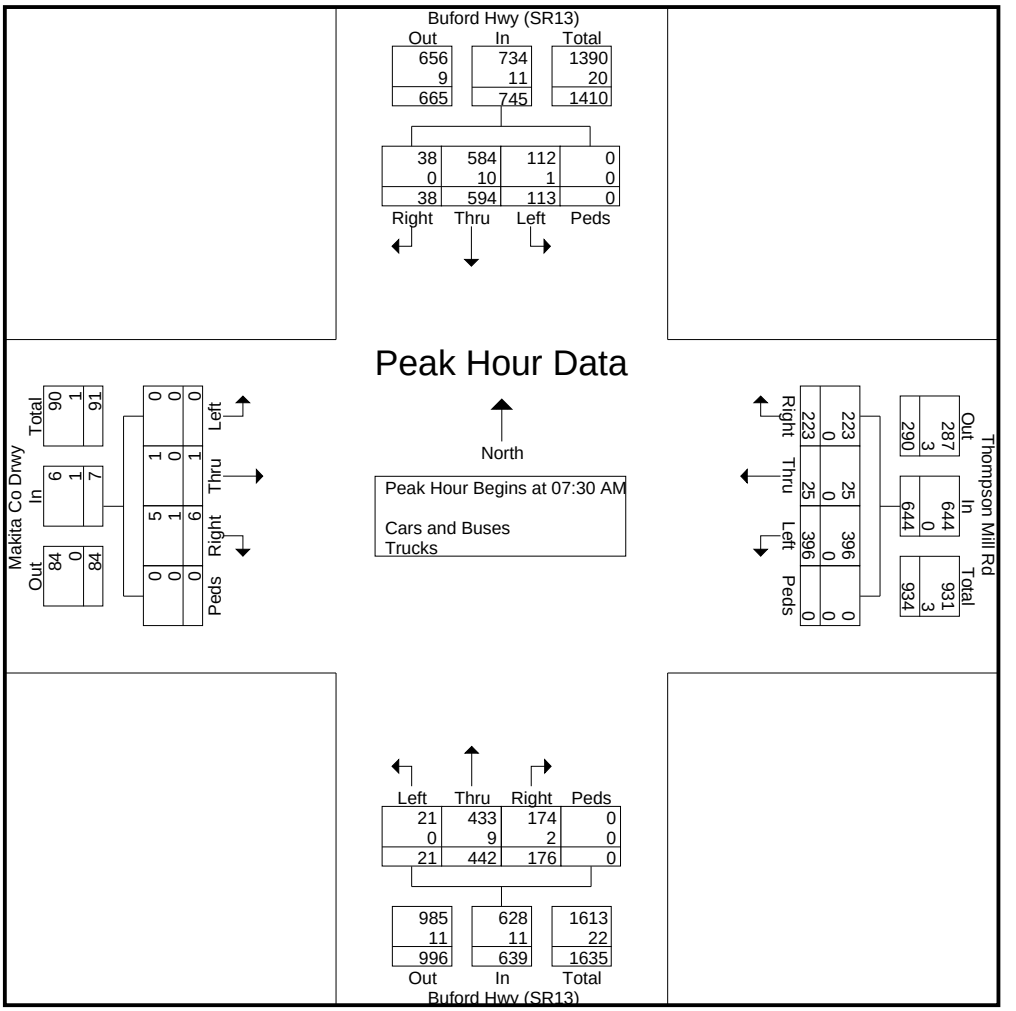
TMC Data
Buford Hwy (SR13) @ Thompson Mill Rd
Buford, GA
7-9am I 4-6pm

File Name : 39230006
Site Code : 39230006
Start Date : 10/19/2016

	Buford Hwy (SR13) Northbound					Buford Hwy (SR13) Southbound					Makita Co Drwy Eastbound					Thompson Mill Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	2	107	39	0	148	23	150	10	0	183	0	0	1	0	1	87	6	56	0	149	481
07:45 AM	7	110	45	0	162	**38**	**166**	8	0	**212**	0	0	**3**	0	**3**	102	8	**63**	0	173	**550**
08:00 AM	**9**	108	44	0	161	22	149	**13**	0	184	0	0	1	0	1	**107**	**9**	58	0	**174**	520
08:15 AM	3	**117**	**48**	0	**168**	30	129	7	0	166	0	**1**	1	0	2	100	2	46	0	148	484
Total Volume	21	442	176	0	639	113	594	38	0	745	0	1	6	0	7	396	25	223	0	644	2035
% App. Total	3.3	69.2	27.5	0		15.2	79.7	5.1	0		0	14.3	85.7	0		61.5	3.9	34.6	0		
PHF	.583	.944	.917	.000	.951	.743	.895	.731	.000	.879	.000	.250	.500	.000	.583	.925	.694	.885	.000	.925	.925
Cars and Buses	21	433	174	0	628	112	584	38	0	734	0	1	5	0	6	396	25	223	0	644	2012
% Cars and Buses	100	98.0	98.9	0	98.3	99.1	98.3	100	0	98.5	0	100	83.3	0	85.7	100	100	100	0	100	98.9
Trucks	0	9	2	0	11	1	10	0	0	11	0	0	1	0	1	0	0	0	0	0	23
% Trucks	0	2.0	1.1	0	1.7	0.9	1.7	0	0	1.5	0	0	16.7	0	14.3	0	0	0	0	0	1.1



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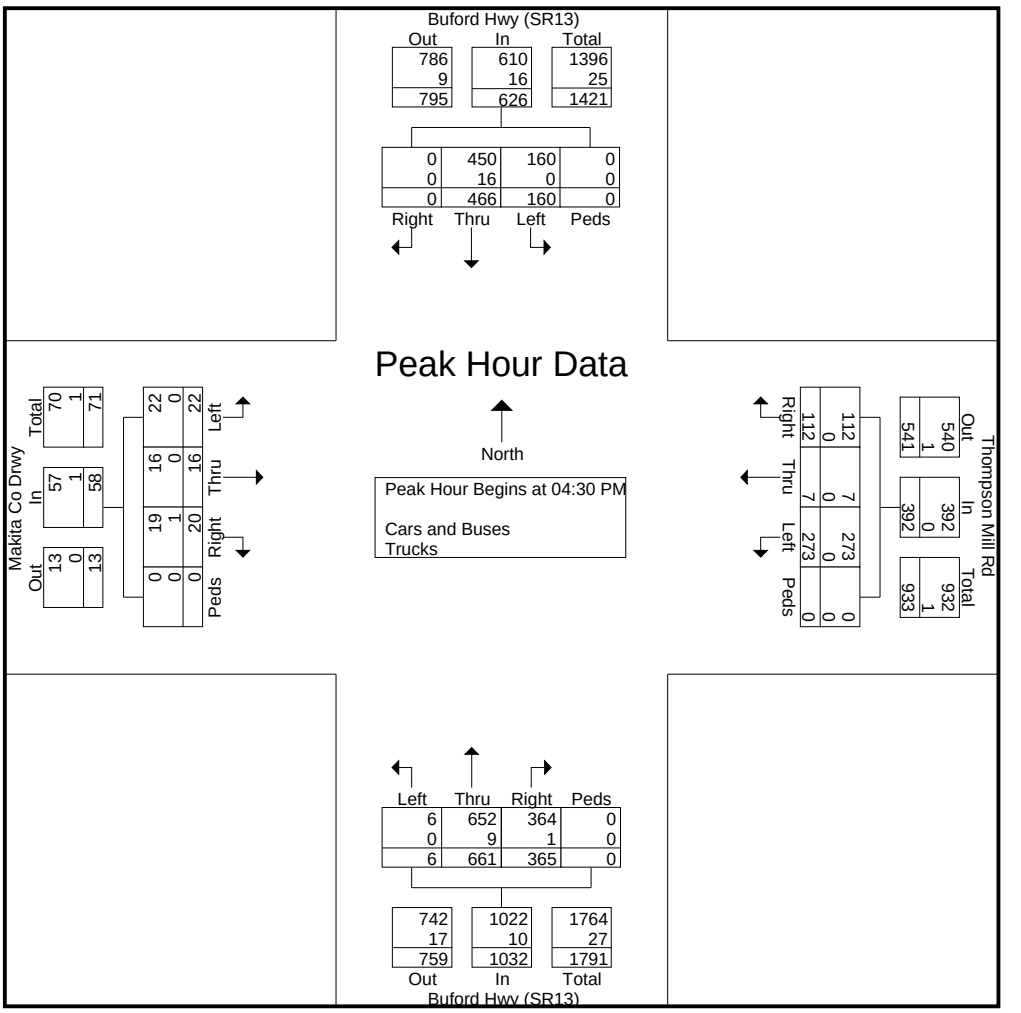
TMC Data
Buford Hwy (SR13) @ Thompson Mill Rd
Buford, GA
7-9am I 4-6pm

File Name : 39230006
Site Code : 39230006
Start Date : 10/19/2016
Page No : 3

	Buford Hwy (SR13) Northbound					Buford Hwy (SR13) Southbound					Makita Co Drwy Eastbound					Thompson Mill Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	1	147	90	0	238	36	114	0	0	150	**8**	**10**	**10**	0	**28**	61	2	26	0	89	505
04:45 PM	2	137	87	0	226	37	81	0	0	118	5	1	2	0	8	69	**4**	18	0	91	443
05:00 PM	0	**198**	92	0	**290**	**46**	127	0	0	173	6	5	7	0	18	68	0	**35**	0	103	**584**
05:15 PM	**3**	179	**96**	0	278	41	**144**	0	0	**185**	3	0	1	0	4	**75**	1	33	0	**109**	576
Total Volume	6	661	365	0	1032	160	466	0	0	626	22	16	20	0	58	273	7	112	0	392	2108
% App. Total	0.6	64.1	35.4	0		25.6	74.4	0	0		37.9	27.6	34.5	0		69.6	1.8	28.6	0		
PHF	.500	.835	.951	.000	.890	.870	.809	.000	.000	.846	.688	.400	.500	.000	.518	.910	.438	.800	.000	.899	.902
Cars and Buses	6	652	364	0	1022	160	450	0	0	610	22	16	19	0	57	273	7	112	0	392	2081
% Cars and Buses	100	98.6	99.7	0	99.0	100	96.6	0	0	97.4	100	100	95.0	0	98.3	100	100	100	0	100	98.7
Trucks	0	9	1	0	10	0	16	0	0	16	0	0	1	0	1	0	0	0	0	0	27
% Trucks	0	1.4	0.3	0	1.0	0	3.4	0	0	2.6	0	0	5.0	0	1.7	0	0	0	0	0	1.3



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TMC Data
Buford Hwy (SR13) @ Hamilton Mill Rd/
S Hill St, Buford, GA
7-9am I 4-6pm

File Name : 39230007
Site Code : 39230007
Start Date : 10/19/2016
Page No : 1

Groups Printed- Cars and Buses - Trucks

	Buford Hwy (SR13) Northbound					Buford Hwy (SR13) Southbound					S Hill St Eastbound					Hamilton Mill Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	10	99	47	0	156	36	129	8	0	173	6	18	7	0	31	92	41	52	0	185	545
07:15 AM	5	104	47	0	156	79	187	10	0	276	4	25	6	0	35	92	39	63	0	194	661
07:30 AM	9	109	55	0	173	78	197	14	0	289	4	32	10	0	46	120	73	53	0	246	754
07:45 AM	14	118	84	0	216	65	200	10	0	275	5	28	16	0	49	120	58	40	0	218	758
Total	38	430	233	0	701	258	713	42	0	1013	19	103	39	0	161	424	211	208	0	843	2718
08:00 AM	12	112	63	0	187	32	173	13	0	218	6	35	16	0	57	132	61	64	0	257	719
08:15 AM	7	93	102	0	202	47	171	14	0	232	13	63	23	0	99	112	46	38	0	196	729
08:30 AM	11	71	66	0	148	35	156	13	0	204	5	28	14	0	47	105	37	12	0	154	553
08:45 AM	14	98	77	0	189	26	143	23	0	192	7	33	12	0	52	114	55	18	0	187	620
Total	44	374	308	0	726	140	643	63	0	846	31	159	65	0	255	463	199	132	0	794	2621
*** BREAK ***																					
04:00 PM	28	178	135	0	341	65	134	12	0	211	21	51	10	0	82	72	30	40	0	142	776
04:15 PM	26	205	141	0	372	53	109	14	0	176	14	57	26	0	97	105	49	47	0	201	846
04:30 PM	32	199	164	0	395	67	143	10	0	220	15	65	19	0	99	73	47	34	0	154	868
04:45 PM	29	201	180	0	410	44	107	12	0	163	19	69	13	0	101	80	47	45	0	172	846
Total	115	783	620	0	1518	229	493	48	0	770	69	242	68	0	379	330	173	166	0	669	3336
05:00 PM	17	230	187	0	434	75	162	9	0	246	15	66	16	0	97	107	61	58	0	226	1003
05:15 PM	10	225	200	0	435	75	153	12	0	240	21	61	9	0	91	88	49	37	0	174	940
05:30 PM	23	185	166	0	374	61	121	9	0	191	19	69	14	0	102	110	54	40	0	204	871
05:45 PM	14	172	157	0	343	43	119	8	0	170	17	41	13	0	71	83	40	34	0	157	741
Total	64	812	710	0	1586	254	555	38	0	847	72	237	52	0	361	388	204	169	0	761	3555
Grand Total	261	2399	1871	0	4531	881	2404	191	0	3476	191	741	224	0	1156	1605	787	675	0	3067	12230
Apprch %	5.8	52.9	41.3	0		25.3	69.2	5.5	0		16.5	64.1	19.4	0		52.3	25.7	22	0		
Total %	2.1	19.6	15.3	0	37	7.2	19.7	1.6	0	28.4	1.6	6.1	1.8	0	9.5	13.1	6.4	5.5	0	25.1	
Cars and Buses	259	2377	1790	0	4426	851	2369	190	0	3410	191	741	223	0	1155	1527	781	651	0	2959	11950
% Cars and Buses	99.2	99.1	95.7	0	97.7	96.6	98.5	99.5	0	98.1	100	100	99.6	0	99.9	95.1	99.2	96.4	0	96.5	97.7
Trucks	2	22	81	0	105	30	35	1	0	66	0	0	1	0	1	78	6	24	0	108	280
% Trucks	0.8	0.9	4.3	0	2.3	3.4	1.5	0.5	0	1.9	0	0	0.4	0	0.1	4.9	0.8	3.6	0	3.5	2.3

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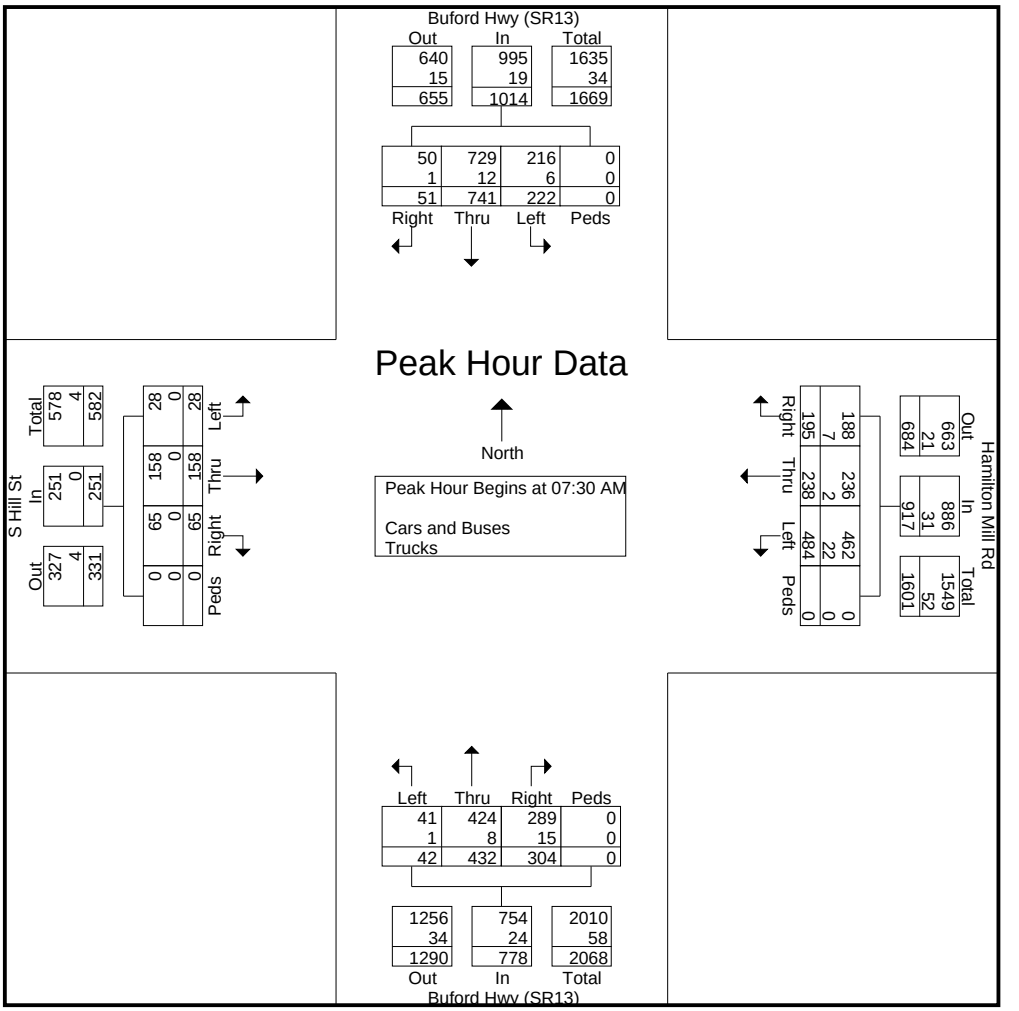
TMC Data
Buford Hwy (SR13) @ Hamilton Mill Rd/
S Hill St, Buford, GA
7-9am I 4-6pm

File Name : 39230007
Site Code : 39230007
Start Date : 10/19/2016

	Buford Hwy (SR13) Northbound					Buford Hwy (SR13) Southbound					S Hill St Eastbound					Hamilton Mill Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	9	109	55	0	173	**78**	197	**14**	0	**289**	4	32	10	0	46	120	**73**	53	0	246	754
07:45 AM	**14**	**118**	84	0	**216**	65	**200**	10	0	275	5	28	16	0	49	120	58	40	0	218	**758**
08:00 AM	12	112	63	0	187	32	173	13	0	218	6	35	16	0	57	**132**	61	**64**	0	**257**	719
08:15 AM	7	93	**102**	0	202	47	171	14	0	232	**13**	**63**	**23**	0	**99**	112	46	38	0	196	729
Total Volume	42	432	304	0	778	222	741	51	0	1014	28	158	65	0	251	484	238	195	0	917	2960
% App. Total	5.4	55.5	39.1	0		21.9	73.1	5	0		11.2	62.9	25.9	0		52.8	26	21.3	0		
PHF	.750	.915	.745	.000	.900	.712	.926	.911	.000	.877	.538	.627	.707	.000	.634	.917	.815	.762	.000	.892	.976
Cars and Buses	41	424	289	0	754	216	729	50	0	995	28	158	65	0	251	462	236	188	0	886	2886
% Cars and Buses	97.6	98.1	95.1	0	96.9	97.3	98.4	98.0	0	98.1	100	100	100	0	100	95.5	99.2	96.4	0	96.6	97.5
Trucks	1	8	15	0	24	6	12	1	0	19	0	0	0	0	0	22	2	7	0	31	74
% Trucks	2.4	1.9	4.9	0	3.1	2.7	1.6	2.0	0	1.9	0	0	0	0	0	4.5	0.8	3.6	0	3.4	2.5



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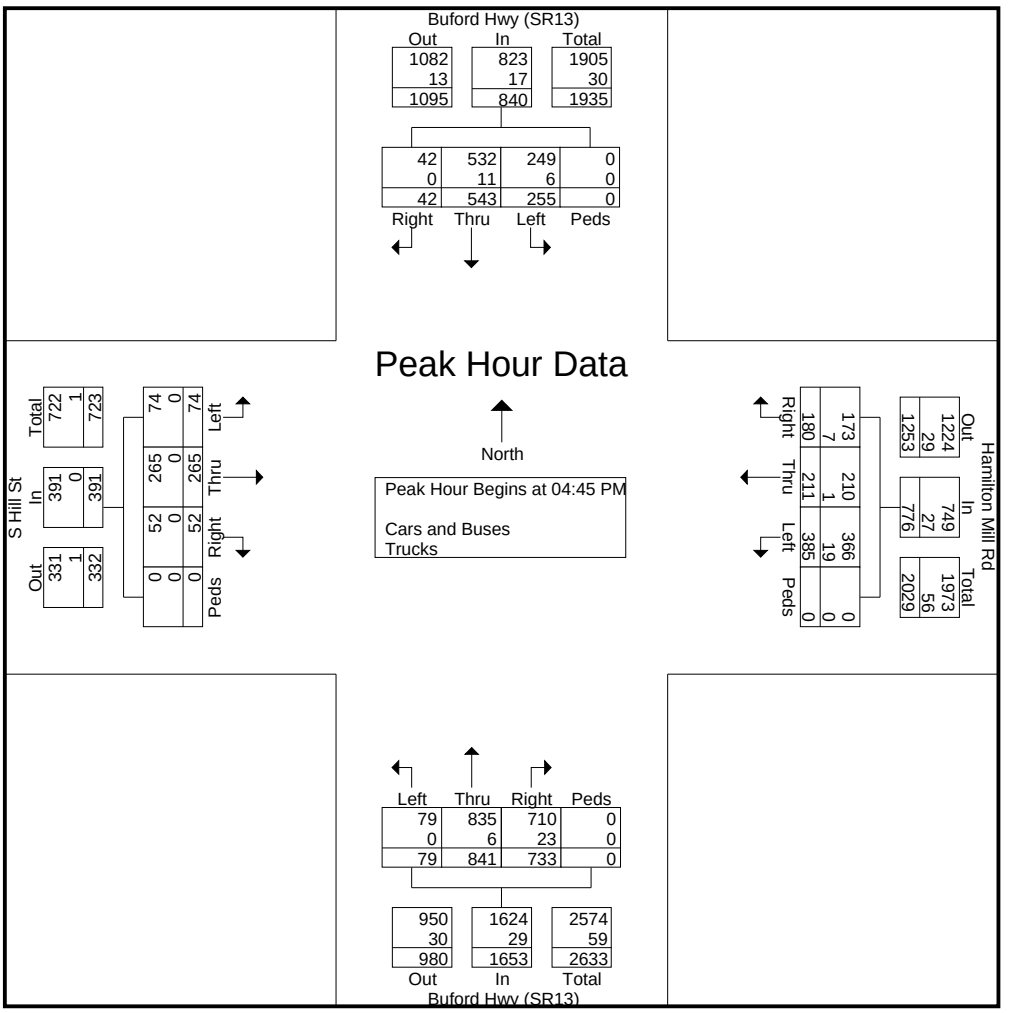
TMC Data
Buford Hwy (SR13) @ Hamilton Mill Rd/
S Hill St, Buford, GA
7-9am I 4-6pm

File Name : 39230007
Site Code : 39230007
Start Date : 10/19/2016

	Buford Hwy (SR13) Northbound					Buford Hwy (SR13) Southbound					S Hill St Eastbound					Hamilton Mill Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	**29**	201	180	0	410	44	107	**12**	0	163	19	**69**	13	0	101	80	47	45	0	172	846
05:00 PM	17	**230**	187	0	434	**75**	**162**	9	0	**246**	15	66	**16**	0	97	107	**61**	**58**	0	**226**	**1003**
05:15 PM	10	225	**200**	0	**435**	75	153	12	0	240	**21**	61	9	0	91	88	49	37	0	174	940
05:30 PM	23	185	166	0	374	61	121	9	0	191	19	69	14	0	**102**	**110**	54	40	0	204	871
Total Volume	79	841	733	0	1653	255	543	42	0	840	74	265	52	0	391	385	211	180	0	776	3660
% App. Total	4.8	50.9	44.3	0		30.4	64.6	5	0		18.9	67.8	13.3	0		49.6	27.2	23.2	0		
PHF	.681	.914	.916	.000	.950	.850	.838	.875	.000	.854	.881	.960	.813	.000	.958	.875	.865	.776	.000	.858	.912
Cars and Buses	79	835	710	0	1624	249	532	42	0	823	74	265	52	0	391	366	210	173	0	749	3587
% Cars and Buses	100	99.3	96.9	0	98.2	97.6	98.0	100	0	98.0	100	100	100	0	100	95.1	99.5	96.1	0	96.5	98.0
Trucks	0	6	23	0	29	6	11	0	0	17	0	0	0	0	0	19	1	7	0	27	73
% Trucks	0	0.7	3.1	0	1.8	2.4	2.0	0	0	2.0	0	0	0	0	0	4.9	0.5	3.9	0	3.5	2.0



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TMC Data
Thompson Mill Rd @ Bryant Rd
Buford, GA
7-9am I 4-6pm

File Name : 39230008
Site Code : 39230008
Start Date : 10/19/2016
Page No : 1

Groups Printed- Cars and Buses - Trucks

	Private Drwy (Gated) Northbound					Bryant Rd Southbound					Thompson Mill Rd Eastbound					Thompson Mill Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	1	0	1	0	2	1	29	0	0	30	0	144	2	0	146	178
07:15 AM	0	0	0	0	0	5	0	1	0	6	1	42	0	0	43	0	157	6	0	163	212
07:30 AM	0	0	0	0	0	4	0	2	0	6	0	61	1	0	62	0	149	5	0	154	222
07:45 AM	0	0	0	0	0	0	0	1	0	1	3	43	0	0	46	0	146	6	0	152	199
Total	0	0	0	0	0	10	0	5	0	15	5	175	1	0	181	0	596	19	0	615	811
08:00 AM	0	0	0	0	0	3	0	2	0	5	1	56	0	0	57	0	137	10	0	147	209
08:15 AM	0	0	0	0	0	1	0	2	0	3	1	52	0	0	53	0	105	4	0	109	165
08:30 AM	0	0	0	0	0	2	0	4	0	6	1	48	0	0	49	0	103	3	0	106	161
08:45 AM	0	0	0	0	0	1	0	3	0	4	2	41	1	0	44	0	93	1	0	94	142
Total	0	0	0	0	0	7	0	11	0	18	5	197	1	0	203	0	438	18	0	456	677
*** BREAK ***																					
04:00 PM	0	0	0	0	0	6	0	8	0	14	1	114	0	0	115	0	45	6	0	51	180
04:15 PM	0	0	0	0	0	6	0	4	0	10	3	113	0	0	116	0	65	3	0	68	194
04:30 PM	0	0	0	0	0	4	0	1	0	5	1	107	0	0	108	0	51	1	0	52	165
04:45 PM	0	0	0	0	0	5	0	2	0	7	4	115	0	0	119	0	69	3	0	72	198
Total	0	0	0	0	0	21	0	15	0	36	9	449	0	0	458	0	230	13	0	243	737
05:00 PM	0	0	0	0	0	6	0	3	0	9	0	153	0	0	153	0	70	0	0	70	232
05:15 PM	0	0	0	0	0	11	0	1	0	12	1	116	0	0	117	0	72	1	0	73	202
05:30 PM	0	0	0	0	0	5	0	2	0	7	0	103	0	0	103	0	67	3	0	70	180
05:45 PM	0	0	0	0	0	7	0	2	0	9	3	96	0	0	99	0	60	1	0	61	169
Total	0	0	0	0	0	29	0	8	0	37	4	468	0	0	472	0	269	5	0	274	783
Grand Total	0	0	0	0	0	67	0	39	0	106	23	1289	2	0	1314	0	1533	55	0	1588	3008
Apprch %	0	0	0	0		63.2	0	36.8	0		1.8	98.1	0.2	0		0	96.5	3.5	0		
Total %	0	0	0	0	0	2.2	0	1.3	0	3.5	0.8	42.9	0.1	0	43.7	0	51	1.8	0	52.8	
Cars and Buses	0	0	0	0	0	67	0	39	0	106	23	1288	0	0	1311	0	1529	55	0	1584	3001
% Cars and Buses	0	0	0	0	0	100	0	100	0	100	100	99.9	0	0	99.8	0	99.7	100	0	99.7	99.8
Trucks	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3	0	4	0	0	4	7
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0.1	100	0	0.2	0	0.3	0	0	0.3	0.2

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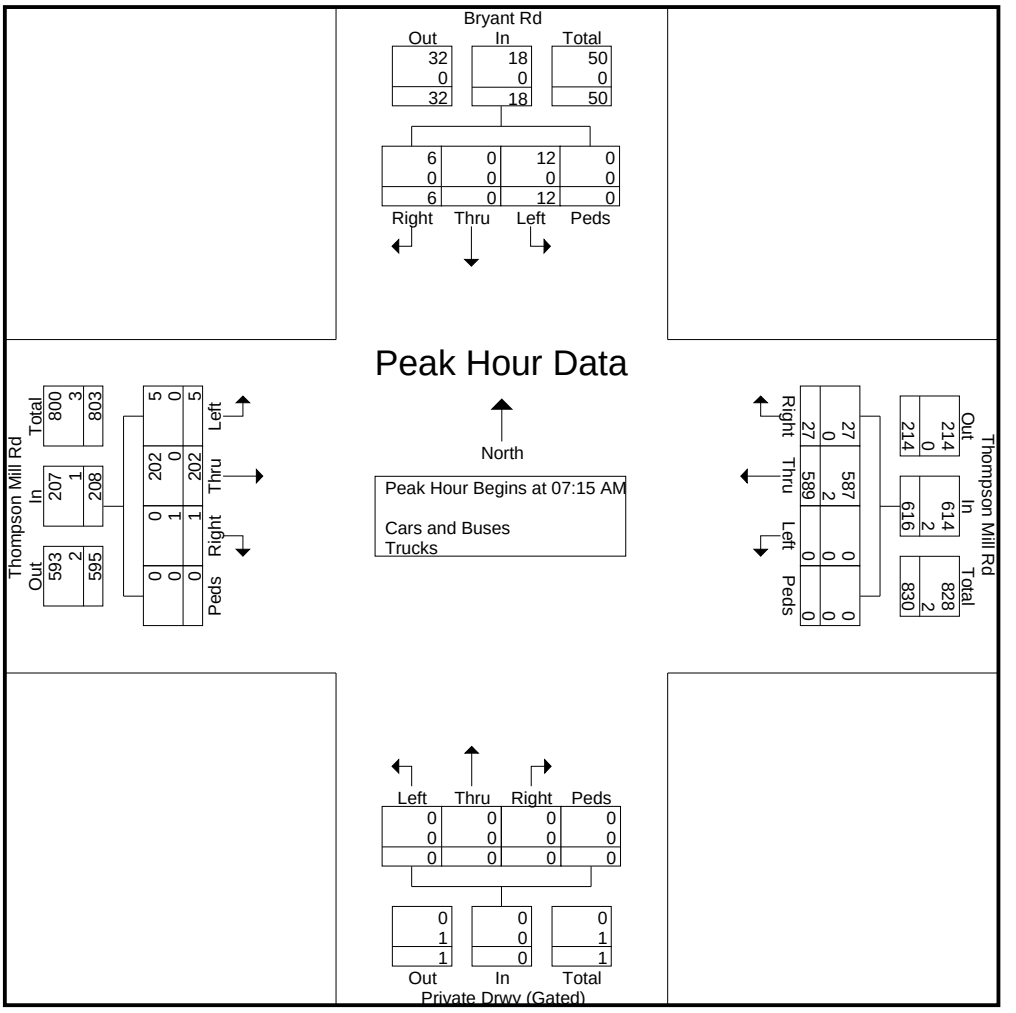
TMC Data
Thompson Mill Rd @ Bryant Rd
Buford, GA
7-9am I 4-6pm

File Name : 39230008
Site Code : 39230008
Start Date : 10/19/2016
Page No : 2

	Private Drwy (Gated) Northbound					Bryant Rd Southbound					Thompson Mill Rd Eastbound					Thompson Mill Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	0	0	0	0	0	**5**	0	1	0	**6**	1	42	0	0	43	0	**157**	6	0	**163**	212
07:30 AM	0	0	0	0	0	4	0	**2**	0	6	0	**61**	**1**	0	**62**	0	149	5	0	154	**222**
07:45 AM	0	0	0	0	0	0	0	1	0	1	**3**	43	0	0	46	0	146	6	0	152	199
08:00 AM	0	0	0	0	0	3	0	2	0	5	1	56	0	0	57	0	137	**10**	0	147	209
Total Volume	0	0	0	0	0	12	0	6	0	18	5	202	1	0	208	0	589	27	0	616	842
% App. Total	0	0	0	0		66.7	0	33.3	0		2.4	97.1	0.5	0		0	95.6	4.4	0		
PHF	.000	.000	.000	.000	.000	.600	.000	.750	.000	.750	.417	.828	.250	.000	.839	.000	.938	.675	.000	.945	.948
Cars and Buses	0	0	0	0	0	12	0	6	0	18	5	202	0	0	207	0	587	27	0	614	839
% Cars and Buses	0	0	0	0	0	100	0	100	0	100	100	100	0	0	99.5	0	99.7	100	0	99.7	99.6
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	2	3
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0.5	0	0.3	0	0	0.3	0.4



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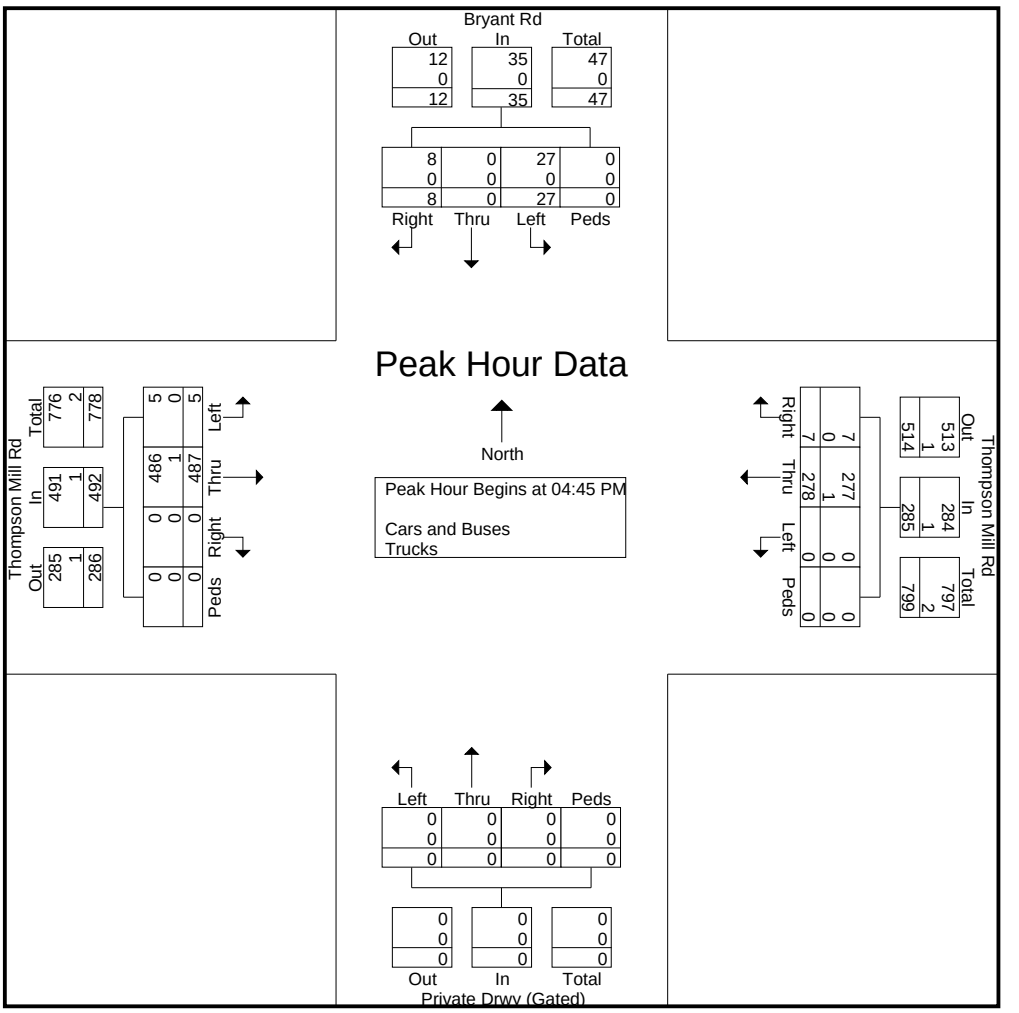
TMC Data
Thompson Mill Rd @ Bryant Rd
Buford, GA
7-9am I 4-6pm

File Name : 39230008
Site Code : 39230008
Start Date : 10/19/2016
Page No : 3

	Private Drwy (Gated) Northbound					Bryant Rd Southbound					Thompson Mill Rd Eastbound					Thompson Mill Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	0	5	0	2	0	7	**4**	115	0	0	119	0	69	**3**	0	72	198
05:00 PM	0	0	0	0	0	6	0	**3**	0	9	0	**153**	0	0	**153**	0	70	0	0	70	**232**
05:15 PM	0	0	0	0	0	**11**	0	1	0	**12**	1	116	0	0	117	0	**72**	1	0	**73**	202
05:30 PM	0	0	0	0	0	5	0	2	0	7	0	103	0	0	103	0	67	3	0	70	180
Total Volume	0	0	0	0	0	27	0	8	0	35	5	487	0	0	492	0	278	7	0	285	812
% App. Total	0	0	0	0		77.1	0	22.9	0		1	99	0	0		0	97.5	2.5	0		
PHF	.000	.000	.000	.000	.000	.614	.000	.667	.000	.729	.313	.796	.000	.000	.804	.000	.965	.583	.000	.976	.875
Cars and Buses	0	0	0	0	0	27	0	8	0	35	5	486	0	0	491	0	277	7	0	284	810
% Cars and Buses	0	0	0	0	0	100	0	100	0	100	100	99.8	0	0	99.8	0	99.6	100	0	99.6	99.8
Trucks	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0	0.2	0	0.4	0	0	0.4	0.2



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TMC Data
Thompson Mill Rd @ N Bogan Rd
Buford, GA
7-9am I 4-6pm

File Name : 39230009
Site Code : 39230009
Start Date : 10/19/2016
Page No : 1

Groups Printed- Cars and Buses - Trucks

	N Bogan Rd Northbound					N Bogan Rd Southbound					Thompson Mill Rd Eastbound					Thompson Mill Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	31	10	1	0	42	0	20	34	0	54	6	16	13	0	35	15	95	2	0	112	243
07:15 AM	39	19	5	0	63	0	24	29	0	53	10	22	18	0	50	11	99	4	0	114	280
07:30 AM	24	16	4	0	44	4	23	22	0	49	14	27	20	0	61	15	97	5	0	117	271
07:45 AM	28	13	5	0	46	3	21	31	0	55	11	24	22	0	57	12	101	0	0	113	271
Total	122	58	15	0	195	7	88	116	0	211	41	89	73	0	203	53	392	11	0	456	1065
08:00 AM	22	18	2	0	42	1	25	39	0	65	18	33	6	0	57	13	89	0	0	102	266
08:15 AM	11	22	12	0	45	1	33	25	0	59	10	31	20	0	61	24	72	5	0	101	266
08:30 AM	16	27	5	0	48	3	29	19	0	51	6	17	15	0	38	15	61	2	0	78	215
08:45 AM	14	19	6	0	39	2	28	10	0	40	4	21	11	0	36	14	65	5	0	84	199
Total	63	86	25	0	174	7	115	93	0	215	38	102	52	0	192	66	287	12	0	365	946
*** BREAK ***																					
04:00 PM	19	38	11	0	68	3	23	10	0	36	20	74	29	0	123	8	27	4	0	39	266
04:15 PM	19	33	20	0	72	6	30	6	0	42	15	91	19	0	125	8	46	7	0	61	300
04:30 PM	9	50	12	0	71	5	23	11	0	39	16	74	25	0	115	10	28	3	0	41	266
04:45 PM	23	34	15	0	72	4	28	16	0	48	19	72	21	0	112	10	35	4	0	49	281
Total	70	155	58	0	283	18	104	43	0	165	70	311	94	0	475	36	136	18	0	190	1113
05:00 PM	19	27	23	0	69	2	32	15	0	49	16	91	28	0	135	12	46	3	0	61	314
05:15 PM	18	44	27	0	89	5	28	6	0	39	21	82	28	0	131	14	45	4	0	63	322
05:30 PM	16	42	19	0	77	3	50	15	0	68	17	87	17	0	121	15	27	3	0	45	311
05:45 PM	17	30	14	0	61	4	40	12	0	56	16	66	34	0	116	14	41	4	0	59	292
Total	70	143	83	0	296	14	150	48	0	212	70	326	107	0	503	55	159	14	0	228	1239
Grand Total	325	442	181	0	948	46	457	300	0	803	219	828	326	0	1373	210	974	55	0	1239	4363
Apprch %	34.3	46.6	19.1	0		5.7	56.9	37.4	0		16	60.3	23.7	0		16.9	78.6	4.4	0		
Total %	7.4	10.1	4.1	0	21.7	1.1	10.5	6.9	0	18.4	5	19	7.5	0	31.5	4.8	22.3	1.3	0	28.4	
Cars and Buses	324	441	180	0	945	46	457	299	0	802	218	827	326	0	1371	210	974	55	0	1239	4357
% Cars and Buses	99.7	99.8	99.4	0	99.7	100	100	99.7	0	99.9	99.5	99.9	100	0	99.9	100	100	100	0	100	99.9
Trucks	1	1	1	0	3	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	6
% Trucks	0.3	0.2	0.6	0	0.3	0	0	0.3	0	0.1	0.5	0.1	0	0	0.1	0	0	0	0	0	0.1

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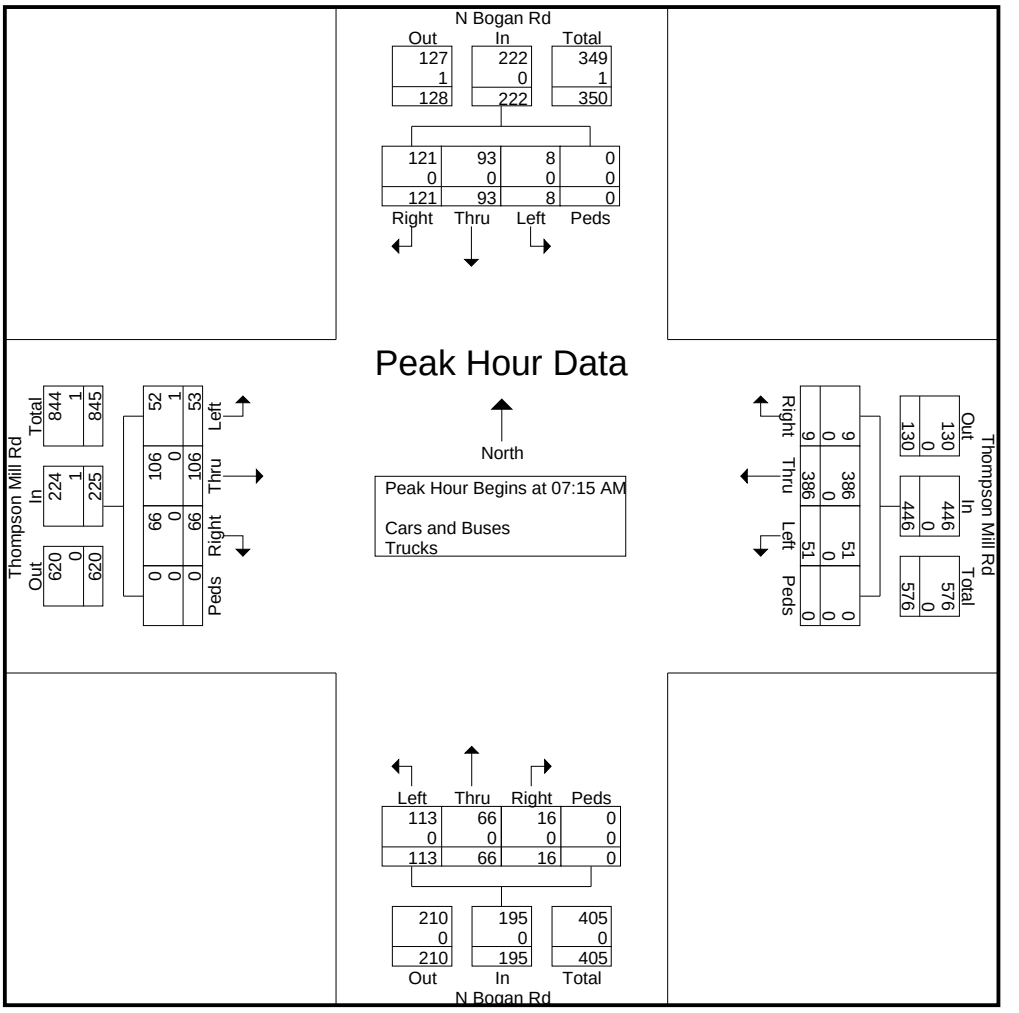
TMC Data
Thompson Mill Rd @ N Bogan Rd
Buford, GA
7-9am I 4-6pm

File Name : 39230009
Site Code : 39230009
Start Date : 10/19/2016

	N Bogan Rd Northbound					N Bogan Rd Southbound					Thompson Mill Rd Eastbound					Thompson Mill Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	**39**	**19**	**5**	0	**63**	0	24	29	0	53	10	22	18	0	50	11	99	4	0	114	**280**
07:30 AM	24	16	4	0	44	**4**	23	22	0	49	14	27	20	0	**61**	**15**	97	**5**	0	**117**	271
07:45 AM	28	13	5	0	46	3	21	31	0	55	11	24	**22**	0	57	12	**101**	0	0	113	271
08:00 AM	22	18	2	0	42	1	**25**	**39**	0	**65**	**18**	**33**	6	0	57	13	89	0	0	102	266
Total Volume	113	66	16	0	195	8	93	121	0	222	53	106	66	0	225	51	386	9	0	446	1088
% App. Total	57.9	33.8	8.2	0		3.6	41.9	54.5	0		23.6	47.1	29.3	0		11.4	86.5	2	0		
PHF	.724	.868	.800	.000	.774	.500	.930	.776	.000	.854	.736	.803	.750	.000	.922	.850	.955	.450	.000	.953	.971
Cars and Buses	113	66	16	0	195	8	93	121	0	222	52	106	66	0	224	51	386	9	0	446	1087
% Cars and Buses	100	100	100	0	100	100	100	100	0	100	98.1	100	100	0	99.6	100	100	100	0	100	99.9
Trucks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
% Trucks	0	0	0	0	0	0	0	0	0	0	1.9	0	0	0	0.4	0	0	0	0	0	0.1



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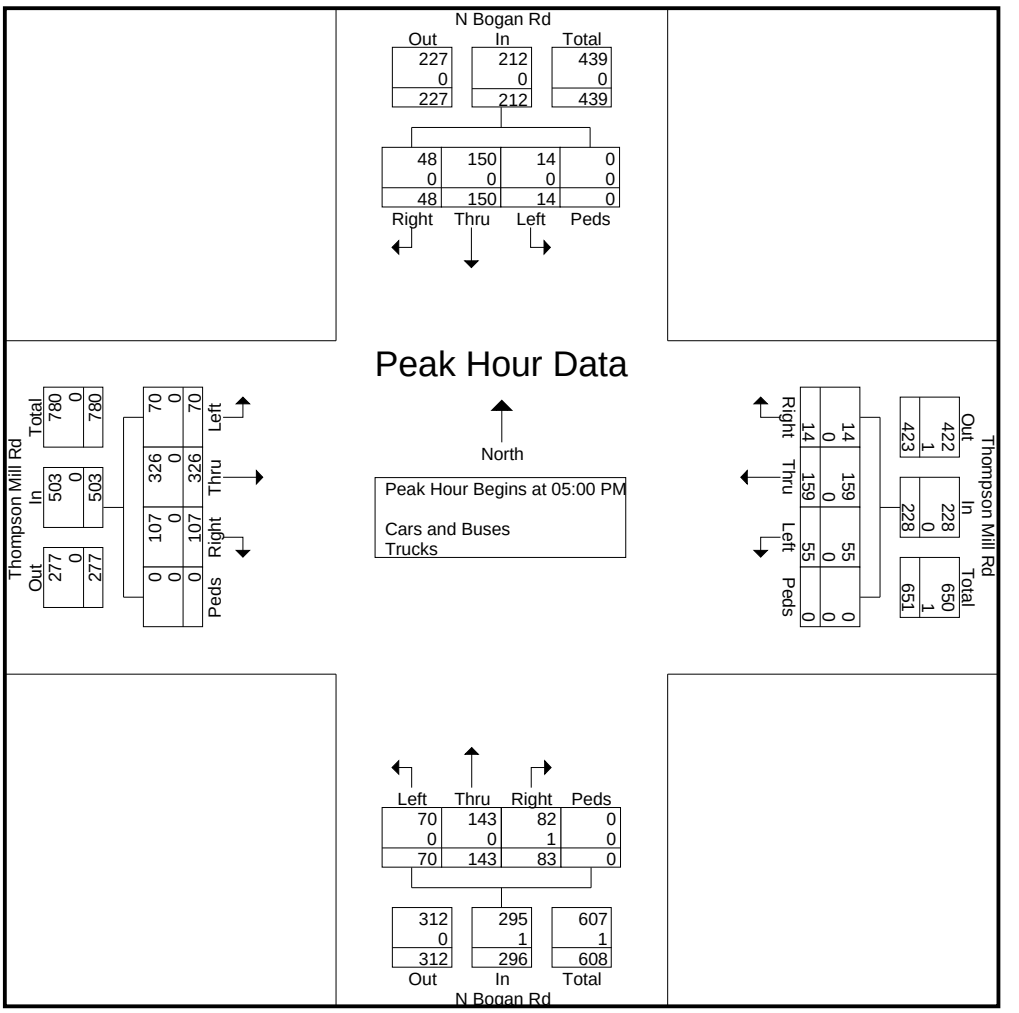
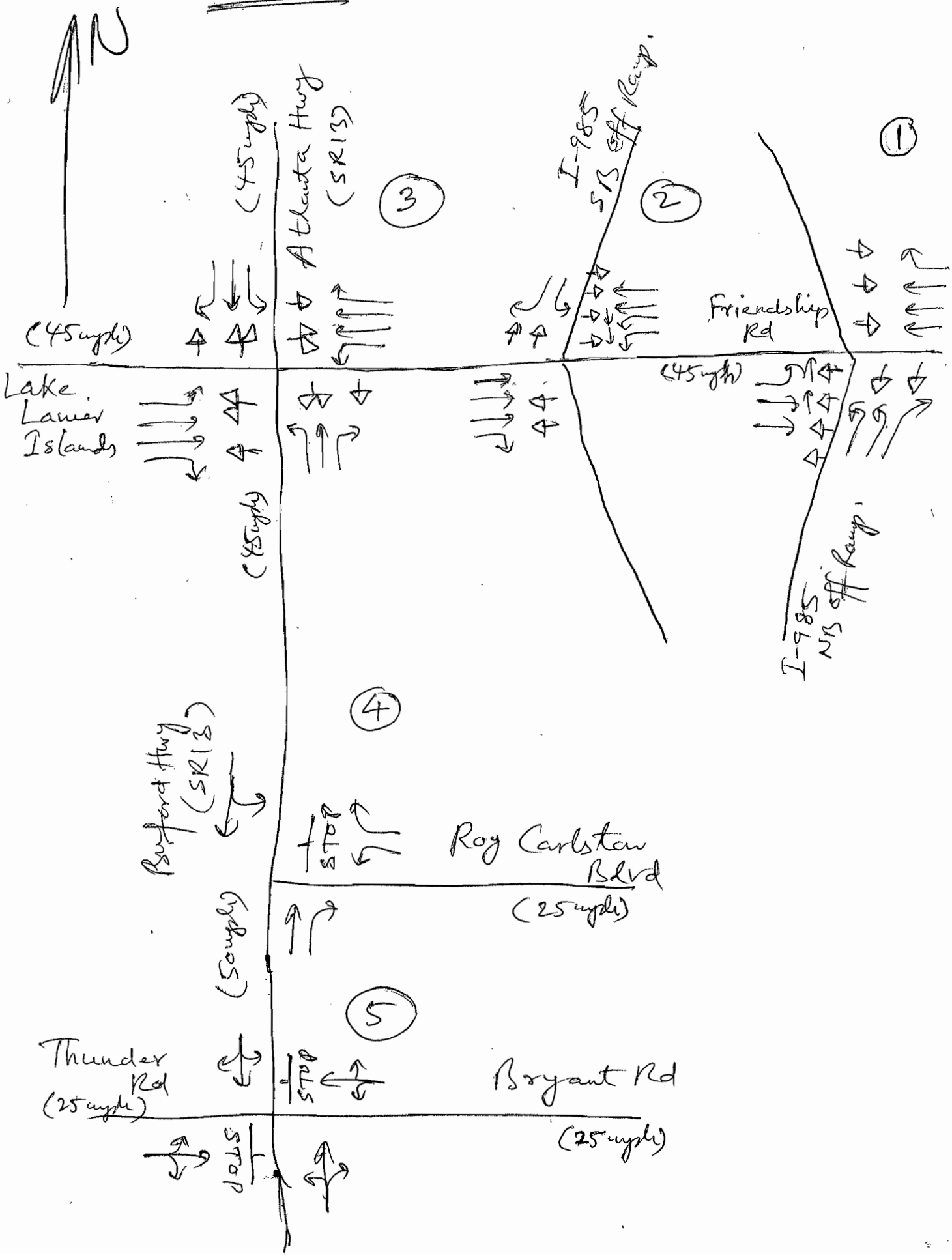
TMC Data
Thompson Mill Rd @ N Bogan Rd
Buford, GA
7-9am I 4-6pm

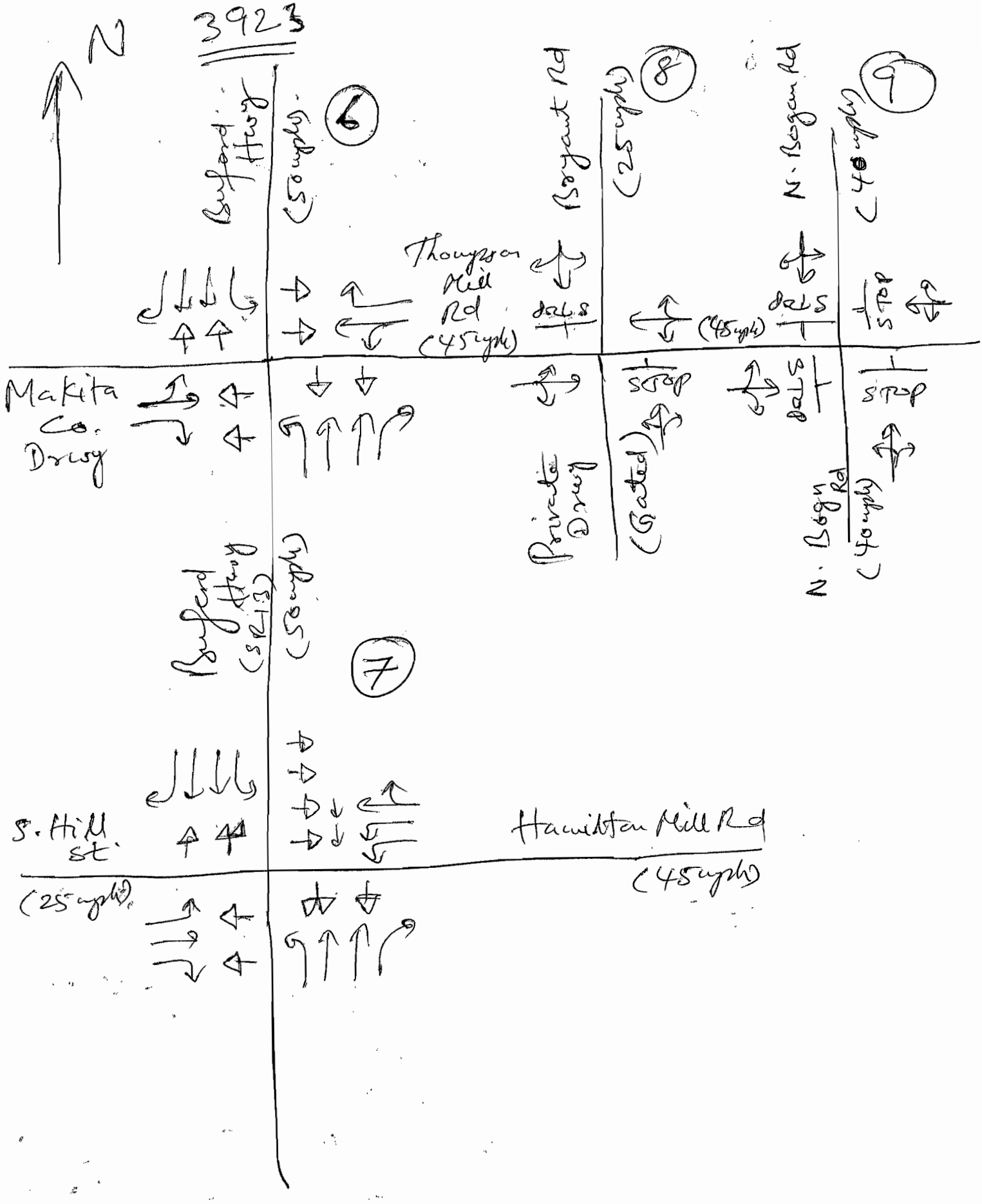
File Name : 39230009
Site Code : 39230009
Start Date : 10/19/2016
Page No : 3

	N Bogan Rd Northbound					N Bogan Rd Southbound					Thompson Mill Rd Eastbound					Thompson Mill Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	**19**	27	23	0	69	2	32	**15**	0	49	16	**91**	28	0	**135**	12	**46**	3	0	61	314
05:15 PM	18	**44**	**27**	0	**89**	**5**	28	6	0	39	**21**	82	28	0	131	14	45	**4**	0	**63**	**322**
05:30 PM	16	42	19	0	77	3	**50**	15	0	**68**	17	87	17	0	121	**15**	27	3	0	45	311
05:45 PM	17	30	14	0	61	4	40	12	0	56	16	66	**34**	0	116	14	41	4	0	59	292
Total Volume	70	143	83	0	296	14	150	48	0	212	70	326	107	0	503	55	159	14	0	228	1239
% App. Total	23.6	48.3	28	0		6.6	70.8	22.6	0		13.9	64.8	21.3	0		24.1	69.7	6.1	0		
PHF	.921	.813	.769	.000	.831	.700	.750	.800	.000	.779	.833	.896	.787	.000	.931	.917	.864	.875	.000	.905	.962
Cars and Buses	70	143	82	0	295	14	150	48	0	212	70	326	107	0	503	55	159	14	0	228	1238
% Cars and Buses	100	100	98.8	0	99.7	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	99.9
Trucks	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Trucks	0	0	1.2	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1



3923


N
(45 mph)
(45 mph)
Atlanta Hwy
(SR13)
3
I-985
SB off Ramp
2
1
Friendship
Rd
(45 mph)
Lake
Lanier
Islands
(45 mph)
I-985
NB off Ramp
4
Buford Hwy
(SR13)
STOP
Roy Carlston
Blvd
(25 mph)
(50 mph)
5
Thunder
Rd
(25 mph)
STOP
Bryant Rd
(25 mph)
STOP


N
3923
Buford Hwy
(50 mph)
6
Thompson Mill Rd
(45 mph)
Bryant Rd
(25 mph)
8
(45 mph)
N. Bogan Rd
9
(40 mph)
STOP
Makita Co. Drug
Private Drug
(Gated)
N. Bogan Rd
(40 mph)
Buford Hwy
(SR 13)
(50 mph)
7
S. Hill St.
Hamilton Mill Rd
(45 mph)
(25 mph)

GRTA Letter of Understanding

LETTER OF UNDERSTANDING

October 11, 2016

Adam Terrell
Prologis
3475 Piedmont Road NE, Suite 650
Atlanta, Georgia 30305-2996

RE: **DRI 2636 Longacre Development**

Dear Mr. Terrell:

The purpose of this letter is to document the discussions during the Pre-Review and Methodology Meeting held at ARC's office on October 3, 2016 regarding **DRI 2636 Longacre Development.** Some of the following items were discussed in this meeting and should assist you and your consultant team in preparing the DRI Review Package.

PROJECT OVERVIEW

- The project is located in City of Buford. The proposed development is located on the eastern side of SR 13/Buford Highway with existing direct access from Roy Carlson Boulevard. Additional access is proposed onto Thompson Mill Road, just west of I-985 Bridge.
- The DRI trigger for this development is a land disturbance permit.
- The proposed development consists of 1,403,120 square feet light industrial and warehouse space and 40,000 square feet commercial/retail use.
- The vehicular (including freight) trip generation is estimated to be 10,104 gross daily trips using the *ITE Trip Generation Manual 9th edition*, land use codes *130 – Industrial Park, 150- Warehousing,* and *820 – Shopping Center*.
- The projected build out for this DRI is 2026.
- The applicant is applying for approval under GRTA's non-expedited review process.

STUDY NETWORK

1. SR 347 (Friendship Rd) @ I-985 NB Ramps
2. SR 347 (Friendship Rd) @ I-985 SB Ramps
3. SR 347 (Friendship Rd) @ SR 13 (Atlanta Hwy)
4. SR 13 (Buford Hwy) @ Roy Carlson Blvd/Site driveway
5. SR 13 (Buford Hwy) @ Thompson Mill Road
6. SR 13 (Buford Hwy) @ Hamilton Mill Rd/S. Hill St
7. Thompson Mill Road at N. Bogan Road
8. Thompson Mill Road at Bryant Road
9. Site driveway at Thompson Mill Road

METHODOLOGY

- All intersections identified as within the study network shall be analyzed during the AM and PM peak hours for (1) existing conditions, (2) future "no-build" conditions [may not be applicable for the site

driveways], and (3) future “build” conditions. This DRI shall be reviewed in one phase to be completed by 2026.

- 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. As appropriate, pedestrian counts and heavy vehicle counts shall be collected with vehicle counts and considered within the capacity analysis. Turning movement counts shall be collected while local schools are in session and ordinarily not between the week of Thanksgiving and the second week of January or any week of a major holiday.
- A 0.5% background traffic growth rate shall be used for all roadways.
- The level of service standard for all analyses shall be LOS D.
- No alternate mode trips reductions are allowed. Standard mixed use and pass-by trip reductions are allowed.
- Default values should not be assumed in the traffic modeling. Existing conditions shall be taken into account.
- The applicant shall research TIP, STIP, RTP, and GDOT’s construction work program, as well as any local government plans (SPLOST, CIP, etc.), to determine the open-to-traffic date, sponsor, cost of the project, funding source(s), for future roadway projects in the project vicinity. This information shall be included within the traffic analysis.

ADDITIONAL INFORMATION

Every roadway segment and intersection listed above will be analyzed for “required improvements.” If the existing LOS for the segment or intersection is below the applicable level of service for a particular time period (e.g., A.M. peak period, P.M. peak period, etc.), then the measured LOS service for that segment and time periods is the standard by which the “base” and “future” traffic conditions will be designed. For example, if the County’s LOS standard is LOS D, but an intersection or segment currently operates at LOS E for a certain peak period, then the LOS standard for that intersection or segment for “base” and “future” conditions becomes LOS E (only for that intersection and only for that peak period). The “base” is the phase year traffic without the development traffic (also called future “no-build” conditions) and the “future” is the phase year with the development traffic (also called future “build” conditions). As required in the technical guidelines, specific “required improvements” will be identified to bring the “base” LOS and “future” LOS for every roadway segment and intersection up to the applicable LOS standard. If the existing LOS for the segment or intersection is LOS F, then the future “no-build’ and future “build” LOS standard will be LOS E. The improvements required to achieve the desired LOS standard will be provided in a table and graphic within the study. The traffic study should indicate the existing roadway laneage at each studied intersection as well as the laneage required (to meet the LOS standard) for future “no-build” and future “build” conditions. The improvements may include both programmed improvements and improvements identified in the study.

The planned and programmed improvement should indicate the project sponsor, the anticipated funding by source (federal, state, city/county, developer, CID, etc.), the year open-to-traffic, and estimate of the total project cost. All other required improvements identified in the study should, to the extent known, identify the cost, sponsor, funding, and timing. If any of these elements are not known, please state as “unknown.”

The future "no-build" and the future "build" analyses should NOT automatically include/assume the additional lanes/capacity associated with planned and programmed improvement projects unless those roadway projects are currently under construction. Instead, the traffic consultant should recommend the additional laneage required to satisfy the level of service standard.

DRI REVIEW PACKAGE CHECKLIST

Please use the DRI Review Package Checklist to help you prepare your GRTA DRI Review Package for expedited review of your application. The Checklist reflects the understandings set forth in this letter, and is incorporated into this letter by reference.

The site plan shall be prepared in accordance with Section 4-104 of the DRI Review Package Technical Guidelines and it shall be dated, and shall be at a scale of 1"= 200' or larger (showing more detail). The site plan shall be consistent with GRTA's Site Plan Information Guidelines, which represents the minimum required information on site plans.

The applicant shall indicate on the site plans all adjacent land uses, current zoning, and future land use as indicated on the future land use map. Additionally, all existing and proposed sidewalks, existing and proposed pedestrian trails, and existing and proposed roadway laneage should be indicated on the site plan.

DRI REVIEW PACKAGE SUBMITTAL

At the time you are ready to submit your DRI Review Package to GRTA, please note the following:

- Provide one (1) paper copy of all materials:
  - Transportation analysis
  - Site Plan
- Provide one (1) CD-ROM with electronic versions of all submittal documents:
  - Provide a PDF of each document
  - Provide the native format for each document
    - .dwg is the preferred CAD format (AutoCAD)
    - .doc is the preferred word processing format (Word)
    - .xls is the preferred spreadsheet format (Excel)
    - .sy6, .sy7, .sy8 or .sy9 is the preferred capacity analysis format (Synchro)

As part of the completeness certification process, please have your consultant forward one copy of the completed GRTA DRI Review Package (traffic analysis, site plan, CD) to the GDOT District Office, Regional Commission and local government Planning & Development and Transportation group (contact information provided below). GRTA shall be copied on each of the transmittal letters.

GDOT DISTRICT 1	GWINNETT CO DOT	CITY OF BUFORD	ATLANTA REGIONAL COMMISSION
Shane Giles PO Box 1057 Gainesville, GA 30503-1057	Michael Johnson 75 Langley Drive Lawrenceville, GA 30046	Kim Wolfe 2300 Buford Highway Buford, GA 30518	Andrew Smith 40 Courtland Street, NE Atlanta, Georgia 30303

We encourage your consultant team to verify the items covered in this letter prior to compiling the submittal materials. If you have any questions, please feel free to contact me directly at 404-463-3068 (lbeall@grta.org).

Sincerely,

Laura F. Beall, AICP
Program Manager

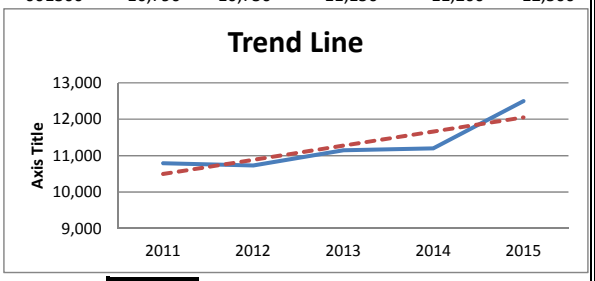
cc:

Jon West, DCA
Andrew Smith, ARC
Shane Giles, GDOT District 1
Michael Johnson, Gwinnett Co DOT
Lewis Cooksey, Gwinnett Co DOT
Kim Wolfe, City of Buford
Matt Dunagin, City of Buford
Jason Bennett, Prologis
Abdul Amer, A & R Engineering
Brian Brumfield, Eberly & Associates

Linear Regression of Daily Traffic

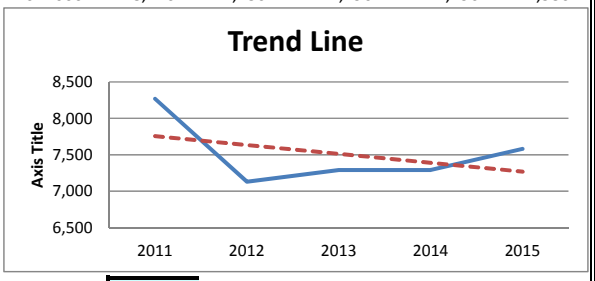
Location	Growth Rate	R Squared	Station ID	Route	2011	2012	2013	2014	2015
Buford Hwy	3.5%	0.74	1350101	001300	10,790	10,730	11,150	11,200	12,500
Thompson Mill Rd	-1.6%	0.18	1350474	012000	8,270	7,130	7,290	7,290	7,580
Buford Dr	1.7%	0.06	1350116	002000	58,260	46,860	47,000	56,100	58,000
Buford Hwy	0.2%	0.01	1350096	001300	26,740	26,590	25,700	25,700	27,400
SR 347	2.2%	0.23	1390405	034700	16,520	19,870	19,740	18,600	19,200
Weighted Average	**1.4%**	0.17	Sum of Count Stations =		120,580	111,180	110,880	118,890	124,680

Location	Traffic Counter	RCLINK	2011	2012	2013	2014	2015
Buford Hwy	1350101	001300	10,790	10,730	11,150	11,200	12,500



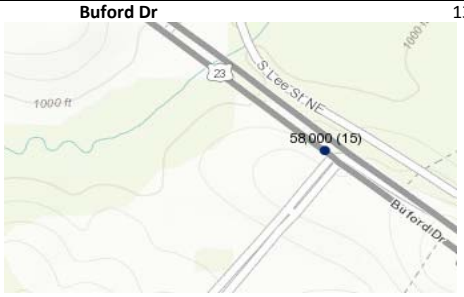
Growth Rate	3.5%	Intercept	-771,783	Slope	389.00
Trend Line	10,496	10,885	11,274	11,663	12,052

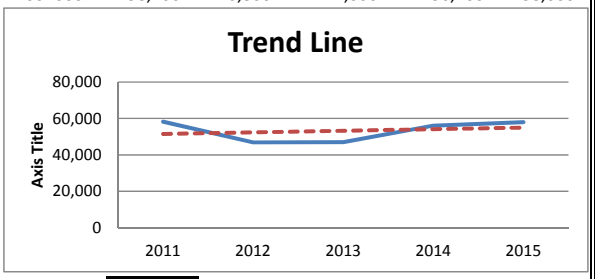
Location	Traffic Counter	RCLINK	2011	2012	2013	2014	2015
Thompson Mill Rd	1350474	012000	8,270	7,130	7,290	7,290	7,580



Growth Rate	-1.6%	Intercept	253,098	Slope	-122.00
Trend Line	7,756	7,634	7,512	7,390	7,268

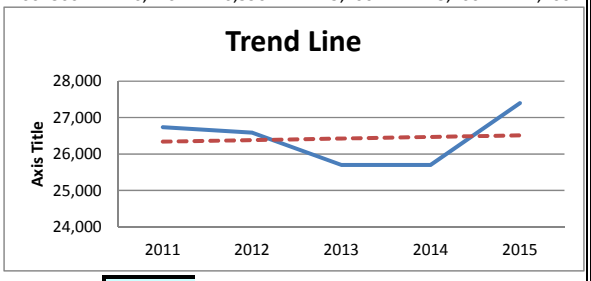
Location	Traffic Counter	RCLINK	2011	2012	2013	2014	2015
Buford Dr	1350116	002000	58,260	46,860	47,000	56,100	58,000





Growth Rate	1.7%	Intercept	-1,702,092	Slope	872.00
Trend Line	51,500	52,372	53,244	54,116	54,988

Location	Traffic Counter	RCLINK	2011	2012	2013	2014	2015
Buford Hwy	1350096	001300	26,740	26,590	25,700	25,700	27,400



Growth Rate	0.2%	Intercept	-60,133	Slope	43.00
Trend Line	26,340	26,383	26,426	26,469	26,512

Fact Sheets for Planned and Programmed Improvements

PROJ ID	COUNTY	DESCRIPTION
132950-	Hall	SR 13 FROM CS 1120/SAWNEE AVE/GWINNETT TO SR 347/HALL

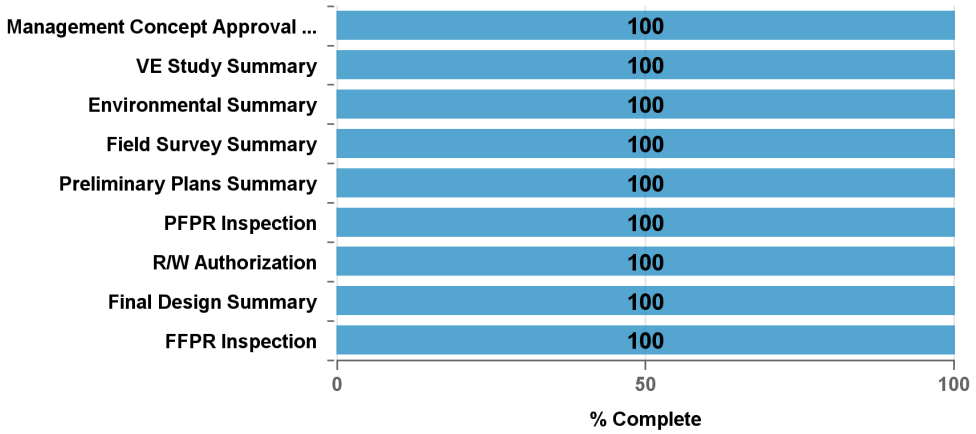
Mgmt Let Date: 6/17/2016

The proposed project would widen Buford Hwy (SR 13), an urban minor arterial, from Sawnee Avenue in Gwinnett County to Friendship Road in Hall County. The length of the project is approx. 1.53 miles. The existing roadway currently consists of two lanes with a variable width, with only a few locations with left turn and right turn lanes along the project length. The proposed project would widen Bufor Hwy (SR 13) to a 4-lane urban facility with a 20-foot raised median, 4-foot bike lanes, curb and gutter and a 5-foot sidewalk on both sides.

PROJ NO:	STP00-0013-01(063)	**SPONSOR:**	Buford
MPO TIP#:	GW-099C	**PROJ MGR:**	Njoku, Iheanachor
MPO:	Atlanta TMA, Gainesville	**DOT DIST:**	1
PROJ LENGTH (MI):	1.65	**CONG DIST:**	007, 009
TYPE WORK:	Widening	**TYPE WORK:**	Widening
LET RESPONSIBILITY:	GDOT Let	**HOUSE DIST:**	
BIKE PROVISIONS INCLUDED?	N	**SENATE DIST:**	

Phase	FY Approved	Approved FY Estimate *	Fund	Phase Status
Engineering	2010	$85,500.00	L240	AUTHORIZED
Engineering	LOCL	$450,000.00	LOC	AUTHORIZED
Right of Way	2013	$880,000.00	M240	AUTHORIZED
Right of Way	2014	$2,000,000.00	LOC	AUTHORIZED
Right of Way	2014	$8,890,000.00	M240	AUTHORIZED
Construction	2016	$20,645,442.87	Z240	AUTHORIZED

*** Inflation Included in Estimate**



Activity	Actual Start Date	Actual Finish Date
Management Concept Approval Complete	2/28/2008	2/28/2008
VE Study Summary	4/9/2009	9/17/2009
Environmental Summary	4/2/2008	6/27/2013
Field Survey Summary	9/19/2009	1/20/2012
Preliminary Plans Summary	6/1/2011	10/23/2013
PFPR Inspection	11/8/2012	11/12/2012
R/W Authorization	11/13/2013	11/13/2013
Final Design Summary	4/30/2012	4/6/2016
FFPR Inspection	2/2/2016	2/2/2016

Right of Way Aqcuisition Information:

Preliminary Parcel Count: 55 **Total Parcel Count:** 71 **Acquired by:** DOT

I-85 @ 3 LOCS IN FRANKLIN; GWINNETT & JACKSON - BRIDGE REHAB

Project ID:	**M005567**	Notice to Proceed Date:	
Project Manager:	Clayton B.G. Bennett	Construction Percent Complete:	%
Office:	Bridge Design	Current Completion Date:	
County:	Franklin, Gwinnett, Jackson	Work Completion Date:	
Congressional District:	007, 009	Construction Contract Amount:	
State Senate District.:	45, 47, 50	Construction Contractor:	
State House District:	103, 104, 31, 32, 98	**Preconstruction Status Report**	
Project Type:	Maintenance	**Construction Status Report**	
Project Status:	Construction Work Program		
Right of Way Authorization:		Submit feedback to project manager	

Project Description:

Bridge rehabilitaiton project involving raising the bridges, strengthening caps, correction of spalls, delamination and cracks in the substructure and deck, correction of broken anchor bolts, joint replacement, painting of the steel superstructure and application of at polymer overlay to the bridge decks. Bridge Structure ID #s, Locations: 1. 157-0022-0, Plainview Road (CR 250) over I-85 (SR 403) 2. 119-0032-0, SR 328 over I-85 (SR403) 3. 135-0029-0, Thompson Mill Road (CR 120) over I-985 (SR 419)

Activity	Program Year	Cost Estimate	Date of Last Estimate

PRECONSTRUCTION STATUS REPORT

PROJ ID	COUNTY	DESCRIPTION
0010242	Gwinnett	**CS 1178/SOUTH LEE ST FM SR 13 TO CS 1086/WEST MORENO STREET**

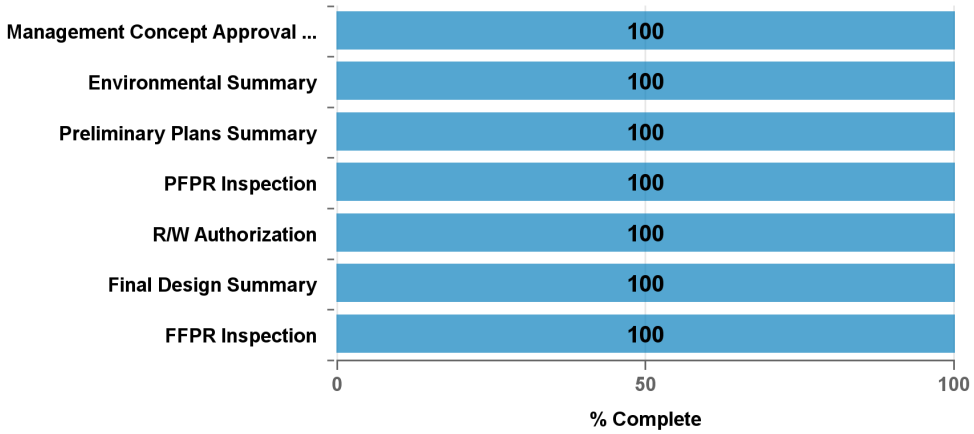
Mgmt Let Date: 5/20/2016

The project will construct new or expanded sidewalks for 0.9 miles along both sides of the corridor using a combination of brick and concrete. In addition, these improvements would include planting street trees and shrubs within a 4¿ pedestrian buffer zone and a center median, and it would install raised curbs, defined pedestrian crossings and shared lane bicycle markings, pedestrian scale lighting and other street furnishings, and ADA-accessible curb ramps. Concurrent with this work, storm sewer upgrades would be completed with project funding, and existing overhead utilities would be buried by the City with local funds in order to enhance the corridor¿s aesthetics while removing other pedestrian impediments. Improving pedestrian facilities along South Lee Street would facilitate greater connectivity between historic commercial uses along Main Street, as well as the goods and services located along Buford Highway.

PROJ NO:		**SPONSOR:**	Buford
MPO TIP#:	GW-356	**PROJ MGR:**	Stolz, Janet
MPO:	Atlanta TMA	**DOT DIST:**	1
PROJ LENGTH (MI):	0.9	**CONG DIST:**	007
TYPE WORK:	Bicycle/Ped. Facility	**TYPE WORK:**	Bicycle/Ped. Facility
LET RESPONSIBILITY:	Local Let	**HOUSE DIST:**	
BIKE PROVISIONS INCLUDED?	N	**SENATE DIST:**	

Phase	FY Approved	Approved FY Estimate *	Fund	Phase Status
Engineering	2011	$283,000.00	Q23	AUTHORIZED
Right of Way	2014	$690,000.00	33C	AUTHORIZED
Construction	2016	$3,895,980.35	M230	AUTHORIZED

*** Inflation Included in Estimate**



Activity	Actual Start Date	Actual Finish Date
Management Concept Approval Complete	10/26/2012	10/26/2012
Environmental Summary	11/1/2011	12/6/2013
Preliminary Plans Summary	6/6/2006	11/25/2013
PFPR Inspection	9/4/2013	9/4/2013
R/W Authorization	6/20/2014	6/20/2014
Final Design Summary	6/30/2014	7/7/2015
FFPR Inspection	6/4/2015	6/4/2015

Right of Way Aqcuisition Information:

Preliminary Parcel Count: 32 **Total Parcel Count:** 30 **Acquired by:** LOC

PROJ ID	COUNTY	DESCRIPTION
0004430	Gwinnett	**SR 20 FM E OF BURNETTE TRAIL TO PEACHTREE IND BLVD-GRTA**

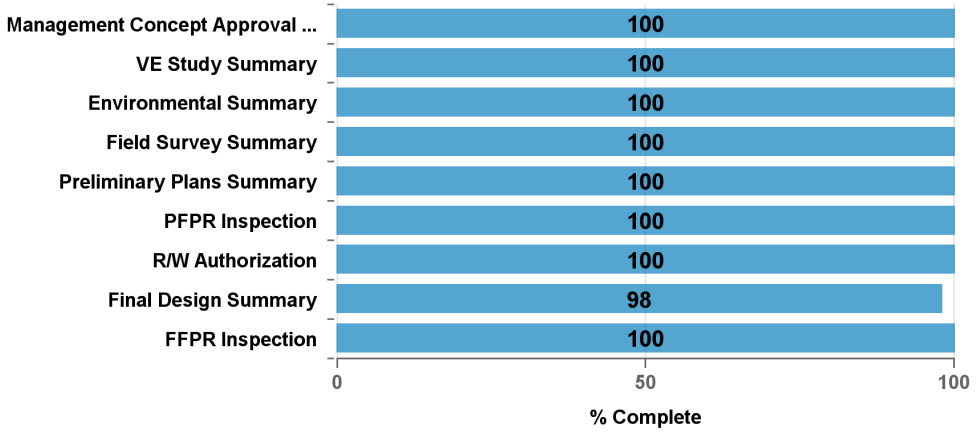
Mgmt Let Date: 1/18/2013

The proposed project would widen SR 20 from a two lane rural section to a four lane urban section from approximately 1,000 feet west of Mountain Ridge Road to Peachtree Industrial Boulevard in Gwinnett County. The typical section will include four- through lanes, a 44-foot grassed median, 16-foot shoulders, curb & gutter on the outside pavement edges, and five-foot concrete sidewalks on both sides of the roadway. Design will accommodate for the future widening of two additional lanes. Project length is 3.91 miles.

PROJ NO: MSL00-0004-00(430)
MPO TIP#: GW-020A1
MPO: Atlanta TMA
PROJ LENGTH (MI): 3.71
TYPE WORK: Widening
LET RESPONSIBILITY: Local Let
BIKE PROVISIONS INCLUDED? Y

SPONSOR: Georgia Regional Transportation Authority
PROJ MGR: Patel, Hiral P.
DOT DIST: 1
CONG DIST: 007
TYPE WORK: Widening
HOUSE DIST:
SENATE DIST:

Phase	FY Approved	Approved FY Estimate *	Fund	Phase Status
Engineering	2003	$966,143.93	CFTS	AUTHORIZED
Engineering	2003	$1,228,829.43	Q23	AUTHORIZED
Right of Way	2011	$28,500,000.00	L050	AUTHORIZED
Right of Way	2011	$11,000,000.00	L240	AUTHORIZED
Construction	2013	$30,130,959.00	M001	AUTHORIZED
UTL	2013	$4,725,769.74	H17A	AUTHORIZED
UTL	2013	$491,965.00	H66A	AUTHORIZED



Activity	Actual Start Date	Actual Finish Date
Management Concept Approval Complete	2/17/2006	2/17/2006
VE Study Summary	8/8/2007	6/26/2008
Environmental Summary	3/15/2005	6/2/2010
Field Survey Summary	7/12/2005	
Preliminary Plans Summary	2/28/2006	6/21/2010
PFPR Inspection	3/26/2008	3/26/2008
R/W Authorization	12/10/2010	12/10/2010
Final Design Summary	12/1/2010	
FFPR Inspection	6/19/2012	6/20/2012

Right of Way Aqcuisition Information:

Preliminary Parcel Count: 173 **Total Parcel Count:** 208 **Acquired by:** LOC

I-985 FROM I-85/GWINNETT TO SR 369/HALL

Project ID:	**M005451**	Notice to Proceed Date:	
Project Manager:	E. Reid Mathews	Construction Percent Complete:	%
Office:	Maintenance	Current Completion Date:	
County:	Gwinnett, Hall	Work Completion Date:	
Congressional District:	007, 009	Construction Contract Amount:	
State Senate District.:	045, 049	Construction Contractor:	
State House District:	029, 030, 098, 102, 103	**Preconstruction Status Report**	
Project Type:	Maintenance	**Construction Status Report**	
Project Status:	Construction Work Program		
Right of Way Authorization:		Submit feedback to project manager	

Project Description:
This project is the restriping of I-985 because the existing striping is deteriorating.

Activity	Program Year	Cost Estimate	Date of Last Estimate
MCST (Maintenance Construction)	2017	$3,094,833.06	

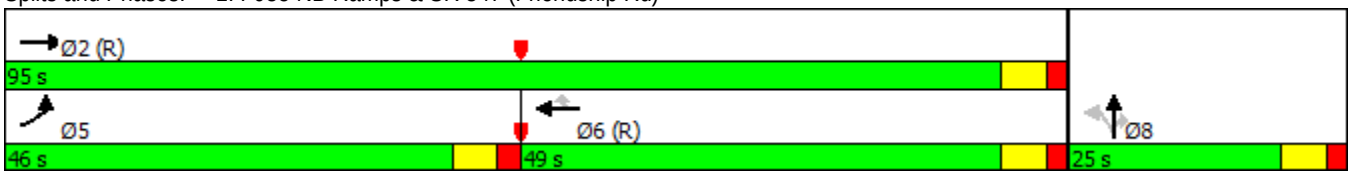
Existing Intersection Analysis

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Configurations							
Traffic Volume (vph)	355	387	1203	312	303	4	83
Future Volume (vph)	355	387	1203	312	303	4	83
Lane Group Flow (vph)	418	412	1399	405	180	180	115
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm
Protected Phases	5	2	6			8	
Permitted Phases				6	8		8
Detector Phase	5	2	6	6	8	8	8
Switch Phase							
Minimum Initial (s)	4.0	15.0	15.0	15.0	6.0	6.0	6.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	46.0	95.0	49.0	49.0	25.0	25.0	25.0
Total Split (%)	38.3%	79.2%	40.8%	40.8%	20.8%	20.8%	20.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?							
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.81	0.15	0.59	0.43	0.69	0.69	0.33
Control Delay	34.8	10.2	27.1	3.9	61.7	61.5	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	10.2	27.1	3.9	61.7	61.5	10.4
Queue Length 50th (ft)	308	139	299	0	138	138	0
Queue Length 95th (ft)	401	147	368	23	207	112	25
Internal Link Dist (ft)		591	1139			825	
Turn Bay Length (ft)				840			510
Base Capacity (vph)	625	2812	2362	948	297	298	377
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	0.67	0.15	0.59	0.43	0.61	0.60	0.31

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 90 (75%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 1: I-985 NB Ramps & SR 347 (Friendship Rd)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	355	387	0	0	1203	312	303	4	83	0	0	0
Future Volume (vph)	355	387	0	0	1203	312	303	4	83	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.91	1.00	0.95	0.95	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1787	3610			5187	1599	1698	1706	1615			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	1787	3610			5187	1599	1698	1706	1615			
Peak-hour factor, PHF	0.85	0.94	0.92	0.92	0.86	0.77	0.86	0.50	0.72	0.92	0.92	0.92
Adj. Flow (vph)	418	412	0	0	1399	405	352	8	115	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	220	0	0	97	0	0	0
Lane Group Flow (vph)	418	412	0	0	1399	185	180	180	18	0	0	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	32.8	91.5			52.7	52.7	16.5	16.5	16.5			
Effective Green, g (s)	34.8	93.5			54.7	54.7	18.5	18.5	18.5			
Actuated g/C Ratio	0.29	0.78			0.46	0.46	0.15	0.15	0.15			
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	5.0			5.0	5.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	518	2812			2364	728	261	263	248			
v/s Ratio Prot	c0.23	0.11			c0.27							
v/s Ratio Perm						0.12	c0.11	0.11	0.01			
v/c Ratio	0.81	0.15			0.59	0.25	0.69	0.68	0.07			
Uniform Delay, d1	39.5	3.3			24.3	20.1	48.0	48.0	43.4			
Progression Factor	0.59	2.85			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	8.5	0.1			1.1	0.8	7.4	7.2	0.1			
Delay (s)	31.6	9.5			25.4	20.9	55.4	55.2	43.5			
Level of Service	C	A			C	C	E	E	D			
Approach Delay (s)		20.7			24.4			52.4			0.0	
Approach LOS		C			C			D			A	

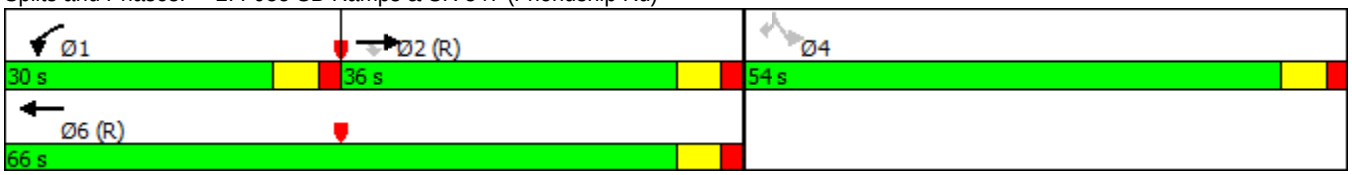
Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

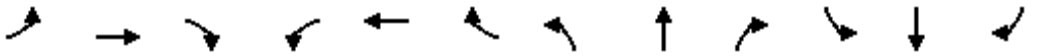
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	627	382	472	1061	112	435
Future Volume (vph)	627	382	472	1061	112	435
Lane Group Flow (vph)	729	424	543	1294	132	518
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			4	4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	4.0	15.0	6.0	6.0
Minimum Split (s)	24.0	24.0	11.0	24.0	24.0	24.0
Total Split (s)	36.0	36.0	30.0	66.0	54.0	54.0
Total Split (%)	30.0%	30.0%	25.0%	55.0%	45.0%	45.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	None	C-Min	None	None
v/c Ratio	0.41	0.51	0.77	0.62	0.21	0.85
Control Delay	24.9	3.9	37.9	8.9	26.7	43.8
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	24.9	3.9	37.9	9.1	26.7	43.8
Queue Length 50th (ft)	99	25	177	375	70	313
Queue Length 95th (ft)	117	37	184	427	101	371
Internal Link Dist (ft)	904			591		
Turn Bay Length (ft)		375	380			
Base Capacity (vph)	1800	830	751	2096	752	714
Starvation Cap Reductn	0	0	0	258	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.51	0.72	0.70	0.18	0.73

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 19 (16%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 2: I-985 SB Ramps & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	627	382	472	1061	0	0	0	0	112	0	435
Future Volume (vph)	0	627	382	472	1061	0	0	0	0	112	0	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0		4.0
Lane Util. Factor		0.91	1.00	0.97	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		5136	1583	3467	3574					1805		1599
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5136	1583	3467	3574					1805		1599
Peak-hour factor, PHF	0.92	0.86	0.90	0.87	0.82	0.92	0.92	0.92	0.92	0.85	0.92	0.84
Adj. Flow (vph)	0	729	424	543	1294	0	0	0	0	132	0	518
RTOR Reduction (vph)	0	0	275	0	0	0	0	0	0	0	0	54
Lane Group Flow (vph)	0	729	149	543	1294	0	0	0	0	132	0	464
Heavy Vehicles (%)	0%	1%	2%	1%	1%	0%	0%	0%	0%	0%	0%	1%
Turn Type		NA	Perm	Prot	NA					Perm		Perm
Protected Phases		2		1	6							
Permitted Phases			2							4		4
Actuated Green, G (s)		40.1	40.1	22.3	68.4					39.6		39.6
Effective Green, g (s)		42.1	42.1	24.3	70.4					41.6		41.6
Actuated g/C Ratio		0.35	0.35	0.20	0.59					0.35		0.35
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Vehicle Extension (s)		5.0	5.0	3.0	5.0					3.0		3.0
Lane Grp Cap (vph)		1801	555	702	2096					625		554
v/s Ratio Prot		0.14		c0.16	c0.36							
v/s Ratio Perm			0.09							0.07		c0.29
v/c Ratio		0.40	0.27	0.77	0.62					0.21		0.84
Uniform Delay, d1		29.5	27.9	45.2	16.1					27.6		36.1
Progression Factor		0.77	0.56	0.69	0.44					1.00		1.00
Incremental Delay, d2		0.6	1.1	4.4	1.1					0.2		10.7
Delay (s)		23.3	16.8	35.6	8.2					27.8		46.8
Level of Service		C	B	D	A					C		D
Approach Delay (s)		20.9			16.3			0.0			42.9	
Approach LOS		C			B			A			D	

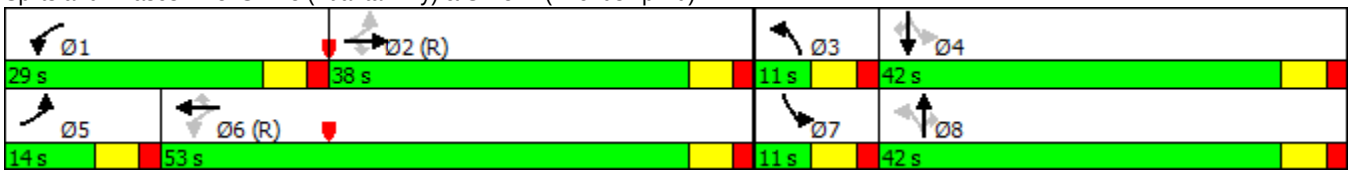
Intersection Summary			
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

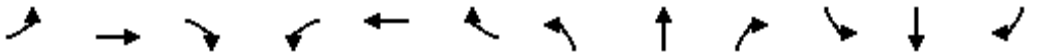
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	570	94	389	577	74	87	131	161	232	268	123
Future Volume (vph)	135	570	94	389	577	74	87	131	161	232	268	123
Lane Group Flow (vph)	157	655	124	423	687	104	112	147	187	239	312	152
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0	15.0	4.0	6.0	6.0	4.0	6.0	6.0
Minimum Split (s)	11.0	37.0	37.0	11.0	37.0	37.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (s)	14.0	38.0	38.0	29.0	53.0	53.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (%)	11.7%	31.7%	31.7%	24.2%	44.2%	44.2%	9.2%	35.0%	35.0%	9.2%	35.0%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.37	0.48	0.17	0.75	0.38	0.12	0.54	0.34	0.37	0.71	0.73	0.30
Control Delay	15.5	31.1	1.0	23.3	12.1	0.3	29.5	31.1	10.5	46.5	52.8	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	31.1	1.0	23.3	12.1	0.3	29.5	31.1	10.5	46.5	52.8	3.5
Queue Length 50th (ft)	48	202	0	101	106	0	63	93	36	146	225	0
Queue Length 95th (ft)	89	275	0	#258	141	0	85	150	96	200	284	12
Internal Link Dist (ft)		1576			3513			1183			1183	
Turn Bay Length (ft)	250		370	300		310	240		250	300		215
Base Capacity (vph)	426	1363	716	569	1803	836	209	595	627	336	595	631
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.48	0.17	0.74	0.38	0.12	0.54	0.25	0.30	0.71	0.52	0.24

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 80 (67%), Referenced to phase 2:EBTL and 6:WBTL, 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: 3: SR 13 (Atlanta Hwy) & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	570	94	389	577	74	87	131	161	232	268	123
Future Volume (vph)	135	570	94	389	577	74	87	131	161	232	268	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3610	1583	1787	3610	1538	1787	1881	1568	1752	1881	1583
Flt Permitted	0.39	1.00	1.00	0.26	1.00	1.00	0.25	1.00	1.00	0.56	1.00	1.00
Satd. Flow (perm)	734	3610	1583	487	3610	1538	463	1881	1568	1032	1881	1583
Peak-hour factor, PHF	0.86	0.87	0.76	0.92	0.84	0.71	0.78	0.89	0.86	0.97	0.86	0.81
Adj. Flow (vph)	157	655	124	423	687	104	112	147	187	239	312	152
RTOR Reduction (vph)	0	0	77	0	0	52	0	0	145	0	0	118
Lane Group Flow (vph)	157	655	47	423	687	52	112	147	42	239	312	34
Heavy Vehicles (%)	1%	0%	2%	1%	0%	5%	1%	1%	3%	3%	1%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	51.2	43.4	43.4	71.8	58.0	58.0	30.2	25.2	25.2	30.2	25.2	25.2
Effective Green, g (s)	55.2	45.4	45.4	73.8	60.0	60.0	34.2	27.2	27.2	34.2	27.2	27.2
Actuated g/C Ratio	0.46	0.38	0.38	0.61	0.50	0.50	0.29	0.23	0.23	0.29	0.23	0.23
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	423	1365	598	563	1805	769	209	426	355	336	426	358
v/s Ratio Prot	0.03	0.18		c0.15	0.19		0.03	0.08		c0.04	c0.17	
v/s Ratio Perm	0.14		0.03	c0.31		0.03	0.12		0.03	0.16		0.02
v/c Ratio	0.37	0.48	0.08	0.75	0.38	0.07	0.54	0.35	0.12	0.71	0.73	0.10
Uniform Delay, d1	19.2	28.3	23.9	14.6	18.5	15.5	33.8	38.9	36.9	38.0	43.0	36.7
Progression Factor	1.00	1.00	1.00	1.16	0.59	0.02	0.70	0.77	1.90	1.00	1.00	1.00
Incremental Delay, d2	0.6	1.2	0.3	4.3	0.5	0.1	2.6	0.5	0.1	6.9	6.4	0.1
Delay (s)	19.7	29.5	24.2	21.3	11.4	0.5	26.1	30.4	70.2	45.0	49.4	36.8
Level of Service	B	C	C	C	B	A	C	C	E	D	D	D
Approach Delay (s)		27.2			13.9			46.0			45.2	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	5	379	49	35	703
Future Volume (Veh/h)	7	5	379	49	35	703
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.44	0.42	0.89	0.72	0.52	0.86
Hourly flow rate (vph)	16	12	426	68	67	817
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1377	426			494	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1377	426			494	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	98			94	
cM capacity (veh/h)	151	633			1064	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	16	12	426	68	884
Volume Left	16	0	0	0	67
Volume Right	0	12	0	68	0
cSH	151	633	1700	1700	1064
Volume to Capacity	0.11	0.02	0.25	0.04	0.06
Queue Length 95th (ft)	9	1	0	0	5
Control Delay (s)	31.6	10.8	0.0	0.0	1.6
Lane LOS	D	B			A
Approach Delay (s)	22.7		0.0		1.6
Approach LOS	C				

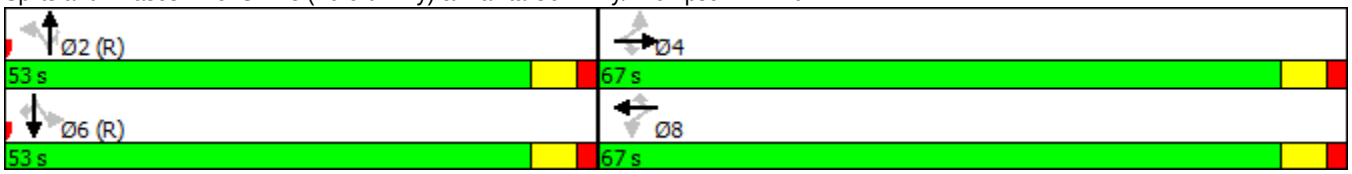
Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

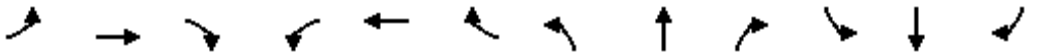
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	1	6	396	25	223	21	442	176	113	594	38
Future Volume (vph)	1	6	396	25	223	21	442	176	113	594	38
Lane Group Flow (vph)	4	12	0	462	251	36	470	191	153	660	52
Turn Type	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	4			8			2			6	
Permitted Phases		4	8		8	2		2	6		6
Detector Phase	4	4	8	8	8	2	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	15.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	67.0	67.0	67.0	67.0	67.0	53.0	53.0	53.0	53.0	53.0	53.0
Total Split (%)	55.8%	55.8%	55.8%	55.8%	55.8%	44.2%	44.2%	44.2%	44.2%	44.2%	44.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.01	0.02		0.80	0.31	0.11	0.26	0.21	0.35	0.36	0.06
Control Delay	16.0	1.8		40.6	3.4	16.9	15.2	6.6	16.8	13.8	2.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	1.8		40.6	3.4	16.9	15.2	6.6	16.8	13.8	2.8
Queue Length 50th (ft)	2	0		304	4	16	116	43	71	161	5
Queue Length 95th (ft)	2	0		243	42	30	194	98	92	199	m11
Internal Link Dist (ft)	275			4179			3868			2104	
Turn Bay Length (ft)		105			250	230		230	200		185
Base Capacity (vph)	997	737		738	963	334	1841	923	432	1841	865
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.02		0.63	0.26	0.11	0.26	0.21	0.35	0.36	0.06

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 72 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: SR 13 (Buford Hwy) & Makita Co. Drwy/Thompson Mill Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1	6	396	25	223	21	442	176	113	594	38
Future Volume (vph)	0	1	6	396	25	223	21	442	176	113	594	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1900	1380		1816	1615	1805	3539	1599	1787	3539	1615
Flt Permitted		1.00	1.00		0.74	1.00	0.34	1.00	1.00	0.44	1.00	1.00
Satd. Flow (perm)		1900	1380		1406	1615	642	3539	1599	832	3539	1615
Peak-hour factor, PHF	0.54	0.25	0.50	0.93	0.69	0.89	0.58	0.94	0.92	0.74	0.90	0.73
Adj. Flow (vph)	0	4	12	426	36	251	36	470	191	153	660	52
RTOR Reduction (vph)	0	0	7	0	0	143	0	0	92	0	0	25
Lane Group Flow (vph)	0	4	5	0	462	108	36	470	99	153	660	27
Heavy Vehicles (%)	0%	0%	17%	0%	0%	0%	0%	2%	1%	1%	2%	0%
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		47.6	47.6		47.6	47.6	60.4	60.4	60.4	60.4	60.4	60.4
Effective Green, g (s)		49.6	49.6		49.6	49.6	62.4	62.4	62.4	62.4	62.4	62.4
Actuated g/C Ratio		0.41	0.41		0.41	0.41	0.52	0.52	0.52	0.52	0.52	0.52
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)		785	570		581	667	333	1840	831	432	1840	839
v/s Ratio Prot		0.00						0.13			c0.19	
v/s Ratio Perm			0.00		c0.33	0.07	0.06		0.06	0.18		0.02
v/c Ratio		0.01	0.01		0.80	0.16	0.11	0.26	0.12	0.35	0.36	0.03
Uniform Delay, d1		20.7	20.7		30.8	22.1	14.6	15.9	14.7	16.9	17.0	14.1
Progression Factor		1.00	1.00		1.00	1.00	0.86	0.84	2.08	0.72	0.71	0.48
Incremental Delay, d2		0.0	0.0		7.4	0.1	0.6	0.3	0.3	1.9	0.5	0.1
Delay (s)		20.7	20.7		38.2	22.3	13.1	13.8	30.9	14.2	12.5	6.8
Level of Service		C	C		D	C	B	B	C	B	B	A
Approach Delay (s)		20.7			32.6			18.4			12.5	
Approach LOS		C			C			B			B	

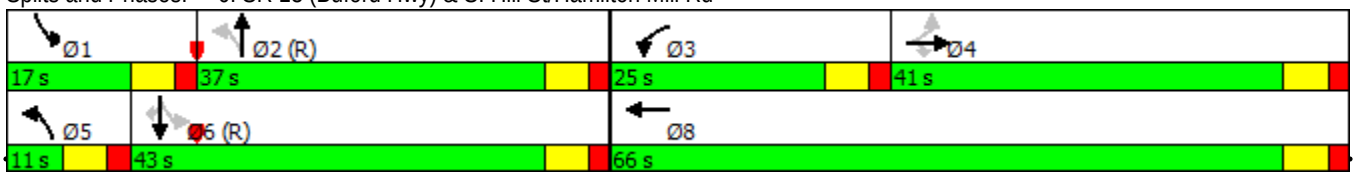
Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

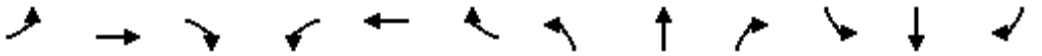
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	28	158	65	484	238	42	432	304	222	741	51
Future Volume (vph)	28	158	65	484	238	42	432	304	222	741	51
Lane Group Flow (vph)	52	251	92	526	551	56	470	411	313	797	56
Turn Type	Perm	NA	Perm	Prot	NA	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8	5	2		1	6	
Permitted Phases	4		4			2		Free	6		6
Detector Phase	4	4	4	3	8	5	2		1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	4.0	6.0	4.0	15.0		4.0	15.0	15.0
Minimum Split (s)	41.0	41.0	41.0	11.0	46.0	11.0	37.0		11.0	40.0	40.0
Total Split (s)	41.0	41.0	41.0	25.0	66.0	11.0	37.0		17.0	43.0	43.0
Total Split (%)	34.2%	34.2%	34.2%	20.8%	55.0%	9.2%	30.8%		14.2%	35.8%	35.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min		None	C-Min	C-Min
v/c Ratio	0.35	0.68	0.22	0.90	0.76	0.18	0.34	0.27	0.66	0.49	0.07
Control Delay	46.3	53.5	2.8	68.5	34.3	17.4	27.8	0.4	22.0	17.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.3	53.5	2.8	68.5	34.3	17.4	27.8	0.4	22.0	17.7	0.2
Queue Length 50th (ft)	35	182	0	208	330	20	133	0	111	167	0
Queue Length 95th (ft)	40	164	0	#306	349	39	197	0	125	215	m0
Internal Link Dist (ft)		657			1618		1320			3868	
Turn Bay Length (ft)	180		300	250		240		1000	400		280
Base Capacity (vph)	238	585	592	583	917	306	1373	1538	477	1615	796
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	0.22	0.43	0.16	0.90	0.60	0.18	0.34	0.27	0.66	0.49	0.07

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, 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.
m Volume for 95th percentile queue is metered by upstream signal.

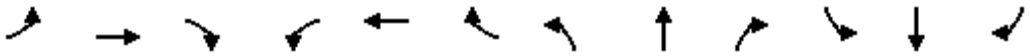
Splits and Phases: 6: SR 13 (Buford Hwy) & S. Hill St/Hamilton Mill Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	158	65	484	238	195	42	432	304	222	741	51
Future Volume (vph)	28	158	65	484	238	195	42	432	304	222	741	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	2.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	1900	1615	3335	1726		1770	3539	1538	1752	3539	1583
Flt Permitted	0.41	1.00	1.00	0.95	1.00		0.28	1.00	1.00	0.37	1.00	1.00
Satd. Flow (perm)	774	1900	1615	3335	1726		524	3539	1538	684	3539	1583
Peak-hour factor, PHF	0.54	0.63	0.71	0.92	0.81	0.76	0.75	0.92	0.74	0.71	0.93	0.91
Adj. Flow (vph)	52	251	92	526	294	257	56	470	411	313	797	56
RTOR Reduction (vph)	0	0	74	0	32	0	0	0	0	0	0	31
Lane Group Flow (vph)	52	251	18	526	519	0	56	470	411	313	797	25
Heavy Vehicles (%)	0%	0%	0%	5%	1%	4%	2%	2%	5%	3%	2%	2%
Turn Type	Perm	NA	Perm	Prot	NA		pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4				2		Free	6		6
Actuated Green, G (s)	21.4	21.4	21.4	19.0	46.4		48.6	44.6	120.0	61.6	51.6	51.6
Effective Green, g (s)	23.4	23.4	23.4	21.0	48.4		52.6	46.6	120.0	63.6	53.6	53.6
Actuated g/C Ratio	0.19	0.19	0.19	0.18	0.40		0.44	0.39	1.00	0.53	0.45	0.45
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0		3.0	5.0	5.0
Lane Grp Cap (vph)	150	370	314	583	696		291	1374	1538	478	1580	707
v/s Ratio Prot		0.13		c0.16	c0.30		0.01	0.13		c0.07	0.23	
v/s Ratio Perm	0.07		0.01				0.07		0.27	c0.28		0.02
v/c Ratio	0.35	0.68	0.06	0.90	0.75		0.19	0.34	0.27	0.65	0.50	0.04
Uniform Delay, d1	41.7	44.8	39.3	48.5	30.5		19.9	25.9	0.0	17.0	23.7	18.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.84	0.68	1.00
Incremental Delay, d2	1.4	4.9	0.1	17.2	4.3		0.3	0.7	0.4	3.0	1.1	0.1
Delay (s)	43.1	49.7	39.4	65.7	34.9		20.3	26.6	0.4	17.2	17.1	18.8
Level of Service	D	D	D	E	C		C	C	A	B	B	B
Approach Delay (s)		46.4			49.9			14.7			17.2	
Approach LOS		D			D			B			B	

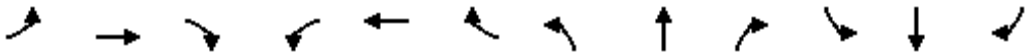
Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	202	1	0	589	27	0	0	0	12	0	6
Future Volume (Veh/h)	5	202	1	0	589	27	0	0	0	12	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.42	0.83	0.25	0.92	0.94	0.68	0.92	0.92	0.92	0.60	0.92	0.75
Hourly flow rate (vph)	12	243	4	0	627	40	0	0	0	20	0	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	667			247			924	936	245	916	918	647
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	667			247			924	936	245	916	918	647
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	92	100	98
cM capacity (veh/h)	932			1331			245	264	799	253	270	475

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	259	667	0	28
Volume Left	12	0	0	20
Volume Right	4	40	0	8
cSH	932	1331	1700	292
Volume to Capacity	0.01	0.00	0.00	0.10
Queue Length 95th (ft)	1	0	0	8
Control Delay (s)	0.5	0.0	0.0	18.7
Lane LOS	A		A	C
Approach Delay (s)	0.5	0.0	0.0	18.7
Approach LOS			A	C

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	42.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	53	106	66	51	386	9	113	66	16	8	93	121
Future Volume (vph)	53	106	66	51	386	9	113	66	16	8	93	121
Peak Hour Factor	0.74	0.80	0.75	0.85	0.95	0.45	0.72	0.87	0.80	0.50	0.93	0.78
Hourly flow rate (vph)	72	133	88	60	406	20	157	76	20	16	100	155

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	293	486	253	271
Volume Left (vph)	72	60	157	16
Volume Right (vph)	88	20	20	155
Hadj (s)	-0.12	0.00	0.08	-0.33
Departure Headway (s)	7.0	6.6	7.5	7.1
Degree Utilization, x	0.57	0.90	0.53	0.53
Capacity (veh/h)	476	526	444	471
Control Delay (s)	19.0	43.1	18.6	17.8
Approach Delay (s)	19.0	43.1	18.6	17.8
Approach LOS	C	E	C	C

Intersection Summary				
Delay	27.6			
Level of Service	D			
Intersection Capacity Utilization	60.3%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection: 8: N. Bogan Rd & Thompson Mill Rd

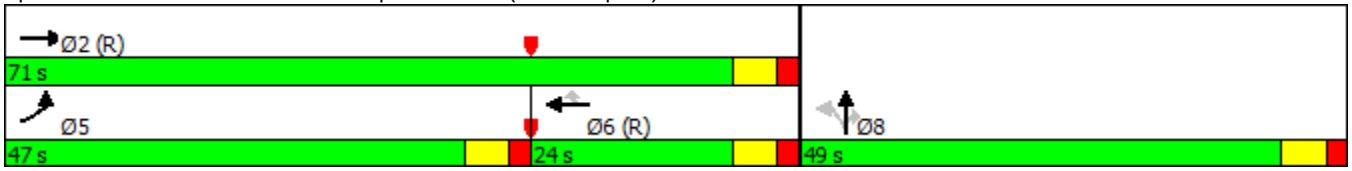
Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	97	188	55	71
Average Queue (ft)	57	113	46	46
95th Queue (ft)	101	193	61	71
Link Distance (ft)	2455	1031	846	592
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

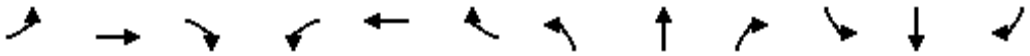
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Configurations							
Traffic Volume (vph)	449	1234	523	128	330	1	535
Future Volume (vph)	449	1234	523	128	330	1	535
Lane Group Flow (vph)	548	1387	539	164	200	197	588
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm
Protected Phases	5	2	6			8	
Permitted Phases				6	8		8
Detector Phase	5	2	6	6	8	8	8
Switch Phase							
Minimum Initial (s)	4.0	15.0	15.0	15.0	6.0	6.0	6.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	47.0	71.0	24.0	24.0	49.0	49.0	49.0
Total Split (%)	39.2%	59.2%	20.0%	20.0%	40.8%	40.8%	40.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?							
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.90	0.67	0.52	0.36	0.33	0.32	0.93
Control Delay	43.7	13.7	46.3	9.1	29.1	29.0	54.0
Queue Delay	0.0	1.1	0.0	0.0	0.0	0.0	0.0
Total Delay	43.7	14.8	46.3	9.1	29.1	29.0	54.0
Queue Length 50th (ft)	393	423	143	0	114	112	376
Queue Length 95th (ft)	435	506	184	37	165	43	#598
Internal Link Dist (ft)		591	1139			825	
Turn Bay Length (ft)				840			510
Base Capacity (vph)	640	2070	1027	451	636	638	656
Starvation Cap Reductn	0	409	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	0.86	0.84	0.52	0.36	0.31	0.31	0.90

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 38 (32%), Referenced to phase 2:EBT and 6:WBT, 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: 1: I-985 NB Ramps & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	449	1234	0	0	523	128	330	1	535	0	0	0
Future Volume (vph)	449	1234	0	0	523	128	330	1	535	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.91	1.00	0.95	0.95	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1787	3610			5136	1599	1698	1704	1615			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	1787	3610			5136	1599	1698	1704	1615			
Peak-hour factor, PHF	0.82	0.89	0.92	0.92	0.97	0.78	0.84	0.25	0.91	0.92	0.92	0.92
Adj. Flow (vph)	548	1387	0	0	539	164	393	4	588	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	131	0	0	52	0	0	0
Lane Group Flow (vph)	548	1387	0	0	539	33	200	197	536	0	0	0
Heavy Vehicles (%)	1%	0%	0%	0%	1%	1%	1%	0%	0%	0%	0%	0%
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	38.8	66.8			22.0	22.0	41.2	41.2	41.2			
Effective Green, g (s)	40.8	68.8			24.0	24.0	43.2	43.2	43.2			
Actuated g/C Ratio	0.34	0.57			0.20	0.20	0.36	0.36	0.36			
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	5.0			5.0	5.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	607	2069			1027	319	611	613	581			
v/s Ratio Prot	c0.31	c0.38			0.10							
v/s Ratio Perm						0.02	0.12	0.12	c0.33			
v/c Ratio	0.90	0.67			0.52	0.10	0.33	0.32	0.92			
Uniform Delay, d1	37.7	17.7			42.9	39.2	27.9	27.8	36.8			
Progression Factor	0.70	0.66			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	14.7	1.5			1.9	0.6	0.3	0.3	20.2			
Delay (s)	41.0	13.2			44.8	39.9	28.2	28.1	57.0			
Level of Service	D	B			D	D	C	C	E			
Approach Delay (s)		21.1			43.7			45.4			0.0	
Approach LOS		C			D			D			A	

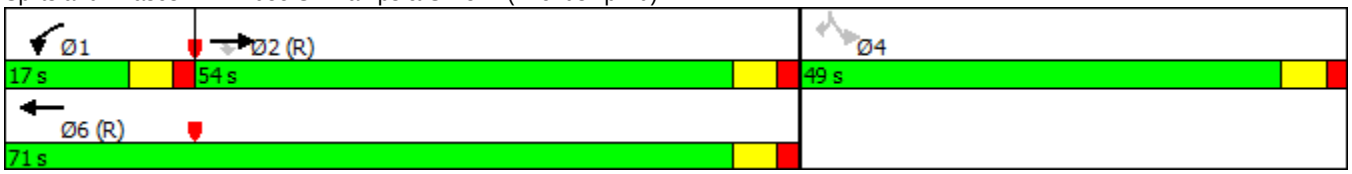
Intersection Summary			
HCM 2000 Control Delay	32.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

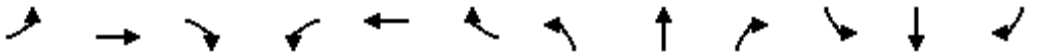
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1393	388	154	710	304	336
Future Volume (vph)	1393	388	154	710	304	336
Lane Group Flow (vph)	1466	479	188	780	400	400
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			4	4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	4.0	15.0	6.0	6.0
Minimum Split (s)	24.0	24.0	11.0	24.0	24.0	24.0
Total Split (s)	54.0	54.0	17.0	71.0	49.0	49.0
Total Split (%)	45.0%	45.0%	14.2%	59.2%	40.8%	40.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	None	C-Min	None	None
v/c Ratio	0.56	0.46	0.53	0.34	0.76	0.68
Control Delay	13.7	1.4	36.3	16.5	47.7	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.7	1.4	36.3	16.5	47.7	26.0
Queue Length 50th (ft)	149	1	63	296	282	156
Queue Length 95th (ft)	m188	m1	85	376	281	207
Internal Link Dist (ft)	904			591		
Turn Bay Length (ft)		375	380			
Base Capacity (vph)	2617	1036	375	2292	676	702
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	27	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.46	0.50	0.34	0.59	0.57

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 93 (78%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-985 SB Ramps & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1393	388	154	710	0	0	0	0	304	0	336
Future Volume (vph)	0	1393	388	154	710	0	0	0	0	304	0	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0		4.0
Lane Util. Factor		0.91	1.00	0.97	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		5187	1583	3467	3574					1805		1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5187	1583	3467	3574					1805		1583
Peak-hour factor, PHF	0.92	0.95	0.81	0.82	0.91	0.92	0.92	0.92	0.92	0.76	0.92	0.84
Adj. Flow (vph)	0	1466	479	188	780	0	0	0	0	400	0	400
RTOR Reduction (vph)	0	0	237	0	0	0	0	0	0	0	0	123
Lane Group Flow (vph)	0	1466	242	188	780	0	0	0	0	400	0	277
Heavy Vehicles (%)	0%	0%	2%	1%	1%	0%	0%	0%	0%	0%	0%	2%
Turn Type		NA	Perm	Prot	NA					Perm		Perm
Protected Phases		2		1	6							
Permitted Phases			2							4		4
Actuated Green, G (s)		58.6	58.6	10.4	75.0					33.0		33.0
Effective Green, g (s)		60.6	60.6	12.4	77.0					35.0		35.0
Actuated g/C Ratio		0.51	0.51	0.10	0.64					0.29		0.29
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Vehicle Extension (s)		5.0	5.0	3.0	5.0					3.0		3.0
Lane Grp Cap (vph)		2619	799	358	2293					526		461
v/s Ratio Prot		c0.28		c0.05	0.22							
v/s Ratio Perm			0.15							c0.22		0.17
v/c Ratio		0.56	0.30	0.53	0.34					0.76		0.60
Uniform Delay, d1		20.5	17.4	51.0	9.9					38.7		36.5
Progression Factor		0.59	0.11	0.61	1.48					1.00		1.00
Incremental Delay, d2		0.7	0.8	1.3	0.4					6.4		2.2
Delay (s)		12.9	2.6	32.5	15.0					45.1		38.7
Level of Service		B	A	C	B					D		D
Approach Delay (s)		10.3			18.4			0.0			41.9	
Approach LOS		B			B			A			D	

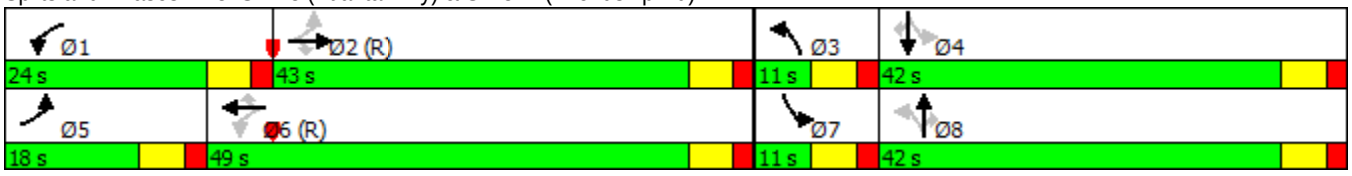
Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

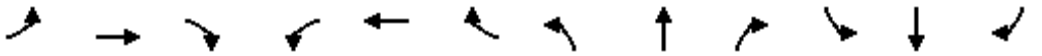
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	829	71	286	582	225	108	339	339	165	152	98
Future Volume (vph)	184	829	71	286	582	225	108	339	339	165	152	98
Lane Group Flow (vph)	211	1023	85	321	669	265	116	424	404	176	183	104
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0	15.0	4.0	6.0	6.0	4.0	6.0	6.0
Minimum Split (s)	11.0	37.0	37.0	11.0	37.0	37.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (s)	18.0	43.0	43.0	24.0	49.0	49.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (%)	15.0%	35.8%	35.8%	20.0%	40.8%	40.8%	9.2%	35.0%	35.0%	9.2%	35.0%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.49	0.78	0.13	0.89	0.44	0.33	0.30	0.81	0.63	0.94	0.36	0.19
Control Delay	18.8	40.1	1.3	57.8	18.3	2.9	23.4	44.7	11.2	80.9	35.8	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.8	40.1	1.3	57.8	18.3	2.9	23.4	44.7	11.2	80.9	35.8	3.0
Queue Length 50th (ft)	80	376	0	127	258	28	45	184	41	92	112	0
Queue Length 95th (ft)	126	412	3	#341	203	13	73	208	68	#185	155	22
Internal Link Dist (ft)		1576			3513			1183			1183	
Turn Bay Length (ft)	250		370	300		310	240		250	300		215
Base Capacity (vph)	446	1309	649	363	1515	812	384	589	688	188	573	599
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.78	0.13	0.88	0.44	0.33	0.30	0.72	0.59	0.94	0.32	0.17

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 35 (29%), Referenced to phase 2:EBTL and 6:WBTL, 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: 3: SR 13 (Atlanta Hwy) & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	829	71	286	582	225	108	339	339	165	152	98
Future Volume (vph)	184	829	71	286	582	225	108	339	339	165	152	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3610	1553	1787	3610	1568	1787	1863	1599	1752	1810	1599
Flt Permitted	0.34	1.00	1.00	0.09	1.00	1.00	0.53	1.00	1.00	0.17	1.00	1.00
Satd. Flow (perm)	650	3610	1553	165	3610	1568	1000	1863	1599	310	1810	1599
Peak-hour factor, PHF	0.87	0.81	0.84	0.89	0.87	0.85	0.93	0.80	0.84	0.94	0.83	0.94
Adj. Flow (vph)	211	1023	85	321	669	265	116	424	404	176	183	104
RTOR Reduction (vph)	0	0	54	0	0	154	0	0	192	0	0	75
Lane Group Flow (vph)	211	1023	31	321	669	111	116	424	212	176	183	29
Heavy Vehicles (%)	0%	0%	4%	1%	0%	3%	1%	2%	1%	3%	5%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	52.5	41.5	41.5	65.4	48.4	48.4	36.6	31.6	31.6	36.6	31.6	31.6
Effective Green, g (s)	56.5	43.5	43.5	67.4	50.4	50.4	40.6	33.6	33.6	40.6	33.6	33.6
Actuated g/C Ratio	0.47	0.36	0.36	0.56	0.42	0.42	0.34	0.28	0.28	0.34	0.28	0.28
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	431	1308	562	361	1516	658	384	521	447	189	506	447
v/s Ratio Prot	0.05	0.28		c0.15	0.19		0.02	0.23		c0.05	0.10	
v/s Ratio Perm	0.18		0.02	c0.35		0.07	0.08		0.13	c0.26		0.02
v/c Ratio	0.49	0.78	0.05	0.89	0.44	0.17	0.30	0.81	0.48	0.93	0.36	0.07
Uniform Delay, d1	19.2	34.0	24.9	34.8	24.8	21.7	28.2	40.3	35.9	35.8	34.6	31.7
Progression Factor	1.00	1.00	1.00	1.03	0.67	0.61	0.87	0.80	0.57	1.00	1.00	1.00
Incremental Delay, d2	0.9	4.7	0.2	21.2	0.9	0.5	0.4	9.2	0.8	46.0	0.4	0.1
Delay (s)	20.1	38.7	25.1	57.0	17.4	13.7	25.0	41.5	21.1	81.9	35.1	31.7
Level of Service	C	D	C	E	B	B	C	D	C	F	D	C
Approach Delay (s)		34.9			26.7			30.7			52.1	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	75	77	750	18	4	459
Future Volume (Veh/h)	75	77	750	18	4	459
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.57	0.88	0.75	0.50	0.80
Hourly flow rate (vph)	93	135	852	24	8	574
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1442	852			876	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1442	852			876	
tC, single (s)	6.5	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	34	63			99	
cM capacity (veh/h)	141	362			779	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	93	135	852	24	582
Volume Left	93	0	0	0	8
Volume Right	0	135	0	24	0
cSH	141	362	1700	1700	779
Volume to Capacity	0.66	0.37	0.50	0.01	0.01
Queue Length 95th (ft)	91	42	0	0	1
Control Delay (s)	70.2	20.7	0.0	0.0	0.3
Lane LOS	F	C			A
Approach Delay (s)	40.9		0.0		0.3
Approach LOS	E				

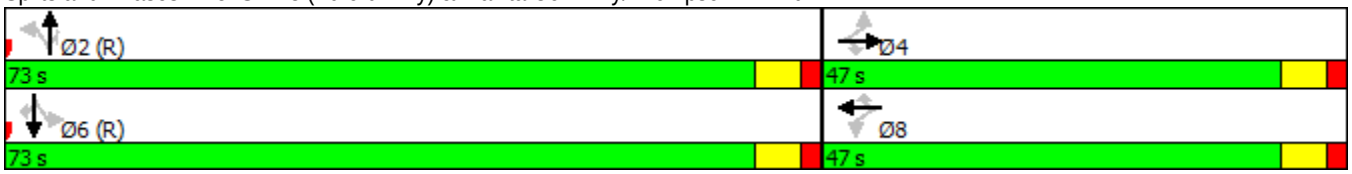
Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

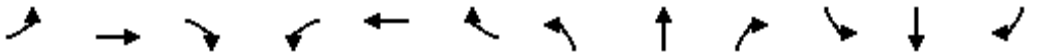
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	22	16	20	273	7	112	6	661	365	160	466
Future Volume (vph)	22	16	20	273	7	112	6	661	365	160	466
Lane Group Flow (vph)	0	72	40	0	316	140	12	796	384	184	575
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		4			8			2			6
Permitted Phases	4		4	8		8	2		2	6	
Detector Phase	4	4	4	8	8	8	2	2	2	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	73.0	73.0	73.0	73.0	73.0
Total Split (%)	39.2%	39.2%	39.2%	39.2%	39.2%	39.2%	60.8%	60.8%	60.8%	60.8%	60.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio		0.18	0.08		0.82	0.24	0.02	0.35	0.33	0.49	0.26
Control Delay		30.4	8.2		56.1	5.4	10.5	11.5	1.9	20.1	11.4
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		30.4	8.2		56.1	5.4	10.5	11.5	1.9	20.1	11.4
Queue Length 50th (ft)		41	0		224	0	3	144	0	89	132
Queue Length 95th (ft)		30	5		123	30	7	190	41	m138	164
Internal Link Dist (ft)		275			4179			3868			2104
Turn Bay Length (ft)			105			250	230		230	200	
Base Capacity (vph)		479	576		466	668	493	2277	1168	373	2233
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.15	0.07		0.68	0.21	0.02	0.35	0.33	0.49	0.26

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 69 (58%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: SR 13 (Buford Hwy) & Makita Co. Drwy/Thompson Mill Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	16	20	273	7	112	6	661	365	160	466	0
Future Volume (vph)	22	16	20	273	7	112	6	661	365	160	466	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98	1.00		0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1859	1538		1814	1615	1805	3574	1615	1805	3505	
Flt Permitted		0.70	1.00		0.68	1.00	0.41	1.00	1.00	0.31	1.00	
Satd. Flow (perm)		1337	1538		1301	1615	776	3574	1615	586	3505	
Peak-hour factor, PHF	0.69	0.40	0.50	0.91	0.44	0.80	0.50	0.83	0.95	0.87	0.81	0.73
Adj. Flow (vph)	32	40	40	300	16	140	12	796	384	184	575	0
RTOR Reduction (vph)	0	0	28	0	0	99	0	0	139	0	0	0
Lane Group Flow (vph)	0	72	12	0	316	41	12	796	245	184	575	0
Heavy Vehicles (%)	0%	0%	5%	0%	0%	0%	0%	1%	0%	0%	3%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		33.5	33.5		33.5	33.5	74.5	74.5	74.5	74.5	74.5	
Effective Green, g (s)		35.5	35.5		35.5	35.5	76.5	76.5	76.5	76.5	76.5	
Actuated g/C Ratio		0.30	0.30		0.30	0.30	0.64	0.64	0.64	0.64	0.64	
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)		395	454		384	477	494	2278	1029	373	2234	
v/s Ratio Prot								0.22			0.16	
v/s Ratio Perm		0.05	0.01		c0.24	0.03	0.02		0.15	c0.31		
v/c Ratio		0.18	0.03		0.82	0.09	0.02	0.35	0.24	0.49	0.26	
Uniform Delay, d1		31.4	30.0		39.3	30.5	8.0	10.1	9.3	11.5	9.4	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.10	1.07	
Incremental Delay, d2		0.2	0.0		13.3	0.1	0.1	0.4	0.5	4.2	0.3	
Delay (s)		31.7	30.0		52.6	30.6	8.1	10.6	9.8	16.8	10.3	
Level of Service		C	C		D	C	A	B	A	B	B	
Approach Delay (s)		31.1			45.9			10.3			11.9	
Approach LOS		C			D			B			B	

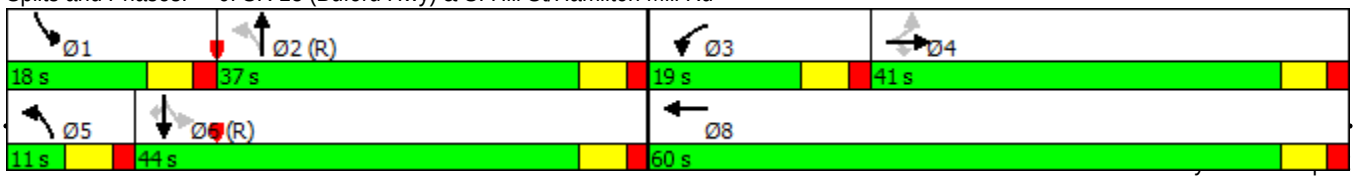
Intersection Summary			
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

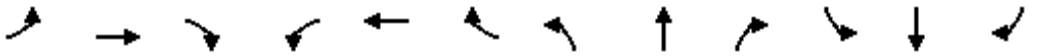
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	74	265	52	385	211	79	841	733	255	543	42
Future Volume (vph)	74	265	52	385	211	79	841	733	255	543	42
Lane Group Flow (vph)	84	276	64	438	476	116	924	797	300	646	48
Turn Type	Perm	NA	Perm	Prot	NA	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8	5	2		1	6	
Permitted Phases	4		4			2		Free	6		6
Detector Phase	4	4	4	3	8	5	2		1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	4.0	6.0	4.0	15.0		4.0	15.0	15.0
Minimum Split (s)	41.0	41.0	41.0	11.0	46.0	11.0	37.0		11.0	40.0	40.0
Total Split (s)	41.0	41.0	41.0	19.0	60.0	11.0	37.0		18.0	44.0	44.0
Total Split (%)	35.7%	35.7%	35.7%	16.5%	52.2%	9.6%	32.2%		15.7%	38.3%	38.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min		None	C-Min	C-Min
v/c Ratio	0.48	0.69	0.13	1.01	0.70	0.30	0.65	0.51	0.89	0.40	0.06
Control Delay	48.0	50.4	0.5	95.0	31.7	16.3	31.9	1.2	49.2	22.5	0.1
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	48.0	50.4	0.5	95.0	31.7	16.3	31.9	1.2	49.2	22.5	0.1
Queue Length 50th (ft)	55	190	0	~171	261	39	287	0	122	162	0
Queue Length 95th (ft)	96	259	0	#268	316	58	404	0	#277	218	0
Internal Link Dist (ft)		657			1618		1320			3868	
Turn Bay Length (ft)	180		300	250		240		1000	400		280
Base Capacity (vph)	265	611	654	435	866	393	1420	1568	336	1621	817
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	0.32	0.45	0.10	1.01	0.55	0.30	0.65	0.51	0.89	0.40	0.06

Intersection Summary

Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 115
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.

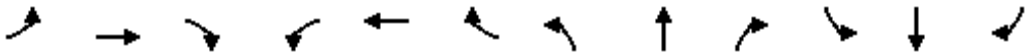
Splits and Phases: 6: SR 13 (Buford Hwy) & S. Hill St/Hamilton Mill Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	265	52	385	211	180	79	841	733	255	543	42
Future Volume (vph)	74	265	52	385	211	180	79	841	733	255	543	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	2.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	1900	1615	3335	1719		1805	3574	1568	1770	3539	1615
Flt Permitted	0.43	1.00	1.00	0.95	1.00		0.38	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	826	1900	1615	3335	1719		713	3574	1568	279	3539	1615
Peak-hour factor, PHF	0.88	0.96	0.81	0.88	0.86	0.78	0.68	0.91	0.92	0.85	0.84	0.88
Adj. Flow (vph)	84	276	64	438	245	231	116	924	797	300	646	48
RTOR Reduction (vph)	0	0	50	0	36	0	0	0	0	0	0	26
Lane Group Flow (vph)	84	276	14	438	440	0	116	924	797	300	646	22
Heavy Vehicles (%)	0%	0%	0%	5%	1%	4%	0%	1%	3%	2%	2%	0%
Turn Type	Perm	NA	Perm	Prot	NA		pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4				2		Free	6		6
Actuated Green, G (s)	22.3	22.3	22.3	13.0	41.3		48.7	43.7	115.0	61.7	50.7	50.7
Effective Green, g (s)	24.3	24.3	24.3	15.0	43.3		52.7	45.7	115.0	63.7	52.7	52.7
Actuated g/C Ratio	0.21	0.21	0.21	0.13	0.38		0.46	0.40	1.00	0.55	0.46	0.46
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0		3.0	5.0	5.0
Lane Grp Cap (vph)	174	401	341	435	647		393	1420	1568	336	1621	740
v/s Ratio Prot		0.15		c0.13	c0.26		0.02	0.26		c0.11	0.18	
v/s Ratio Perm	0.10		0.01				0.12		0.51	c0.39		0.01
v/c Ratio	0.48	0.69	0.04	1.01	0.68		0.30	0.65	0.51	0.89	0.40	0.03
Uniform Delay, d1	39.8	41.9	36.1	50.0	30.0		18.1	28.2	0.0	21.6	20.6	17.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	4.9	0.0	44.9	2.8		0.4	2.3	1.2	24.4	0.7	0.1
Delay (s)	41.9	46.7	36.1	94.9	32.9		18.5	30.5	1.2	46.0	21.4	17.2
Level of Service	D	D	D	F	C		B	C	A	D	C	B
Approach Delay (s)		44.2			62.6			17.0			28.6	
Approach LOS		D			E			B			C	

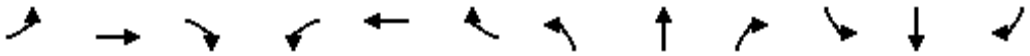
Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	487	0	0	278	7	0	0	0	27	0	8
Future Volume (Veh/h)	5	487	0	0	278	7	0	0	0	27	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.31	0.80	0.25	0.92	0.96	0.58	0.92	0.92	0.92	0.61	0.92	0.67
Hourly flow rate (vph)	16	609	0	0	290	12	0	0	0	44	0	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	302			609			949	943	609	937	937	296
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	302			609			949	943	609	937	937	296
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	82	100	98
cM capacity (veh/h)	1270			979			236	261	499	245	263	748

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	625	302	0	56
Volume Left	16	0	0	44
Volume Right	0	12	0	12
cSH	1270	979	1700	286
Volume to Capacity	0.01	0.00	0.00	0.20
Queue Length 95th (ft)	1	0	0	18
Control Delay (s)	0.4	0.0	0.0	20.6
Lane LOS	A		A	C
Approach Delay (s)	0.4	0.0	0.0	20.6
Approach LOS			A	C

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	39.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	70	326	107	55	159	14	70	143	83	14	150	48
Future Volume (vph)	70	326	107	55	159	14	70	143	83	14	150	48
Peak Hour Factor	0.83	0.90	0.79	0.92	0.86	0.88	0.92	0.81	0.77	0.70	0.75	0.80
Hourly flow rate (vph)	84	362	135	60	185	16	76	177	108	20	200	60

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	581	261	361	280
Volume Left (vph)	84	60	76	20
Volume Right (vph)	135	16	108	60
Hadj (s)	-0.11	0.01	-0.13	-0.11
Departure Headway (s)	7.2	8.0	7.6	7.9
Degree Utilization, x	1.16	0.58	0.76	0.61
Capacity (veh/h)	493	419	461	429
Control Delay (s)	118.1	21.4	30.5	22.5
Approach Delay (s)	118.1	21.4	30.5	22.5
Approach LOS	F	C	D	C

Intersection Summary			
Delay	61.7		
Level of Service	F		
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection: 8: N. Bogan Rd & Thompson Mill Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	192	90	76	73
Average Queue (ft)	153	56	47	47
95th Queue (ft)	191	102	76	75
Link Distance (ft)	2455	1031	846	592
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

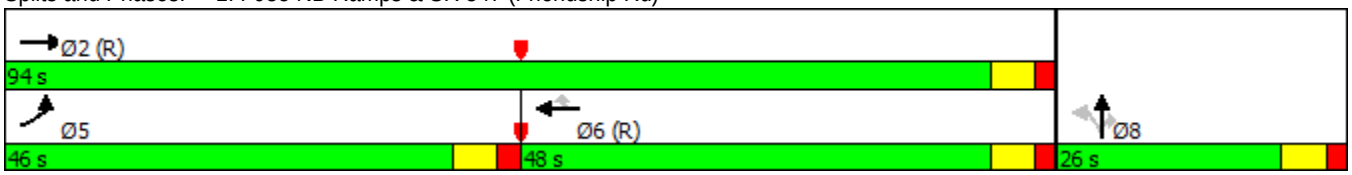
Future “No-Build” Intersection Analysis

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Configurations							
Traffic Volume (vph)	373	407	1265	328	318	4	87
Future Volume (vph)	373	407	1265	328	318	4	87
Lane Group Flow (vph)	439	433	1471	426	189	189	121
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm
Protected Phases	5	2	6			8	
Permitted Phases				6	8		8
Detector Phase	5	2	6	6	8	8	8
Switch Phase							
Minimum Initial (s)	4.0	15.0	15.0	15.0	6.0	6.0	6.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	46.0	94.0	48.0	48.0	26.0	26.0	26.0
Total Split (%)	38.3%	78.3%	40.0%	40.0%	21.7%	21.7%	21.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?							
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.87	0.16	0.67	0.46	0.77	0.77	0.36
Control Delay	38.7	8.8	31.2	4.3	70.3	69.9	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.5	0.5	0.0
Total Delay	38.7	8.8	31.2	4.3	70.8	70.4	10.8
Queue Length 50th (ft)	325	149	341	0	148	148	0
Queue Length 95th (ft)	421	166	409	23	220	118	25
Internal Link Dist (ft)		591	1139			825	
Turn Bay Length (ft)				840			510
Base Capacity (vph)	595	2729	2198	923	283	284	370
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	9	9	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.16	0.67	0.46	0.69	0.69	0.33

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 86 (72%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 1: I-985 NB Ramps & SR 347 (Friendship Rd)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	373	407	0	0	1265	328	318	4	87	0	0	0
Future Volume (vph)	373	407	0	0	1265	328	318	4	87	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Lane Util. Factor	1.00	0.95			0.91	1.00	0.95	0.95	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1787	3610			5187	1599	1698	1706	1615			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	1787	3610			5187	1599	1698	1706	1615			
Peak-hour factor, PHF	0.85	0.94	0.92	0.92	0.86	0.77	0.86	0.50	0.72	0.92	0.92	0.92
Adj. Flow (vph)	439	433	0	0	1471	426	370	8	121	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	246	0	0	104	0	0	0
Lane Group Flow (vph)	439	433	0	0	1471	180	189	189	17	0	0	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	33.9	90.7			50.8	50.8	17.3	17.3	17.3			
Effective Green, g (s)	33.9	90.7			50.8	50.8	17.3	17.3	17.3			
Actuated g/C Ratio	0.28	0.76			0.42	0.42	0.14	0.14	0.14			
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	5.0			5.0	5.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	504	2728			2195	676	244	245	232			
v/s Ratio Prot	c0.25	0.12			c0.28							
v/s Ratio Perm						0.11	c0.11	0.11	0.01			
v/c Ratio	0.87	0.16			0.67	0.27	0.77	0.77	0.08			
Uniform Delay, d1	41.0	4.1			27.9	22.5	49.5	49.4	44.4			
Progression Factor	0.53	2.02			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	14.1	0.1			1.6	1.0	14.2	13.9	0.1			
Delay (s)	35.9	8.3			29.5	23.5	63.7	63.4	44.6			
Level of Service	D	A			C	C	E	E	D			
Approach Delay (s)		22.2			28.1			58.9			0.0	
Approach LOS		C			C			E			A	

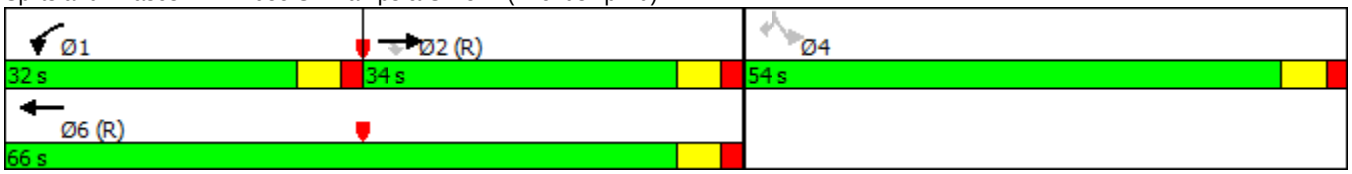
Intersection Summary			
HCM 2000 Control Delay	31.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

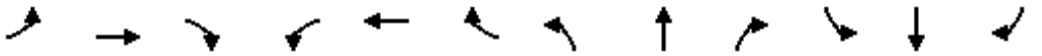
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	659	402	496	1115	118	457
Future Volume (vph)	659	402	496	1115	118	457
Lane Group Flow (vph)	766	447	570	1360	139	544
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			4	4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	4.0	15.0	6.0	6.0
Minimum Split (s)	24.0	24.0	11.0	24.0	24.0	24.0
Total Split (s)	34.0	34.0	32.0	66.0	54.0	54.0
Total Split (%)	28.3%	28.3%	26.7%	55.0%	45.0%	45.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
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)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	None	C-Min	None	None
v/c Ratio	0.48	0.56	0.83	0.69	0.22	0.90
Control Delay	27.9	4.3	40.0	11.2	27.3	50.1
Queue Delay	0.0	0.0	0.0	0.5	0.0	0.0
Total Delay	27.9	4.3	40.0	11.7	27.3	50.1
Queue Length 50th (ft)	116	25	191	438	74	338
Queue Length 95th (ft)	136	m34	206	478	108	412
Internal Link Dist (ft)	904			591		
Turn Bay Length (ft)		375	380			
Base Capacity (vph)	1583	797	751	1985	722	688
Starvation Cap Reductn	0	0	0	233	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.56	0.76	0.78	0.19	0.79

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 18 (15%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-985 SB Ramps & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	659	402	496	1115	0	0	0	0	118	0	457
Future Volume (vph)	0	659	402	496	1115	0	0	0	0	118	0	457
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Lane Util. Factor		0.91	1.00	0.97	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		5136	1583	3467	3574					1805		1599
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5136	1583	3467	3574					1805		1599
Peak-hour factor, PHF	0.92	0.86	0.90	0.87	0.82	0.92	0.92	0.92	0.92	0.85	0.92	0.84
Adj. Flow (vph)	0	766	447	570	1360	0	0	0	0	139	0	544
RTOR Reduction (vph)	0	0	309	0	0	0	0	0	0	0	0	54
Lane Group Flow (vph)	0	766	138	570	1360	0	0	0	0	139	0	490
Heavy Vehicles (%)	0%	1%	2%	1%	1%	0%	0%	0%	0%	0%	0%	1%
Turn Type		NA	Perm	Prot	NA					Perm		Perm
Protected Phases		2		1	6							
Permitted Phases			2							4		4
Actuated Green, G (s)		37.0	37.0	23.7	66.7					41.3		41.3
Effective Green, g (s)		37.0	37.0	23.7	66.7					41.3		41.3
Actuated g/C Ratio		0.31	0.31	0.20	0.56					0.34		0.34
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Vehicle Extension (s)		5.0	5.0	3.0	5.0					3.0		3.0
Lane Grp Cap (vph)		1583	488	684	1986					621		550
v/s Ratio Prot		0.15		c0.16	c0.38							
v/s Ratio Perm			0.09							0.08		c0.31
v/c Ratio		0.48	0.28	0.83	0.68					0.22		0.89
Uniform Delay, d1		33.7	31.4	46.3	19.1					28.0		37.2
Progression Factor		0.75	0.52	0.67	0.47					1.00		1.00
Incremental Delay, d2		0.9	1.2	6.7	1.5					0.2		16.5
Delay (s)		26.3	17.5	37.8	10.5					28.1		53.8
Level of Service		C	B	D	B					C		D
Approach Delay (s)		23.1			18.6			0.0			48.5	
Approach LOS		C			B			A			D	

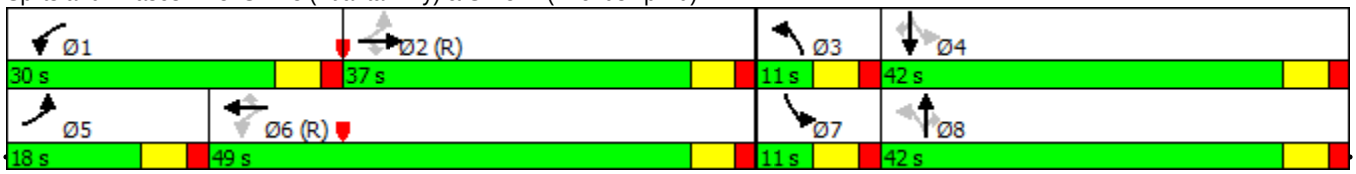
Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

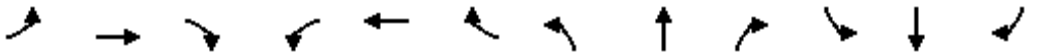
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	599	99	409	607	78	91	138	169	244	282	129
Future Volume (vph)	142	599	99	409	607	78	91	138	169	244	282	129
Lane Group Flow (vph)	165	689	130	445	723	110	117	155	197	252	328	159
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0	15.0	4.0	6.0	6.0	4.0	6.0	6.0
Minimum Split (s)	11.0	37.0	37.0	11.0	37.0	37.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (s)	18.0	37.0	37.0	30.0	49.0	49.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (%)	15.0%	30.8%	30.8%	25.0%	40.8%	40.8%	9.2%	35.0%	35.0%	9.2%	35.0%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.42	0.56	0.20	0.86	0.44	0.14	0.66	0.38	0.40	0.81	0.79	0.32
Control Delay	18.0	35.8	1.6	39.5	13.7	0.3	42.1	33.0	8.9	58.1	58.1	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	35.8	1.6	39.5	13.7	0.3	42.1	33.0	8.9	58.1	58.1	4.1
Queue Length 50th (ft)	55	228	0	193	97	0	74	107	61	157	242	0
Queue Length 95th (ft)	101	310	0	m#405	181	m1	54	168	103	212	300	17
Internal Link Dist (ft)		1576			3513			1183			1183	
Turn Bay Length (ft)	250		370	300		310			500	300		215
Base Capacity (vph)	418	1222	662	519	1638	772	176	564	608	311	564	608
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.56	0.20	0.86	0.44	0.14	0.66	0.27	0.32	0.81	0.58	0.26

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 73 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 115
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: SR 13 (Atlanta Hwy) & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	599	99	409	607	78	91	138	169	244	282	129
Future Volume (vph)	142	599	99	409	607	78	91	138	169	244	282	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3610	1583	1787	3610	1538	1787	1881	1568	1752	1881	1583
Flt Permitted	0.38	1.00	1.00	0.22	1.00	1.00	0.25	1.00	1.00	0.59	1.00	1.00
Satd. Flow (perm)	709	3610	1583	418	3610	1538	463	1881	1568	1085	1881	1583
Peak-hour factor, PHF	0.86	0.87	0.76	0.92	0.84	0.71	0.78	0.89	0.86	0.97	0.86	0.81
Adj. Flow (vph)	165	689	130	445	723	110	117	155	197	252	328	159
RTOR Reduction (vph)	0	0	86	0	0	60	0	0	154	0	0	124
Lane Group Flow (vph)	165	689	44	445	723	50	117	155	43	252	328	35
Heavy Vehicles (%)	1%	0%	2%	1%	0%	5%	1%	1%	3%	3%	1%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	50.8	40.6	40.6	70.6	54.4	54.4	31.4	26.4	26.4	31.4	26.4	26.4
Effective Green, g (s)	50.8	40.6	40.6	70.6	54.4	54.4	31.4	26.4	26.4	31.4	26.4	26.4
Actuated g/C Ratio	0.42	0.34	0.34	0.59	0.45	0.45	0.26	0.22	0.22	0.26	0.22	0.22
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	391	1221	535	519	1636	697	176	413	344	311	413	348
v/s Ratio Prot	0.04	0.19		c0.17	0.20		0.03	0.08		c0.03	0.17	
v/s Ratio Perm	0.14		0.03	c0.33		0.03	0.15		0.03	c0.18		0.02
v/c Ratio	0.42	0.56	0.08	0.86	0.44	0.07	0.66	0.38	0.13	0.81	0.79	0.10
Uniform Delay, d1	22.0	32.5	27.0	19.3	22.4	18.5	38.5	39.8	37.5	41.3	44.2	37.3
Progression Factor	1.00	1.00	1.00	1.50	0.55	0.03	0.75	0.79	1.40	1.00	1.00	1.00
Incremental Delay, d2	0.7	1.9	0.3	9.5	0.6	0.1	9.1	0.6	0.2	14.7	10.1	0.1
Delay (s)	22.7	34.4	27.3	38.5	12.9	0.8	37.9	32.0	52.8	56.0	54.3	37.5
Level of Service	C	C	C	D	B	A	D	C	D	E	D	D
Approach Delay (s)		31.5			20.8			42.2			51.3	
Approach LOS		C			C			D			D	

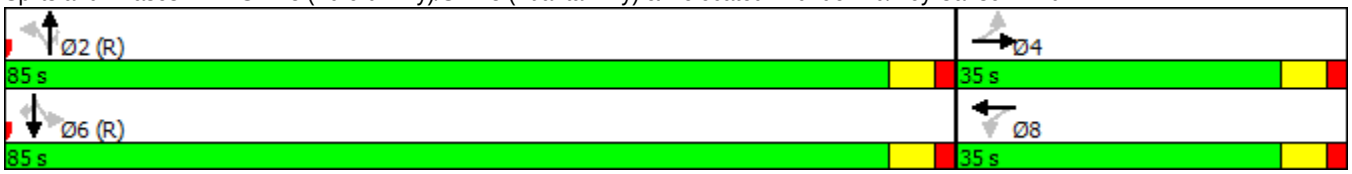
Intersection Summary			
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

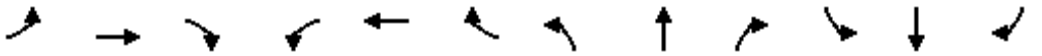
Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	13	7	8	41	377	54	47	727	2
Future Volume (vph)	13	7	8	41	377	54	47	727	2
Lane Group Flow (vph)	60	16	71	45	424	75	90	845	2
Turn Type	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	4		8		2			6	
Permitted Phases		8		2		2	6		6
Detector Phase	4	8	8	2	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	6.0	6.0	6.0	15.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	35.0	35.0	35.0	85.0	85.0	85.0	85.0	85.0	85.0
Total Split (%)	29.2%	29.2%	29.2%	70.8%	70.8%	70.8%	70.8%	70.8%	70.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.40	0.19	0.44	0.08	0.14	0.05	0.11	0.27	0.00
Control Delay	28.6	57.4	24.8	1.1	1.1	0.2	2.6	2.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.6	57.4	24.8	1.1	1.1	0.2	2.6	2.6	0.0
Queue Length 50th (ft)	11	12	7	1	6	0	8	42	0
Queue Length 95th (ft)	53	17	52	4	12	0	14	81	m0
Internal Link Dist (ft)	491		1741		2367			498	
Turn Bay Length (ft)				375		375	200		200
Base Capacity (vph)	446	329	446	550	3099	1382	808	3099	1404
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.05	0.16	0.08	0.14	0.05	0.11	0.27	0.00

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 29 (24%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: SR 13 (Buford Hwy)/SR 13 (Atlanta Hwy) & Relocated Thunder Rd/Roy Carlson Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	13	42	7	8	26	41	377	54	47	727	2
Future Volume (vph)	0	13	42	7	8	26	41	377	54	47	727	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.90		1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1703		1805	1651		1805	3574	1583	1752	3574	1615
Flt Permitted		1.00		0.72	1.00		0.33	1.00	1.00	0.50	1.00	1.00
Satd. Flow (perm)		1703		1364	1651		635	3574	1583	931	3574	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.44	0.92	0.42	0.92	0.89	0.72	0.52	0.86	0.92
Adj. Flow (vph)	0	14	46	16	9	62	45	424	75	90	845	2
RTOR Reduction (vph)	0	44	0	0	59	0	0	0	11	0	0	0
Lane Group Flow (vph)	0	16	0	16	12	0	45	424	64	90	845	2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	2%	3%	1%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		6.3		6.3	6.3		101.7	101.7	101.7	101.7	101.7	101.7
Effective Green, g (s)		6.3		6.3	6.3		101.7	101.7	101.7	101.7	101.7	101.7
Actuated g/C Ratio		0.05		0.05	0.05		0.85	0.85	0.85	0.85	0.85	0.85
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0		3.0	3.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)		89		71	86		538	3028	1341	789	3028	1368
v/s Ratio Prot		0.01			0.01			0.12			c0.24	
v/s Ratio Perm				c0.01			0.07		0.04	0.10		0.00
v/c Ratio		0.18		0.23	0.14		0.08	0.14	0.05	0.11	0.28	0.00
Uniform Delay, d1		54.4		54.5	54.3		1.5	1.6	1.5	1.5	1.8	1.4
Progression Factor		1.00		1.00	1.00		0.43	0.60	0.36	1.23	1.23	1.00
Incremental Delay, d2		1.0		1.6	0.8		0.3	0.1	0.1	0.2	0.2	0.0
Delay (s)		55.4		56.1	55.0		0.9	1.0	0.6	2.1	2.4	1.4
Level of Service		E		E	E		A	A	A	A	A	A
Approach Delay (s)		55.4			55.2			1.0			2.4	
Approach LOS		E			E			A			A	

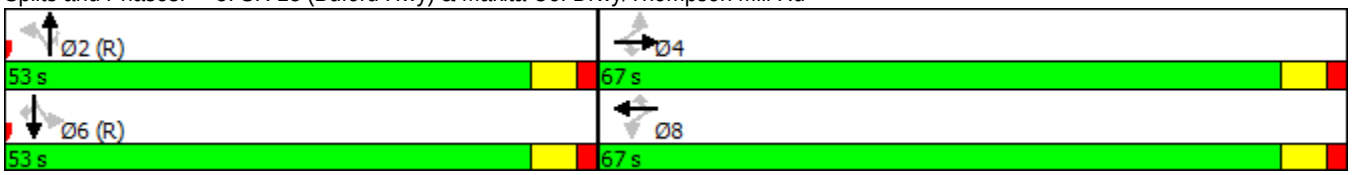
Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

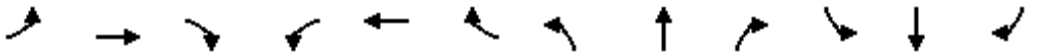
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	1	6	416	26	234	22	465	185	119	624	40
Future Volume (vph)	1	6	416	26	234	22	465	185	119	624	40
Lane Group Flow (vph)	4	12	0	485	263	38	495	201	161	693	55
Turn Type	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	4			8			2			6	
Permitted Phases		4	8		8	2		2	6		6
Detector Phase	4	4	8	8	8	2	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	15.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	67.0	67.0	67.0	67.0	67.0	53.0	53.0	53.0	53.0	53.0	53.0
Total Split (%)	55.8%	55.8%	55.8%	55.8%	55.8%	44.2%	44.2%	44.2%	44.2%	44.2%	44.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.01	0.02		0.84	0.33	0.13	0.29	0.23	0.40	0.40	0.07
Control Delay	16.0	1.8		44.6	5.7	20.3	18.4	7.1	18.6	14.8	2.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	1.8		44.6	5.7	20.3	18.4	7.1	18.6	14.8	2.9
Queue Length 50th (ft)	2	0		327	25	20	140	52	58	131	4
Queue Length 95th (ft)	2	0		262	63	34	218	109	119	224	6
Internal Link Dist (ft)	275			4179			3868			2104	
Turn Bay Length (ft)		105			250	230		230	200		185
Base Capacity (vph)	965	714		714	923	302	1730	884	400	1730	817
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.02		0.68	0.28	0.13	0.29	0.23	0.40	0.40	0.07

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 72 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 5: SR 13 (Buford Hwy) & Makita Co. Drwy/Thompson Mill Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1	6	416	26	234	22	465	185	119	624	40
Future Volume (vph)	0	1	6	416	26	234	22	465	185	119	624	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1900	1380		1816	1615	1805	3539	1599	1787	3539	1615
Flt Permitted		1.00	1.00		0.74	1.00	0.32	1.00	1.00	0.44	1.00	1.00
Satd. Flow (perm)		1900	1380		1406	1615	617	3539	1599	820	3539	1615
Peak-hour factor, PHF	0.88	0.25	0.50	0.93	0.69	0.89	0.58	0.94	0.92	0.74	0.90	0.73
Adj. Flow (vph)	0	4	12	447	38	263	38	495	201	161	693	55
RTOR Reduction (vph)	0	0	7	0	0	123	0	0	103	0	0	28
Lane Group Flow (vph)	0	4	5	0	485	140	38	495	98	161	693	27
Heavy Vehicles (%)	0%	0%	17%	0%	0%	0%	0%	2%	1%	1%	2%	0%
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		49.3	49.3		49.3	49.3	58.7	58.7	58.7	58.7	58.7	58.7
Effective Green, g (s)		49.3	49.3		49.3	49.3	58.7	58.7	58.7	58.7	58.7	58.7
Actuated g/C Ratio		0.41	0.41		0.41	0.41	0.49	0.49	0.49	0.49	0.49	0.49
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)		780	566		577	663	301	1731	782	401	1731	790
v/s Ratio Prot		0.00						0.14			0.20	
v/s Ratio Perm			0.00		c0.34	0.09	0.06		0.06	c0.20		0.02
v/c Ratio		0.01	0.01		0.84	0.21	0.13	0.29	0.13	0.40	0.40	0.03
Uniform Delay, d1		20.9	20.9		31.8	22.8	16.7	18.2	16.7	19.5	19.5	15.9
Progression Factor		1.00	1.00		1.00	1.00	0.92	0.90	2.08	0.67	0.66	0.48
Incremental Delay, d2		0.0	0.0		10.7	0.2	0.8	0.4	0.3	2.9	0.7	0.1
Delay (s)		20.9	20.9		42.5	23.0	16.1	16.8	35.0	16.0	13.6	7.6
Level of Service		C	C		D	C	B	B	D	B	B	A
Approach Delay (s)		20.9			35.6			21.8			13.6	
Approach LOS		C			D			C			B	

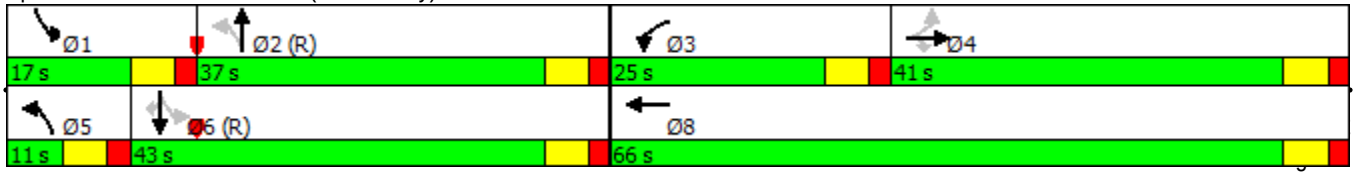
Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

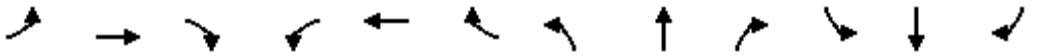
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	29	166	68	509	250	44	454	320	233	779	54
Future Volume (vph)	29	166	68	509	250	44	454	320	233	779	54
Lane Group Flow (vph)	54	263	96	553	579	59	493	432	328	838	59
Turn Type	Perm	NA	Perm	Prot	NA	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8	5	2		1	6	
Permitted Phases	4		4			2		Free	6		6
Detector Phase	4	4	4	3	8	5	2		1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	4.0	6.0	4.0	15.0		4.0	15.0	15.0
Minimum Split (s)	41.0	41.0	41.0	11.0	46.0	11.0	37.0		11.0	40.0	40.0
Total Split (s)	41.0	41.0	41.0	25.0	66.0	11.0	37.0		17.0	43.0	43.0
Total Split (%)	34.2%	34.2%	34.2%	20.8%	55.0%	9.2%	30.8%		14.2%	35.8%	35.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min		None	C-Min	C-Min
v/c Ratio	0.40	0.74	0.23	1.05	0.81	0.23	0.38	0.28	0.77	0.55	0.08
Control Delay	50.2	58.5	3.4	100.9	38.7	20.2	30.5	0.5	30.9	17.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.2	58.5	3.4	100.9	38.7	20.2	30.5	0.5	30.9	17.5	0.2
Queue Length 50th (ft)	37	195	0	~240	365	23	146	0	111	173	0
Queue Length 95th (ft)	41	173	0	#353	380	44	218	0	158	216	m0
Internal Link Dist (ft)		657			1618		1320			3868	
Turn Bay Length (ft)	180		300	250		240		1000	400		280
Base Capacity (vph)	209	554	567	528	889	252	1286	1538	426	1528	760
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	0.26	0.47	0.17	1.05	0.65	0.23	0.38	0.28	0.77	0.55	0.08

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 115
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.

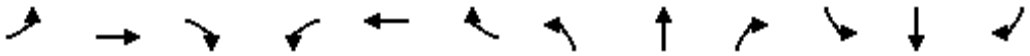
Splits and Phases: 6: SR 13 (Buford Hwy) & S. Hill St/Hamilton Mill Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	166	68	509	250	205	44	454	320	233	779	54
Future Volume (vph)	29	166	68	509	250	205	44	454	320	233	779	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	1900	1615	3335	1726		1770	3539	1538	1752	3539	1583
Flt Permitted	0.38	1.00	1.00	0.95	1.00		0.26	1.00	1.00	0.35	1.00	1.00
Satd. Flow (perm)	718	1900	1615	3335	1726		490	3539	1538	645	3539	1583
Peak-hour factor, PHF	0.54	0.63	0.71	0.92	0.81	0.76	0.75	0.92	0.74	0.71	0.93	0.91
Adj. Flow (vph)	54	263	96	553	309	270	59	493	432	328	838	59
RTOR Reduction (vph)	0	0	78	0	31	0	0	0	0	0	0	34
Lane Group Flow (vph)	54	263	18	553	548	0	59	493	432	328	838	25
Heavy Vehicles (%)	0%	0%	0%	5%	1%	4%	2%	2%	5%	3%	2%	2%
Turn Type	Perm	NA	Perm	Prot	NA		pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4				2		Free	6		6
Actuated Green, G (s)	22.4	22.4	22.4	19.0	47.4		47.6	43.6	120.0	60.6	50.6	50.6
Effective Green, g (s)	22.4	22.4	22.4	19.0	47.4		47.6	43.6	120.0	60.6	50.6	50.6
Actuated g/C Ratio	0.19	0.19	0.19	0.16	0.39		0.40	0.36	1.00	0.51	0.42	0.42
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0		3.0	5.0	5.0
Lane Grp Cap (vph)	134	354	301	528	681		237	1285	1538	427	1492	667
v/s Ratio Prot		0.14		c0.17	c0.32		0.01	0.14		c0.07	0.24	
v/s Ratio Perm	0.08		0.01				0.09		0.28	c0.32		0.02
v/c Ratio	0.40	0.74	0.06	1.05	0.80		0.25	0.38	0.28	0.77	0.56	0.04
Uniform Delay, d1	42.9	46.1	40.1	50.5	32.2		23.0	28.3	0.0	21.4	26.3	20.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.85	0.59	1.00
Incremental Delay, d2	2.0	8.2	0.1	52.1	6.8		0.6	0.9	0.5	7.3	1.4	0.1
Delay (s)	44.9	54.3	40.2	102.6	39.0		23.6	29.1	0.5	25.6	16.9	20.5
Level of Service	D	D	D	F	D		C	C	A	C	B	C
Approach Delay (s)		49.8			70.1			16.2			19.4	
Approach LOS		D			E			B			B	

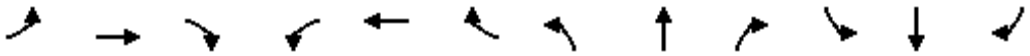
Intersection Summary			
HCM 2000 Control Delay	37.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	212	1	0	619	28	0	0	0	13	0	6
Future Volume (Veh/h)	5	212	1	0	619	28	0	0	0	13	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.42	0.83	0.25	0.92	0.94	0.68	0.92	0.92	0.92	0.60	0.92	0.75
Hourly flow rate (vph)	12	255	4	0	659	41	0	0	0	22	0	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	700			259			968	981	257	960	962	680
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	700			259			968	981	257	960	962	680
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	91	100	98
cM capacity (veh/h)	906			1317			229	248	787	236	254	455

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	271	700	0	30
Volume Left	12	0	0	22
Volume Right	4	41	0	8
cSH	906	1317	1700	270
Volume to Capacity	0.01	0.00	0.00	0.11
Queue Length 95th (ft)	1	0	0	9
Control Delay (s)	0.5	0.0	0.0	20.0
Lane LOS	A		A	C
Approach Delay (s)	0.5	0.0	0.0	20.0
Approach LOS			A	C

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	44.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	56	111	69	54	406	9	119	69	17	8	98	127
Future Volume (vph)	56	111	69	54	406	9	119	69	17	8	98	127
Peak Hour Factor	0.74	0.80	0.75	0.85	0.95	0.45	0.72	0.87	0.80	0.50	0.93	0.78
Hourly flow rate (vph)	76	139	92	64	427	20	165	79	21	16	105	163

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	307	511	265	284
Volume Left (vph)	76	64	165	16
Volume Right (vph)	92	20	21	163
Hadj (s)	-0.12	0.00	0.08	-0.33
Departure Headway (s)	7.5	7.0	8.0	7.6
Degree Utilization, x	0.64	1.00	0.59	0.60
Capacity (veh/h)	468	511	433	462
Control Delay (s)	22.9	65.5	21.8	21.1
Approach Delay (s)	22.9	65.5	21.8	21.1
Approach LOS	C	F	C	C

Intersection Summary				
Delay	38.2			
Level of Service	E			
Intersection Capacity Utilization	62.8%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection: 8: N. Bogan Rd & Thompson Mill Rd

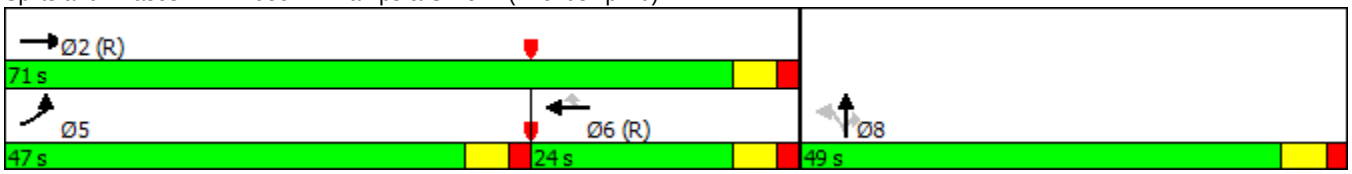
Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	50	260	68	76
Average Queue (ft)	35	155	56	60
95th Queue (ft)	48	281	67	77
Link Distance (ft)	2455	1031	846	592
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

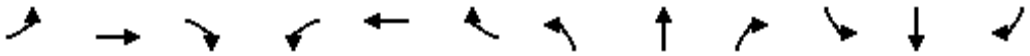
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Configurations							
Traffic Volume (vph)	472	1297	550	135	347	1	562
Future Volume (vph)	472	1297	550	135	347	1	562
Lane Group Flow (vph)	576	1457	567	173	206	211	618
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm
Protected Phases	5	2	6			8	
Permitted Phases				6	8		8
Detector Phase	5	2	6	6	8	8	8
Switch Phase							
Minimum Initial (s)	4.0	15.0	15.0	15.0	6.0	6.0	6.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	47.0	71.0	24.0	24.0	49.0	49.0	49.0
Total Split (%)	39.2%	59.2%	20.0%	20.0%	40.8%	40.8%	40.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?							
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.96	0.75	0.71	0.44	0.34	0.35	0.98
Control Delay	53.9	17.6	53.7	10.4	30.1	30.2	64.8
Queue Delay	0.0	2.7	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	20.3	53.7	10.4	30.1	30.2	64.8
Queue Length 50th (ft)	431	493	155	0	122	125	422
Queue Length 95th (ft)	#565	617	199	38	174	47	#673
Internal Link Dist (ft)		591	1139			825	
Turn Bay Length (ft)				840			510
Base Capacity (vph)	610	1955	803	395	608	610	631
Starvation Cap Reductn	0	367	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	0.94	0.92	0.71	0.44	0.34	0.35	0.98

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 73 (61%), Referenced to phase 2:EBT and 6:WBT, 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: 1: I-985 NB Ramps & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	472	1297	0	0	550	135	347	1	562	0	0	0
Future Volume (vph)	472	1297	0	0	550	135	347	1	562	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Lane Util. Factor	1.00	0.95			0.91	1.00	0.95	0.95	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1787	3610			5136	1599	1698	1704	1615			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	1787	3610			5136	1599	1698	1704	1615			
Peak-hour factor, PHF	0.82	0.89	0.92	0.92	0.97	0.78	0.84	0.25	0.91	0.92	0.92	0.92
Adj. Flow (vph)	576	1457	0	0	567	173	413	4	618	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	146	0	0	53	0	0	0
Lane Group Flow (vph)	576	1457	0	0	567	27	206	211	565	0	0	0
Heavy Vehicles (%)	1%	0%	0%	0%	1%	1%	1%	0%	0%	0%	0%	0%
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	40.2	65.0			18.8	18.8	43.0	43.0	43.0			
Effective Green, g (s)	40.2	65.0			18.8	18.8	43.0	43.0	43.0			
Actuated g/C Ratio	0.34	0.54			0.16	0.16	0.36	0.36	0.36			
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	5.0			5.0	5.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	598	1955			804	250	608	610	578			
v/s Ratio Prot	c0.32	c0.40			0.11							
v/s Ratio Perm						0.02	0.12	0.12	c0.35			
v/c Ratio	0.96	0.75			0.71	0.11	0.34	0.35	0.98			
Uniform Delay, d1	39.2	21.1			48.0	43.4	28.1	28.2	38.0			
Progression Factor	0.71	0.72			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	23.9	2.1			5.2	0.9	0.3	0.3	31.5			
Delay (s)	51.7	17.4			53.1	44.3	28.5	28.5	69.6			
Level of Service	D	B			D	D	C	C	E			
Approach Delay (s)		27.1			51.1			53.0			0.0	
Approach LOS		C			D			D			A	

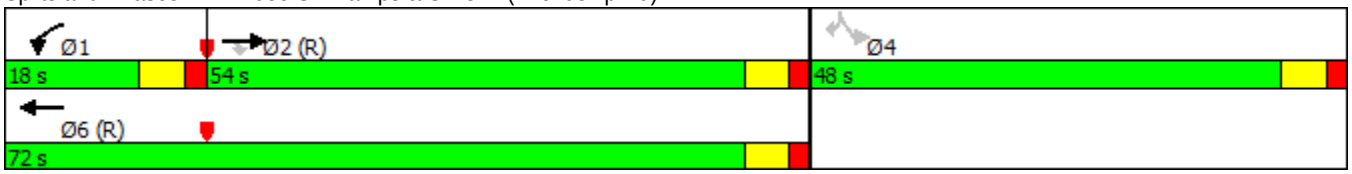
Intersection Summary			
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

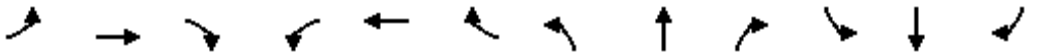
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1464	408	162	746	320	353
Future Volume (vph)	1464	408	162	746	320	353
Lane Group Flow (vph)	1541	504	198	820	421	420
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			4	4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	4.0	15.0	6.0	6.0
Minimum Split (s)	24.0	24.0	11.0	24.0	24.0	24.0
Total Split (s)	54.0	54.0	18.0	72.0	48.0	48.0
Total Split (%)	45.0%	45.0%	15.0%	60.0%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
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)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	None	C-Min	None	None
v/c Ratio	0.63	0.50	0.62	0.37	0.83	0.76
Control Delay	16.4	1.6	43.7	14.8	53.9	32.8
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0
Total Delay	16.4	1.6	43.7	14.8	53.9	32.8
Queue Length 50th (ft)	174	5	72	315	304	193
Queue Length 95th (ft)	m201	m1	91	394	310	252
Internal Link Dist (ft)	904			591		
Turn Bay Length (ft)		375	380			
Base Capacity (vph)	2463	1016	346	2207	631	653
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	57	0	0	0	5	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.50	0.57	0.37	0.67	0.64

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 6 (5%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-985 SB Ramps & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1464	408	162	746	0	0	0	0	320	0	353
Future Volume (vph)	0	1464	408	162	746	0	0	0	0	320	0	353
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Lane Util. Factor		0.91	1.00	0.97	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		5187	1583	3467	3574					1805		1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5187	1583	3467	3574					1805		1583
Peak-hour factor, PHF	0.92	0.95	0.81	0.82	0.91	0.92	0.92	0.92	0.92	0.76	0.92	0.84
Adj. Flow (vph)	0	1541	504	198	820	0	0	0	0	421	0	420
RTOR Reduction (vph)	0	0	265	0	0	0	0	0	0	0	0	110
Lane Group Flow (vph)	0	1541	239	198	820	0	0	0	0	421	0	310
Heavy Vehicles (%)	0%	0%	2%	1%	1%	0%	0%	0%	0%	0%	0%	2%
Turn Type		NA	Perm	Prot	NA					Perm		Perm
Protected Phases		2		1	6							
Permitted Phases			2							4		4
Actuated Green, G (s)		57.0	57.0	11.1	74.1					33.9		33.9
Effective Green, g (s)		57.0	57.0	11.1	74.1					33.9		33.9
Actuated g/C Ratio		0.48	0.48	0.09	0.62					0.28		0.28
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Vehicle Extension (s)		5.0	5.0	3.0	5.0					3.0		3.0
Lane Grp Cap (vph)		2463	751	320	2206					509		447
v/s Ratio Prot		c0.30		c0.06	0.23							
v/s Ratio Perm			0.15							c0.23		0.20
v/c Ratio		0.63	0.32	0.62	0.37					0.83		0.69
Uniform Delay, d1		23.5	19.5	52.4	11.4					40.3		38.4
Progression Factor		0.62	0.19	0.69	1.16					1.00		1.00
Incremental Delay, d2		0.9	0.8	3.0	0.4					10.6		4.6
Delay (s)		15.5	4.4	39.3	13.7					50.9		43.1
Level of Service		B	A	D	B					D		D
Approach Delay (s)		12.8			18.7			0.0			47.0	
Approach LOS		B			B			A			D	

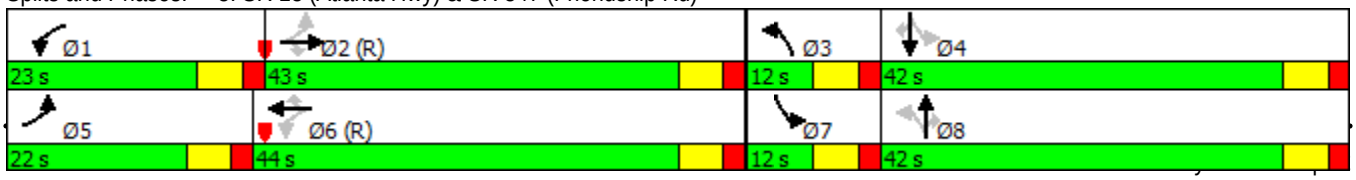
Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	871	75	301	612	237	114	356	356	173	160	103
Future Volume (vph)	193	871	75	301	612	237	114	356	356	173	160	103
Lane Group Flow (vph)	222	1075	89	338	703	279	123	445	424	184	193	110
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0	15.0	4.0	6.0	6.0	4.0	6.0	6.0
Minimum Split (s)	11.0	37.0	37.0	11.0	37.0	37.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (s)	22.0	43.0	43.0	23.0	44.0	44.0	12.0	42.0	42.0	12.0	42.0	42.0
Total Split (%)	18.3%	35.8%	35.8%	19.2%	36.7%	36.7%	10.0%	35.0%	35.0%	10.0%	35.0%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.58	0.89	0.15	1.07	0.53	0.37	0.33	0.88	0.64	1.12	0.39	0.21
Control Delay	23.1	48.4	1.7	105.7	23.1	4.1	18.9	53.3	17.1	135.2	37.4	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.1	48.4	1.7	105.7	23.1	4.1	18.9	53.3	17.1	135.2	37.4	3.7
Queue Length 50th (ft)	93	424	0	~227	282	44	58	339	188	~107	119	0
Queue Length 95th (ft)	141	451	5	#419	303	23	88	405	254	#230	168	27
Internal Link Dist (ft)		1576			3513			1183			1183	
Turn Bay Length (ft)	250		370	300		310			500	300		215
Base Capacity (vph)	426	1213	612	315	1328	753	370	558	697	165	543	574
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.89	0.15	1.07	0.53	0.37	0.33	0.80	0.61	1.12	0.36	0.19

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 68 (57%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 115
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: 3: SR 13 (Atlanta Hwy) & SR 347 (Friendship Rd)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	871	75	301	612	237	114	356	356	173	160	103
Future Volume (vph)	193	871	75	301	612	237	114	356	356	173	160	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3610	1553	1787	3610	1568	1787	1863	1599	1752	1810	1599
Flt Permitted	0.29	1.00	1.00	0.09	1.00	1.00	0.55	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	552	3610	1553	171	3610	1568	1033	1863	1599	286	1810	1599
Peak-hour factor, PHF	0.87	0.81	0.84	0.89	0.87	0.85	0.93	0.80	0.84	0.94	0.83	0.94
Adj. Flow (vph)	222	1075	89	338	703	279	123	445	424	184	193	110
RTOR Reduction (vph)	0	0	59	0	0	176	0	0	226	0	0	80
Lane Group Flow (vph)	222	1075	30	338	703	103	123	445	198	184	193	30
Heavy Vehicles (%)	0%	0%	4%	1%	0%	3%	1%	2%	1%	3%	5%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	53.5	40.3	40.3	61.1	44.1	44.1	38.7	32.7	32.7	38.7	32.7	32.7
Effective Green, g (s)	53.5	40.3	40.3	61.1	44.1	44.1	38.7	32.7	32.7	38.7	32.7	32.7
Actuated g/C Ratio	0.45	0.34	0.34	0.51	0.37	0.37	0.32	0.27	0.27	0.32	0.27	0.27
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	383	1212	521	316	1326	576	370	507	435	165	493	435
v/s Ratio Prot	0.06	0.30		c0.15	c0.19		0.02	0.24		c0.06	0.11	
v/s Ratio Perm	0.19		0.02	c0.39		0.07	0.09		0.12	c0.30		0.02
v/c Ratio	0.58	0.89	0.06	1.07	0.53	0.18	0.33	0.88	0.45	1.12	0.39	0.07
Uniform Delay, d1	21.6	37.7	27.0	37.2	29.8	25.7	29.7	41.7	36.2	38.7	35.5	32.4
Progression Factor	1.00	1.00	1.00	1.10	0.69	0.78	0.65	0.83	1.27	1.00	1.00	1.00
Incremental Delay, d2	2.1	9.8	0.2	68.2	1.4	0.6	0.5	15.2	0.7	104.3	0.5	0.1
Delay (s)	23.7	47.5	27.2	109.0	22.1	20.5	19.7	49.9	46.7	143.0	36.1	32.4
Level of Service	C	D	C	F	C	C	B	D	D	F	D	C
Approach Delay (s)		42.4			44.0			44.8			75.6	
Approach LOS		D			D			D			E	

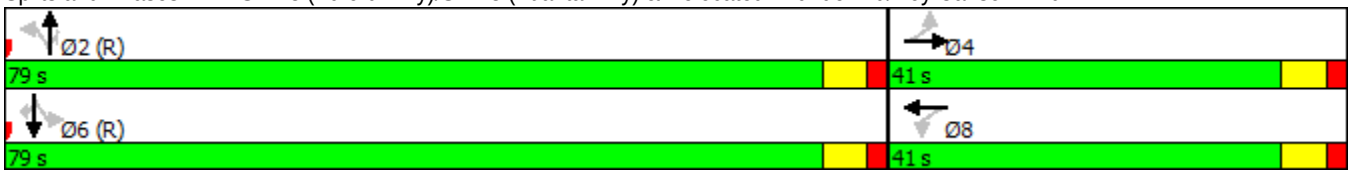
Intersection Summary			
HCM 2000 Control Delay	47.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

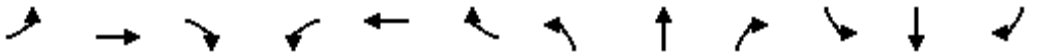
Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	12	80	14	18	778	21	15	471
Future Volume (vph)	12	80	14	18	778	21	15	471
Lane Group Flow (vph)	68	99	175	20	884	28	30	589
Turn Type	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases	4		8		2			6
Permitted Phases		8		2		2	6	
Detector Phase	4	8	8	2	2	2	6	6
Switch Phase								
Minimum Initial (s)	6.0	6.0	6.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	41.0	41.0	41.0	79.0	79.0	79.0	79.0	79.0
Total Split (%)	34.2%	34.2%	34.2%	65.8%	65.8%	65.8%	65.8%	65.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	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)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.26	0.63	0.51	0.03	0.32	0.02	0.07	0.21
Control Delay	18.0	66.9	14.3	0.8	0.9	0.0	5.8	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	66.9	14.3	0.8	0.9	0.0	5.8	5.8
Queue Length 50th (ft)	9	74	10	1	12	0	7	78
Queue Length 95th (ft)	49	112	73	m2	18	0	m8	m84
Internal Link Dist (ft)	491		1743		2367			498
Turn Bay Length (ft)				375		375	200	
Base Capacity (vph)	532	369	591	634	2747	1189	457	2747
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	0.13	0.27	0.30	0.03	0.32	0.02	0.07	0.21

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 15 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: SR 13 (Buford Hwy)/SR 13 (Atlanta Hwy) & Relocated Thunder Rd/Roy Carlson Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	51	80	14	91	18	778	21	15	471	0
Future Volume (vph)	0	12	51	80	14	91	18	778	21	15	471	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt		0.89		1.00	0.86		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1693		1687	1639		1805	3539	1524	1805	3539	
Flt Permitted		1.00		0.71	1.00		0.43	1.00	1.00	0.31	1.00	
Satd. Flow (perm)		1693		1266	1639		816	3539	1524	589	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.81	0.92	0.57	0.92	0.88	0.75	0.50	0.80	0.92
Adj. Flow (vph)	0	13	55	99	15	160	20	884	28	30	589	0
RTOR Reduction (vph)	0	48	0	0	140	0	0	0	6	0	0	0
Lane Group Flow (vph)	0	20	0	99	35	0	20	884	22	30	589	0
Heavy Vehicles (%)	0%	0%	0%	7%	0%	0%	0%	2%	6%	0%	2%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		14.8		14.8	14.8		93.2	93.2	93.2	93.2	93.2	
Effective Green, g (s)		14.8		14.8	14.8		93.2	93.2	93.2	93.2	93.2	
Actuated g/C Ratio		0.12		0.12	0.12		0.78	0.78	0.78	0.78	0.78	
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)		208		156	202		633	2748	1183	457	2748	
v/s Ratio Prot		0.01			0.02			c0.25			0.17	
v/s Ratio Perm				c0.08			0.02		0.01	0.05		
v/c Ratio		0.10		0.63	0.17		0.03	0.32	0.02	0.07	0.21	
Uniform Delay, d1		46.7		50.0	47.1		3.1	4.0	3.0	3.2	3.6	
Progression Factor		1.00		1.00	1.00		0.17	0.14	0.00	1.32	1.40	
Incremental Delay, d2		0.2		8.2	0.4		0.1	0.3	0.0	0.2	0.1	
Delay (s)		46.9		58.2	47.5		0.6	0.9	0.0	4.4	5.2	
Level of Service		D		E	D		A	A	A	A	A	
Approach Delay (s)		46.9			51.4			0.8			5.1	
Approach LOS		D			D			A			A	

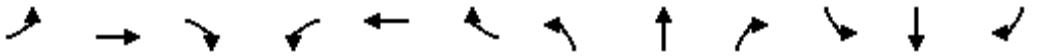
Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	23	17	21	287	7	118	6	695	384	168	490
Future Volume (vph)	23	17	21	287	7	118	6	695	384	168	490
Lane Group Flow (vph)	0	76	42	0	331	148	12	837	404	193	605
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		4			8			2			6
Permitted Phases	4		4	8		8	2		2	6	
Detector Phase	4	4	4	8	8	8	2	2	2	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	72.0	72.0	72.0	72.0	72.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio		0.20	0.09		0.88	0.26	0.03	0.39	0.35	0.57	0.28
Control Delay		31.3	8.3		63.7	5.6	6.8	6.2	0.7	18.5	6.1
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		31.3	8.3		63.7	5.6	6.8	6.2	0.7	18.5	6.1
Queue Length 50th (ft)		44	0		240	1	1	52	0	82	62
Queue Length 95th (ft)		33	4		131	31	m2	68	m4	216	74
Internal Link Dist (ft)		275			4179			3868			2104
Turn Bay Length (ft)			105			250	230		230	200	
Base Capacity (vph)		447	565		452	660	460	2172	1140	339	2130
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.17	0.07		0.73	0.22	0.03	0.39	0.35	0.57	0.28

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 60 (50%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: SR 13 (Buford Hwy) & Makita Co. Drwy/Thompson Mill Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	17	21	287	7	118	6	695	384	168	490	0
Future Volume (vph)	23	17	21	287	7	118	6	695	384	168	490	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98	1.00		0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1860	1538		1814	1615	1805	3574	1615	1805	3505	
Flt Permitted		0.67	1.00		0.68	1.00	0.40	1.00	1.00	0.29	1.00	
Satd. Flow (perm)		1278	1538		1295	1615	759	3574	1615	559	3505	
Peak-hour factor, PHF	0.69	0.40	0.50	0.91	0.44	0.80	0.50	0.83	0.95	0.87	0.81	0.73
Adj. Flow (vph)	33	42	42	315	16	148	12	837	404	193	605	0
RTOR Reduction (vph)	0	0	30	0	0	104	0	0	158	0	0	0
Lane Group Flow (vph)	0	76	12	0	331	44	12	837	246	193	605	0
Heavy Vehicles (%)	0%	0%	5%	0%	0%	0%	0%	1%	0%	0%	3%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		35.0	35.0		35.0	35.0	73.0	73.0	73.0	73.0	73.0	
Effective Green, g (s)		35.0	35.0		35.0	35.0	73.0	73.0	73.0	73.0	73.0	
Actuated g/C Ratio		0.29	0.29		0.29	0.29	0.61	0.61	0.61	0.61	0.61	
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)		372	448		377	471	461	2174	982	340	2132	
v/s Ratio Prot								0.23			0.17	
v/s Ratio Perm		0.06	0.01		c0.26	0.03	0.02		0.15	c0.35		
v/c Ratio		0.20	0.03		0.88	0.09	0.03	0.39	0.25	0.57	0.28	
Uniform Delay, d1		32.0	30.3		40.5	30.9	9.4	12.0	10.9	14.1	11.1	
Progression Factor		1.00	1.00		1.00	1.00	0.57	0.44	0.10	0.67	0.48	
Incremental Delay, d2		0.3	0.0		20.0	0.1	0.1	0.4	0.4	6.7	0.3	
Delay (s)		32.3	30.4		60.4	31.0	5.4	5.7	1.5	16.0	5.7	
Level of Service		C	C		E	C	A	A	A	B	A	
Approach Delay (s)		31.6			51.3			4.4			8.2	
Approach LOS		C			D			A			A	

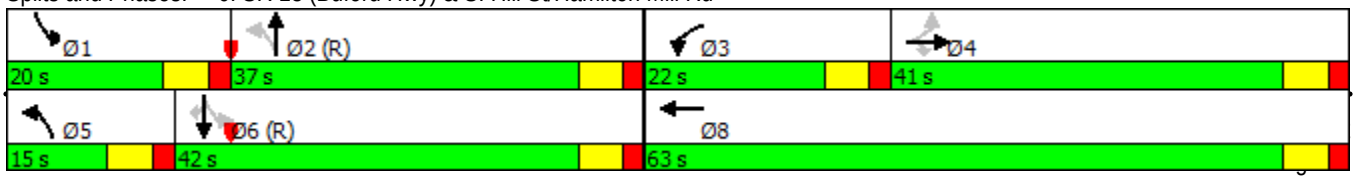
Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

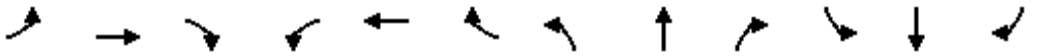
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	78	279	55	405	222	83	884	770	268	571	44
Future Volume (vph)	78	279	55	405	222	83	884	770	268	571	44
Lane Group Flow (vph)	89	291	68	460	500	122	971	837	315	680	50
Turn Type	Perm	NA	Perm	Prot	NA	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8	5	2		1	6	
Permitted Phases	4		4			2		Free	6		6
Detector Phase	4	4	4	3	8	5	2		1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	4.0	6.0	4.0	15.0		4.0	15.0	15.0
Minimum Split (s)	41.0	41.0	41.0	11.0	46.0	11.0	37.0		11.0	40.0	40.0
Total Split (s)	41.0	41.0	41.0	22.0	63.0	15.0	37.0		20.0	42.0	42.0
Total Split (%)	34.2%	34.2%	34.2%	18.3%	52.5%	12.5%	30.8%		16.7%	35.0%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min		None	C-Min	C-Min
v/c Ratio	0.50	0.77	0.16	1.04	0.72	0.35	0.78	0.53	1.11	0.48	0.07
Control Delay	51.2	58.5	0.8	102.9	34.0	20.1	40.9	1.3	109.4	26.4	0.9
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	51.2	58.5	0.8	102.9	34.0	20.1	40.9	1.3	109.4	26.4	0.9
Queue Length 50th (ft)	62	215	0	~197	295	47	350	0	~199	214	1
Queue Length 95th (ft)	105	290	0	#292	350	69	#525	0	#365	295	m7
Internal Link Dist (ft)		657			1618		1320			3868	
Turn Bay Length (ft)	180		300	250		240		1000	400		280
Base Capacity (vph)	260	554	567	444	844	357	1252	1568	284	1405	723
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	0.34	0.53	0.12	1.04	0.59	0.34	0.78	0.53	1.11	0.48	0.07

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 16 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 125
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.

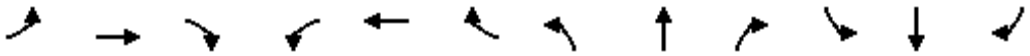
Splits and Phases: 6: SR 13 (Buford Hwy) & S. Hill St/Hamilton Mill Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	279	55	405	222	189	83	884	770	268	571	44
Future Volume (vph)	78	279	55	405	222	189	83	884	770	268	571	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	1900	1615	3335	1720		1805	3574	1568	1770	3539	1615
Flt Permitted	0.47	1.00	1.00	0.95	1.00		0.33	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	893	1900	1615	3335	1720		634	3574	1568	198	3539	1615
Peak-hour factor, PHF	0.88	0.96	0.81	0.88	0.86	0.78	0.68	0.91	0.92	0.85	0.84	0.88
Adj. Flow (vph)	89	291	68	460	258	242	122	971	837	315	680	50
RTOR Reduction (vph)	0	0	54	0	33	0	0	0	0	0	0	30
Lane Group Flow (vph)	89	291	14	460	467	0	122	971	837	315	680	20
Heavy Vehicles (%)	0%	0%	0%	5%	1%	4%	0%	1%	3%	2%	2%	0%
Turn Type	Perm	NA	Perm	Prot	NA		pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4				2		Free	6		6
Actuated Green, G (s)	23.9	23.9	23.9	16.0	45.9		50.5	42.1	120.0	61.7	47.7	47.7
Effective Green, g (s)	23.9	23.9	23.9	16.0	45.9		50.5	42.1	120.0	61.7	47.7	47.7
Actuated g/C Ratio	0.20	0.20	0.20	0.13	0.38		0.42	0.35	1.00	0.51	0.40	0.40
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0		3.0	5.0	5.0
Lane Grp Cap (vph)	177	378	321	444	657		348	1253	1568	285	1406	641
v/s Ratio Prot		0.15		c0.14	c0.27		0.02	0.27		c0.13	0.19	
v/s Ratio Perm	0.10		0.01				0.12		c0.53	c0.44		0.01
v/c Ratio	0.50	0.77	0.04	1.04	0.71		0.35	0.77	0.53	1.11	0.48	0.03
Uniform Delay, d1	42.8	45.4	38.8	52.0	31.4		21.8	34.7	0.0	32.6	27.0	22.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.76	0.89	1.00
Incremental Delay, d2	2.2	9.1	0.1	52.3	3.6		0.6	4.7	1.3	82.9	1.1	0.1
Delay (s)	45.0	54.6	38.9	104.3	35.0		22.4	39.5	1.3	107.7	25.0	22.1
Level of Service	D	D	D	F	D		C	D	A	F	C	C
Approach Delay (s)		50.3			68.2			21.8			49.8	
Approach LOS		D			E			C			D	

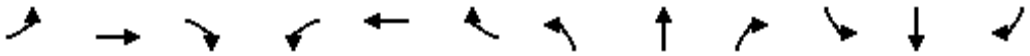
Intersection Summary			
HCM 2000 Control Delay	41.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	512	0	0	292	7	0	0	0	28	0	8
Future Volume (Veh/h)	5	512	0	0	292	7	0	0	0	28	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.31	0.80	0.25	0.92	0.96	0.58	0.92	0.92	0.92	0.61	0.92	0.67
Hourly flow rate (vph)	16	640	0	0	304	12	0	0	0	46	0	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	316			640			994	988	640	982	982	310
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	316			640			994	988	640	982	982	310
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	80	100	98
cM capacity (veh/h)	1256			954			220	246	479	228	248	735

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	656	316	0	58
Volume Left	16	0	0	46
Volume Right	0	12	0	12
cSH	1256	954	1700	266
Volume to Capacity	0.01	0.00	0.00	0.22
Queue Length 95th (ft)	1	0	0	20
Control Delay (s)	0.4	0.0	0.0	22.3
Lane LOS	A		A	C
Approach Delay (s)	0.4	0.0	0.0	22.3
Approach LOS			A	C

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	74	343	112	58	167	15	74	150	87	15	158	50
Future Volume (vph)	74	343	112	58	167	15	74	150	87	15	158	50
Peak Hour Factor	0.83	0.90	0.79	0.92	0.86	0.88	0.92	0.81	0.77	0.70	0.75	0.80
Hourly flow rate (vph)	89	381	142	63	194	17	80	185	113	21	211	63

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	612	274	378	295
Volume Left (vph)	89	63	80	21
Volume Right (vph)	142	17	113	63
Hadj (s)	-0.11	0.01	-0.13	-0.11
Departure Headway (s)	7.6	8.3	7.8	8.1
Degree Utilization, x	1.28	0.63	0.82	0.66
Capacity (veh/h)	464	408	442	420
Control Delay (s)	166.2	24.3	37.0	25.7
Approach Delay (s)	166.2	24.3	37.0	25.7
Approach LOS	F	C	E	D

Intersection Summary			
Delay	83.3		
Level of Service	F		
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

Intersection: 8: N. Bogan Rd & Thompson Mill Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	176	73	128	76
Average Queue (ft)	105	49	80	52
95th Queue (ft)	171	82	125	76
Link Distance (ft)	2455	1031	846	592
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

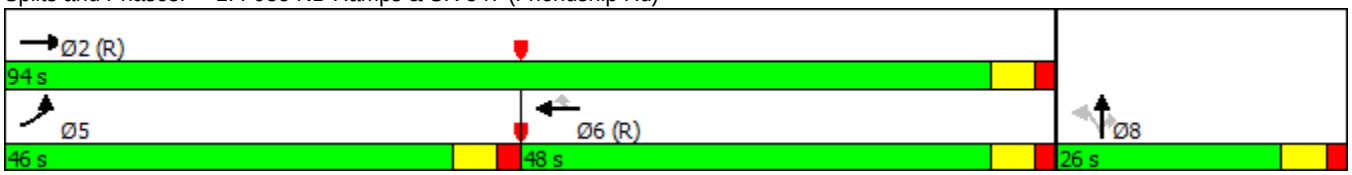
Future “No-Build” Improved Intersection Analysis

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Configurations							
Traffic Volume (vph)	373	407	1265	328	318	4	87
Future Volume (vph)	373	407	1265	328	318	4	87
Lane Group Flow (vph)	439	433	1471	426	189	189	121
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm
Protected Phases	5	2	6			8	
Permitted Phases				6	8		8
Detector Phase	5	2	6	6	8	8	8
Switch Phase							
Minimum Initial (s)	4.0	15.0	15.0	15.0	6.0	6.0	6.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	46.0	94.0	48.0	48.0	26.0	26.0	26.0
Total Split (%)	38.3%	78.3%	40.0%	40.0%	21.7%	21.7%	21.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?							
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.87	0.16	0.67	0.46	0.77	0.77	0.36
Control Delay	38.7	8.8	31.2	4.3	70.3	69.9	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.5	0.5	0.0
Total Delay	38.7	8.8	31.2	4.3	70.8	70.4	10.8
Queue Length 50th (ft)	325	149	341	0	148	148	0
Queue Length 95th (ft)	421	166	409	23	220	118	25
Internal Link Dist (ft)		591	1139			825	
Turn Bay Length (ft)				840			510
Base Capacity (vph)	595	2729	2198	923	283	284	370
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	9	9	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.16	0.67	0.46	0.69	0.69	0.33

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 86 (72%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 1: I-985 NB Ramps & SR 347 (Friendship Rd)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	373	407	0	0	1265	328	318	4	87	0	0	0
Future Volume (vph)	373	407	0	0	1265	328	318	4	87	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Lane Util. Factor	1.00	0.95			0.91	1.00	0.95	0.95	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1787	3610			5187	1599	1698	1706	1615			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	1787	3610			5187	1599	1698	1706	1615			
Peak-hour factor, PHF	0.85	0.94	0.92	0.92	0.86	0.77	0.86	0.50	0.72	0.92	0.92	0.92
Adj. Flow (vph)	439	433	0	0	1471	426	370	8	121	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	246	0	0	104	0	0	0
Lane Group Flow (vph)	439	433	0	0	1471	180	189	189	17	0	0	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	33.9	90.7			50.8	50.8	17.3	17.3	17.3			
Effective Green, g (s)	33.9	90.7			50.8	50.8	17.3	17.3	17.3			
Actuated g/C Ratio	0.28	0.76			0.42	0.42	0.14	0.14	0.14			
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	5.0			5.0	5.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	504	2728			2195	676	244	245	232			
v/s Ratio Prot	c0.25	0.12			c0.28							
v/s Ratio Perm						0.11	c0.11	0.11	0.01			
v/c Ratio	0.87	0.16			0.67	0.27	0.77	0.77	0.08			
Uniform Delay, d1	41.0	4.1			27.9	22.5	49.5	49.4	44.4			
Progression Factor	0.53	2.02			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	14.1	0.1			1.6	1.0	14.2	13.9	0.1			
Delay (s)	35.9	8.3			29.5	23.5	63.7	63.4	44.6			
Level of Service	D	A			C	C	E	E	D			
Approach Delay (s)		22.2			28.1			58.9			0.0	
Approach LOS		C			C			E			A	

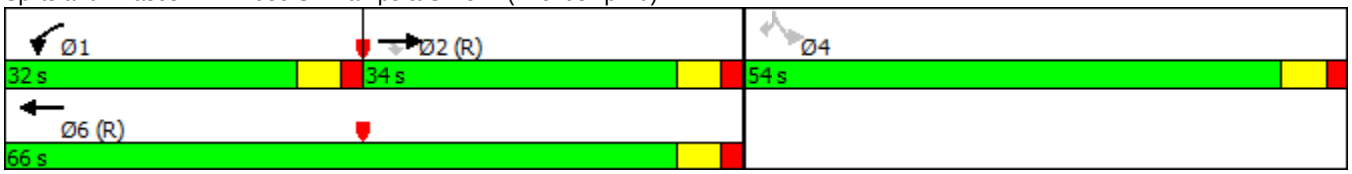
Intersection Summary			
HCM 2000 Control Delay	31.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

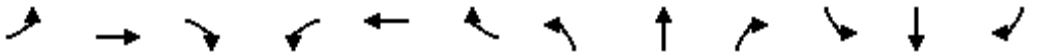
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	659	402	496	1115	118	457
Future Volume (vph)	659	402	496	1115	118	457
Lane Group Flow (vph)	766	447	570	1360	139	544
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			4	4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	4.0	15.0	6.0	6.0
Minimum Split (s)	24.0	24.0	11.0	24.0	24.0	24.0
Total Split (s)	34.0	34.0	32.0	66.0	54.0	54.0
Total Split (%)	28.3%	28.3%	26.7%	55.0%	45.0%	45.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
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)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	None	C-Min	None	None
v/c Ratio	0.48	0.56	0.83	0.69	0.22	0.90
Control Delay	27.9	4.3	40.0	11.2	27.3	50.1
Queue Delay	0.0	0.0	0.0	0.5	0.0	0.0
Total Delay	27.9	4.3	40.0	11.7	27.3	50.1
Queue Length 50th (ft)	116	25	191	438	74	338
Queue Length 95th (ft)	136	m34	206	478	108	412
Internal Link Dist (ft)	904			591		
Turn Bay Length (ft)		375	380			
Base Capacity (vph)	1583	797	751	1985	722	688
Starvation Cap Reductn	0	0	0	233	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.56	0.76	0.78	0.19	0.79

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 18 (15%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-985 SB Ramps & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	659	402	496	1115	0	0	0	0	118	0	457
Future Volume (vph)	0	659	402	496	1115	0	0	0	0	118	0	457
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Lane Util. Factor		0.91	1.00	0.97	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		5136	1583	3467	3574					1805		1599
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5136	1583	3467	3574					1805		1599
Peak-hour factor, PHF	0.92	0.86	0.90	0.87	0.82	0.92	0.92	0.92	0.92	0.85	0.92	0.84
Adj. Flow (vph)	0	766	447	570	1360	0	0	0	0	139	0	544
RTOR Reduction (vph)	0	0	309	0	0	0	0	0	0	0	0	54
Lane Group Flow (vph)	0	766	138	570	1360	0	0	0	0	139	0	490
Heavy Vehicles (%)	0%	1%	2%	1%	1%	0%	0%	0%	0%	0%	0%	1%
Turn Type		NA	Perm	Prot	NA					Perm		Perm
Protected Phases		2		1	6							
Permitted Phases			2							4		4
Actuated Green, G (s)		37.0	37.0	23.7	66.7					41.3		41.3
Effective Green, g (s)		37.0	37.0	23.7	66.7					41.3		41.3
Actuated g/C Ratio		0.31	0.31	0.20	0.56					0.34		0.34
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Vehicle Extension (s)		5.0	5.0	3.0	5.0					3.0		3.0
Lane Grp Cap (vph)		1583	488	684	1986					621		550
v/s Ratio Prot		0.15		c0.16	c0.38							
v/s Ratio Perm			0.09							0.08		c0.31
v/c Ratio		0.48	0.28	0.83	0.68					0.22		0.89
Uniform Delay, d1		33.7	31.4	46.3	19.1					28.0		37.2
Progression Factor		0.75	0.52	0.67	0.47					1.00		1.00
Incremental Delay, d2		0.9	1.2	6.7	1.5					0.2		16.5
Delay (s)		26.3	17.5	37.8	10.5					28.1		53.8
Level of Service		C	B	D	B					C		D
Approach Delay (s)		23.1			18.6			0.0			48.5	
Approach LOS		C			B			A			D	

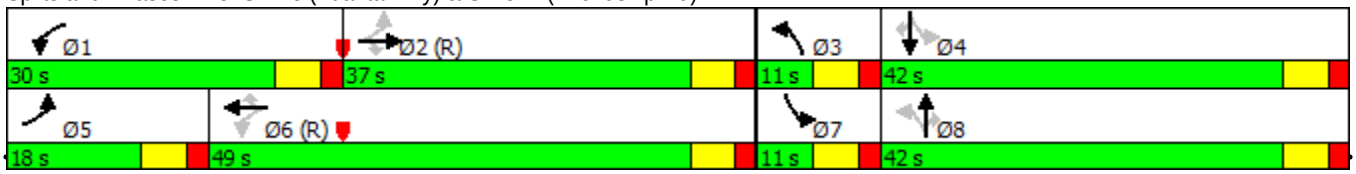
Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	599	99	409	607	78	91	138	169	244	282	129
Future Volume (vph)	142	599	99	409	607	78	91	138	169	244	282	129
Lane Group Flow (vph)	165	689	130	445	723	110	117	155	197	252	328	159
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0	15.0	4.0	6.0	6.0	4.0	6.0	6.0
Minimum Split (s)	11.0	37.0	37.0	11.0	37.0	37.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (s)	18.0	37.0	37.0	30.0	49.0	49.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (%)	15.0%	30.8%	30.8%	25.0%	40.8%	40.8%	9.2%	35.0%	35.0%	9.2%	35.0%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.42	0.56	0.20	0.86	0.44	0.14	0.66	0.38	0.40	0.81	0.79	0.32
Control Delay	18.0	35.8	1.6	39.5	13.7	0.3	42.1	33.0	8.9	58.1	58.1	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	35.8	1.6	39.5	13.7	0.3	42.1	33.0	8.9	58.1	58.1	4.1
Queue Length 50th (ft)	55	228	0	193	97	0	74	107	61	157	242	0
Queue Length 95th (ft)	101	310	0	m#405	181	m1	54	168	103	212	300	17
Internal Link Dist (ft)		1576			3513			1183			1183	
Turn Bay Length (ft)	250		370	300		310			500	300		215
Base Capacity (vph)	418	1222	662	519	1638	772	176	564	608	311	564	608
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.56	0.20	0.86	0.44	0.14	0.66	0.27	0.32	0.81	0.58	0.26

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 73 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 115
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: SR 13 (Atlanta Hwy) & SR 347 (Friendship Rd)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	599	99	409	607	78	91	138	169	244	282	129
Future Volume (vph)	142	599	99	409	607	78	91	138	169	244	282	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3610	1583	1787	3610	1538	1787	1881	1568	1752	1881	1583
Flt Permitted	0.38	1.00	1.00	0.22	1.00	1.00	0.25	1.00	1.00	0.59	1.00	1.00
Satd. Flow (perm)	709	3610	1583	418	3610	1538	463	1881	1568	1085	1881	1583
Peak-hour factor, PHF	0.86	0.87	0.76	0.92	0.84	0.71	0.78	0.89	0.86	0.97	0.86	0.81
Adj. Flow (vph)	165	689	130	445	723	110	117	155	197	252	328	159
RTOR Reduction (vph)	0	0	86	0	0	60	0	0	154	0	0	124
Lane Group Flow (vph)	165	689	44	445	723	50	117	155	43	252	328	35
Heavy Vehicles (%)	1%	0%	2%	1%	0%	5%	1%	1%	3%	3%	1%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	50.8	40.6	40.6	70.6	54.4	54.4	31.4	26.4	26.4	31.4	26.4	26.4
Effective Green, g (s)	50.8	40.6	40.6	70.6	54.4	54.4	31.4	26.4	26.4	31.4	26.4	26.4
Actuated g/C Ratio	0.42	0.34	0.34	0.59	0.45	0.45	0.26	0.22	0.22	0.26	0.22	0.22
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	391	1221	535	519	1636	697	176	413	344	311	413	348
v/s Ratio Prot	0.04	0.19		c0.17	0.20		0.03	0.08		c0.03	0.17	
v/s Ratio Perm	0.14		0.03	c0.33		0.03	0.15		0.03	c0.18		0.02
v/c Ratio	0.42	0.56	0.08	0.86	0.44	0.07	0.66	0.38	0.13	0.81	0.79	0.10
Uniform Delay, d1	22.0	32.5	27.0	19.3	22.4	18.5	38.5	39.8	37.5	41.3	44.2	37.3
Progression Factor	1.00	1.00	1.00	1.50	0.55	0.03	0.75	0.79	1.40	1.00	1.00	1.00
Incremental Delay, d2	0.7	1.9	0.3	9.5	0.6	0.1	9.1	0.6	0.2	14.7	10.1	0.1
Delay (s)	22.7	34.4	27.3	38.5	12.9	0.8	37.9	32.0	52.8	56.0	54.3	37.5
Level of Service	C	C	C	D	B	A	D	C	D	E	D	D
Approach Delay (s)		31.5			20.8			42.2			51.3	
Approach LOS		C			C			D			D	

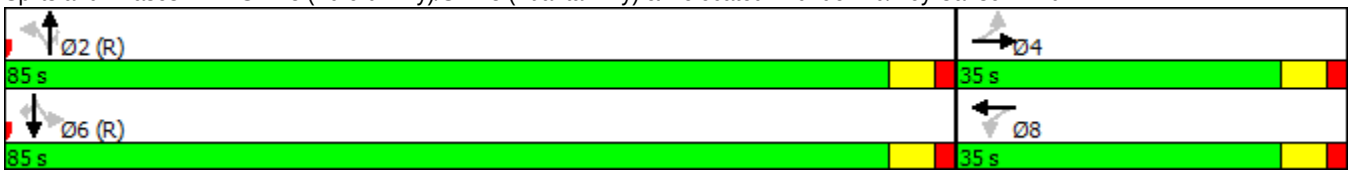
Intersection Summary			
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

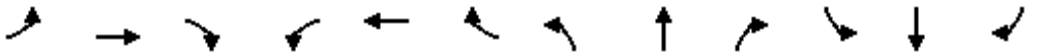
Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	13	7	8	41	377	54	47	727	2
Future Volume (vph)	13	7	8	41	377	54	47	727	2
Lane Group Flow (vph)	60	16	71	45	424	75	90	845	2
Turn Type	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	4		8		2			6	
Permitted Phases		8		2		2	6		6
Detector Phase	4	8	8	2	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	6.0	6.0	6.0	15.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	35.0	35.0	35.0	85.0	85.0	85.0	85.0	85.0	85.0
Total Split (%)	29.2%	29.2%	29.2%	70.8%	70.8%	70.8%	70.8%	70.8%	70.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.40	0.19	0.44	0.08	0.14	0.05	0.11	0.27	0.00
Control Delay	28.6	57.4	24.8	1.1	1.1	0.2	2.6	2.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.6	57.4	24.8	1.1	1.1	0.2	2.6	2.6	0.0
Queue Length 50th (ft)	11	12	7	1	6	0	8	42	0
Queue Length 95th (ft)	53	17	52	4	12	0	14	81	m0
Internal Link Dist (ft)	491		1740		2367			498	
Turn Bay Length (ft)				375		375	200		200
Base Capacity (vph)	446	329	446	550	3099	1382	808	3099	1404
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.05	0.16	0.08	0.14	0.05	0.11	0.27	0.00

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 29 (24%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: SR 13 (Buford Hwy)/SR 13 (Atlanta Hwy) & Relocated Thunder Rd/Roy Carlson Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	13	42	7	8	26	41	377	54	47	727	2
Future Volume (vph)	0	13	42	7	8	26	41	377	54	47	727	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.90		1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1703		1805	1651		1805	3574	1583	1752	3574	1615
Flt Permitted		1.00		0.72	1.00		0.33	1.00	1.00	0.50	1.00	1.00
Satd. Flow (perm)		1703		1364	1651		635	3574	1583	931	3574	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.44	0.92	0.42	0.92	0.89	0.72	0.52	0.86	0.92
Adj. Flow (vph)	0	14	46	16	9	62	45	424	75	90	845	2
RTOR Reduction (vph)	0	44	0	0	59	0	0	0	11	0	0	0
Lane Group Flow (vph)	0	16	0	16	12	0	45	424	64	90	845	2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	2%	3%	1%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		6.3		6.3	6.3		101.7	101.7	101.7	101.7	101.7	101.7
Effective Green, g (s)		6.3		6.3	6.3		101.7	101.7	101.7	101.7	101.7	101.7
Actuated g/C Ratio		0.05		0.05	0.05		0.85	0.85	0.85	0.85	0.85	0.85
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0		3.0	3.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)		89		71	86		538	3028	1341	789	3028	1368
v/s Ratio Prot		0.01			0.01			0.12			c0.24	
v/s Ratio Perm				c0.01			0.07		0.04	0.10		0.00
v/c Ratio		0.18		0.23	0.14		0.08	0.14	0.05	0.11	0.28	0.00
Uniform Delay, d1		54.4		54.5	54.3		1.5	1.6	1.5	1.5	1.8	1.4
Progression Factor		1.00		1.00	1.00		0.43	0.60	0.36	1.23	1.23	1.00
Incremental Delay, d2		1.0		1.6	0.8		0.3	0.1	0.1	0.2	0.2	0.0
Delay (s)		55.4		56.1	55.0		0.9	1.0	0.6	2.1	2.4	1.4
Level of Service		E		E	E		A	A	A	A	A	A
Approach Delay (s)		55.4			55.2			1.0			2.4	
Approach LOS		E			E			A			A	

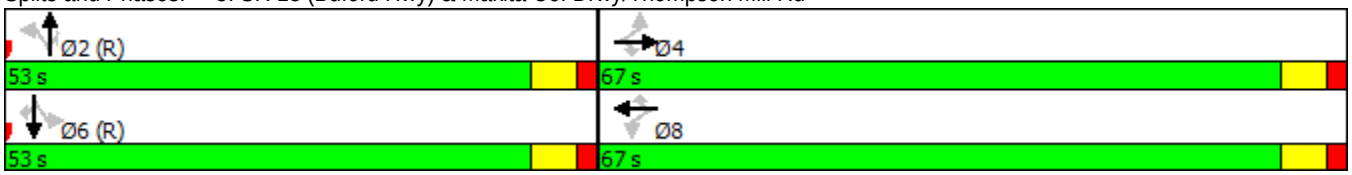
Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

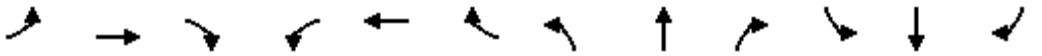
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	1	6	416	26	234	22	465	185	119	624	40
Future Volume (vph)	1	6	416	26	234	22	465	185	119	624	40
Lane Group Flow (vph)	4	12	0	485	263	38	495	201	161	693	55
Turn Type	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	4			8			2			6	
Permitted Phases		4	8		8	2		2	6		6
Detector Phase	4	4	8	8	8	2	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	15.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	67.0	67.0	67.0	67.0	67.0	53.0	53.0	53.0	53.0	53.0	53.0
Total Split (%)	55.8%	55.8%	55.8%	55.8%	55.8%	44.2%	44.2%	44.2%	44.2%	44.2%	44.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.01	0.02		0.84	0.33	0.13	0.29	0.23	0.40	0.40	0.07
Control Delay	16.0	1.8		44.6	5.7	20.3	18.4	7.1	18.6	14.8	2.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	1.8		44.6	5.7	20.3	18.4	7.1	18.6	14.8	2.9
Queue Length 50th (ft)	2	0		327	25	20	140	52	58	131	4
Queue Length 95th (ft)	2	0		262	63	34	218	109	119	224	6
Internal Link Dist (ft)	275			4179			3868			2104	
Turn Bay Length (ft)		105			250	230		230	200		185
Base Capacity (vph)	965	714		714	923	302	1730	884	400	1730	817
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.02		0.68	0.28	0.13	0.29	0.23	0.40	0.40	0.07

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 72 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 5: SR 13 (Buford Hwy) & Makita Co. Drwy/Thompson Mill Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1	6	416	26	234	22	465	185	119	624	40
Future Volume (vph)	0	1	6	416	26	234	22	465	185	119	624	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1900	1380		1816	1615	1805	3539	1599	1787	3539	1615
Flt Permitted		1.00	1.00		0.74	1.00	0.32	1.00	1.00	0.44	1.00	1.00
Satd. Flow (perm)		1900	1380		1406	1615	617	3539	1599	820	3539	1615
Peak-hour factor, PHF	0.88	0.25	0.50	0.93	0.69	0.89	0.58	0.94	0.92	0.74	0.90	0.73
Adj. Flow (vph)	0	4	12	447	38	263	38	495	201	161	693	55
RTOR Reduction (vph)	0	0	7	0	0	123	0	0	103	0	0	28
Lane Group Flow (vph)	0	4	5	0	485	140	38	495	98	161	693	27
Heavy Vehicles (%)	0%	0%	17%	0%	0%	0%	0%	2%	1%	1%	2%	0%
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		49.3	49.3		49.3	49.3	58.7	58.7	58.7	58.7	58.7	58.7
Effective Green, g (s)		49.3	49.3		49.3	49.3	58.7	58.7	58.7	58.7	58.7	58.7
Actuated g/C Ratio		0.41	0.41		0.41	0.41	0.49	0.49	0.49	0.49	0.49	0.49
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)		780	566		577	663	301	1731	782	401	1731	790
v/s Ratio Prot		0.00						0.14			0.20	
v/s Ratio Perm			0.00		c0.34	0.09	0.06		0.06	c0.20		0.02
v/c Ratio		0.01	0.01		0.84	0.21	0.13	0.29	0.13	0.40	0.40	0.03
Uniform Delay, d1		20.9	20.9		31.8	22.8	16.7	18.2	16.7	19.5	19.5	15.9
Progression Factor		1.00	1.00		1.00	1.00	0.92	0.90	2.08	0.67	0.66	0.48
Incremental Delay, d2		0.0	0.0		10.7	0.2	0.8	0.4	0.3	2.9	0.7	0.1
Delay (s)		20.9	20.9		42.5	23.0	16.1	16.8	35.0	16.0	13.6	7.6
Level of Service		C	C		D	C	B	B	D	B	B	A
Approach Delay (s)		20.9			35.6			21.8			13.6	
Approach LOS		C			D			C			B	

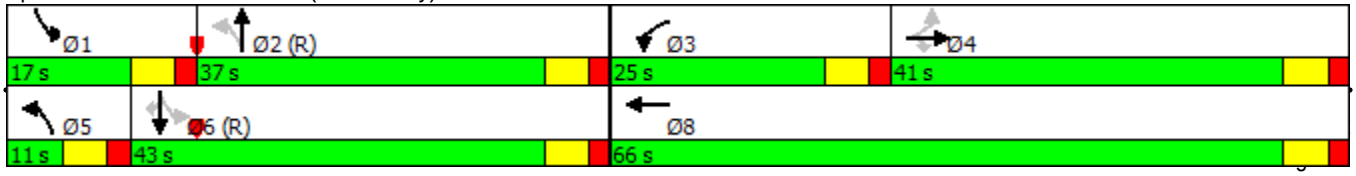
Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

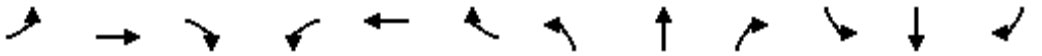
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	29	166	68	509	250	44	454	320	233	779	54
Future Volume (vph)	29	166	68	509	250	44	454	320	233	779	54
Lane Group Flow (vph)	54	263	96	553	579	59	493	432	328	838	59
Turn Type	Perm	NA	Perm	Prot	NA	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8	5	2		1	6	
Permitted Phases	4		4			2		Free	6		6
Detector Phase	4	4	4	3	8	5	2		1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	4.0	6.0	4.0	15.0		4.0	15.0	15.0
Minimum Split (s)	41.0	41.0	41.0	11.0	46.0	11.0	37.0		11.0	40.0	40.0
Total Split (s)	41.0	41.0	41.0	25.0	66.0	11.0	37.0		17.0	43.0	43.0
Total Split (%)	34.2%	34.2%	34.2%	20.8%	55.0%	9.2%	30.8%		14.2%	35.8%	35.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min		None	C-Min	C-Min
v/c Ratio	0.40	0.74	0.23	1.05	0.81	0.23	0.38	0.28	0.77	0.55	0.08
Control Delay	50.2	58.5	3.4	100.9	38.7	20.2	30.5	0.5	30.9	17.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.2	58.5	3.4	100.9	38.7	20.2	30.5	0.5	30.9	17.5	0.2
Queue Length 50th (ft)	37	195	0	~240	365	23	146	0	111	173	0
Queue Length 95th (ft)	41	173	0	#353	380	44	218	0	158	216	m0
Internal Link Dist (ft)		657			1618		1320			3868	
Turn Bay Length (ft)	180		300	250		240		1000	400		280
Base Capacity (vph)	209	554	567	528	889	252	1286	1538	426	1528	760
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	0.26	0.47	0.17	1.05	0.65	0.23	0.38	0.28	0.77	0.55	0.08

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 115
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.

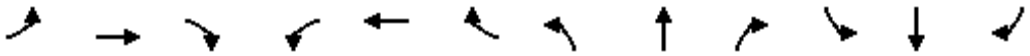
Splits and Phases: 6: SR 13 (Buford Hwy) & S. Hill St/Hamilton Mill Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	166	68	509	250	205	44	454	320	233	779	54
Future Volume (vph)	29	166	68	509	250	205	44	454	320	233	779	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	1900	1615	3335	1726		1770	3539	1538	1752	3539	1583
Flt Permitted	0.38	1.00	1.00	0.95	1.00		0.26	1.00	1.00	0.35	1.00	1.00
Satd. Flow (perm)	718	1900	1615	3335	1726		490	3539	1538	645	3539	1583
Peak-hour factor, PHF	0.54	0.63	0.71	0.92	0.81	0.76	0.75	0.92	0.74	0.71	0.93	0.91
Adj. Flow (vph)	54	263	96	553	309	270	59	493	432	328	838	59
RTOR Reduction (vph)	0	0	78	0	31	0	0	0	0	0	0	34
Lane Group Flow (vph)	54	263	18	553	548	0	59	493	432	328	838	25
Heavy Vehicles (%)	0%	0%	0%	5%	1%	4%	2%	2%	5%	3%	2%	2%
Turn Type	Perm	NA	Perm	Prot	NA		pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4				2		Free	6		6
Actuated Green, G (s)	22.4	22.4	22.4	19.0	47.4		47.6	43.6	120.0	60.6	50.6	50.6
Effective Green, g (s)	22.4	22.4	22.4	19.0	47.4		47.6	43.6	120.0	60.6	50.6	50.6
Actuated g/C Ratio	0.19	0.19	0.19	0.16	0.39		0.40	0.36	1.00	0.51	0.42	0.42
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0		3.0	5.0	5.0
Lane Grp Cap (vph)	134	354	301	528	681		237	1285	1538	427	1492	667
v/s Ratio Prot		0.14		c0.17	c0.32		0.01	0.14		c0.07	0.24	
v/s Ratio Perm	0.08		0.01				0.09		0.28	c0.32		0.02
v/c Ratio	0.40	0.74	0.06	1.05	0.80		0.25	0.38	0.28	0.77	0.56	0.04
Uniform Delay, d1	42.9	46.1	40.1	50.5	32.2		23.0	28.3	0.0	21.4	26.3	20.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.85	0.59	1.00
Incremental Delay, d2	2.0	8.2	0.1	52.1	6.8		0.6	0.9	0.5	7.3	1.4	0.1
Delay (s)	44.9	54.3	40.2	102.6	39.0		23.6	29.1	0.5	25.6	16.9	20.5
Level of Service	D	D	D	F	D		C	C	A	C	B	C
Approach Delay (s)		49.8			70.1			16.2			19.4	
Approach LOS		D			E			B			B	

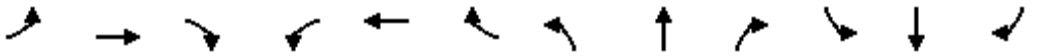
Intersection Summary			
HCM 2000 Control Delay	37.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	212	1	0	619	28	0	0	0	13	0	6
Future Volume (Veh/h)	5	212	1	0	619	28	0	0	0	13	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.42	0.83	0.25	0.92	0.94	0.68	0.92	0.92	0.92	0.60	0.92	0.75
Hourly flow rate (vph)	12	255	4	0	659	41	0	0	0	22	0	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	700			259			968	981	257	960	962	680
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	700			259			968	981	257	960	962	680
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	91	100	98
cM capacity (veh/h)	906			1317			229	248	787	236	254	455

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	271	700	0	30
Volume Left	12	0	0	22
Volume Right	4	41	0	8
cSH	906	1317	1700	270
Volume to Capacity	0.01	0.00	0.00	0.11
Queue Length 95th (ft)	1	0	0	9
Control Delay (s)	0.5	0.0	0.0	20.0
Lane LOS	A		A	C
Approach Delay (s)	0.5	0.0	0.0	20.0
Approach LOS			A	C

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	44.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	56	111	69	54	406	9	119	69	17	8	98	127
Future Volume (vph)	56	111	69	54	406	9	119	69	17	8	98	127
Peak Hour Factor	0.74	0.80	0.75	0.85	0.95	0.45	0.72	0.87	0.80	0.50	0.93	0.78
Hourly flow rate (vph)	76	139	92	64	427	20	165	79	21	16	105	163

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	215	92	511	244	21	121	163
Volume Left (vph)	76	0	64	165	0	16	0
Volume Right (vph)	0	92	20	0	21	0	163
Hadj (s)	0.08	-0.60	0.00	0.14	-0.60	0.03	-0.60
Departure Headway (s)	6.1	3.2	5.6	6.4	3.2	6.7	3.2
Degree Utilization, x	0.37	0.08	0.79	0.44	0.02	0.22	0.14
Capacity (veh/h)	530	1121	631	506	1121	471	1121
Control Delay (s)	12.7	6.5	26.0	14.3	6.3	11.6	6.7
Approach Delay (s)	10.8		26.0	13.7		8.8	
Approach LOS	B		D	B		A	

Intersection Summary				
Delay	16.6			
Level of Service	C			
Intersection Capacity Utilization	55.1%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection: 8: N. Bogan Rd & Thompson Mill Rd

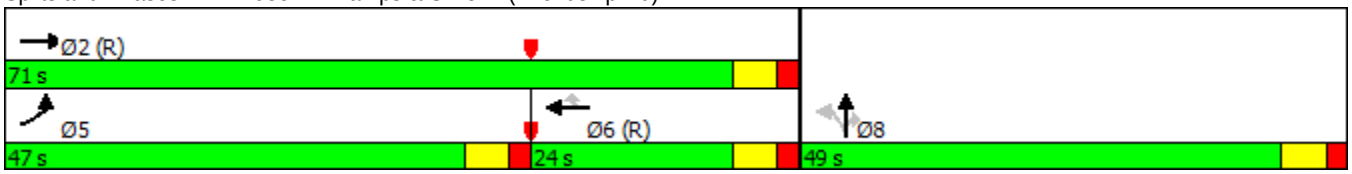
Movement	EB	WB	NB	SB	SB
Directions Served	LT	LTR	LT	LT	R
Maximum Queue (ft)	77	158	54	52	56
Average Queue (ft)	52	78	44	35	22
95th Queue (ft)	78	146	62	49	66
Link Distance (ft)	2455	1026	849	592	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					100
Storage Blk Time (%)					
Queuing Penalty (veh)					

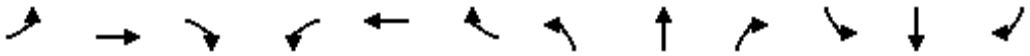
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Configurations							
Traffic Volume (vph)	472	1297	550	135	347	1	562
Future Volume (vph)	472	1297	550	135	347	1	562
Lane Group Flow (vph)	576	1457	567	173	206	211	618
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm
Protected Phases	5	2	6			8	
Permitted Phases				6	8		8
Detector Phase	5	2	6	6	8	8	8
Switch Phase							
Minimum Initial (s)	4.0	15.0	15.0	15.0	6.0	6.0	6.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	47.0	71.0	24.0	24.0	49.0	49.0	49.0
Total Split (%)	39.2%	59.2%	20.0%	20.0%	40.8%	40.8%	40.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?							
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.96	0.75	0.71	0.44	0.34	0.35	0.98
Control Delay	53.9	17.6	53.7	10.4	30.1	30.2	64.8
Queue Delay	0.0	2.7	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	20.3	53.7	10.4	30.1	30.2	64.8
Queue Length 50th (ft)	431	493	155	0	122	125	422
Queue Length 95th (ft)	#565	617	199	38	174	47	#673
Internal Link Dist (ft)		591	1139			825	
Turn Bay Length (ft)				840			510
Base Capacity (vph)	610	1955	803	395	608	610	631
Starvation Cap Reductn	0	367	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	0.94	0.92	0.71	0.44	0.34	0.35	0.98

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 73 (61%), Referenced to phase 2:EBT and 6:WBT, 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: 1: I-985 NB Ramps & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	472	1297	0	0	550	135	347	1	562	0	0	0
Future Volume (vph)	472	1297	0	0	550	135	347	1	562	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Lane Util. Factor	1.00	0.95			0.91	1.00	0.95	0.95	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1787	3610			5136	1599	1698	1704	1615			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	1787	3610			5136	1599	1698	1704	1615			
Peak-hour factor, PHF	0.82	0.89	0.92	0.92	0.97	0.78	0.84	0.25	0.91	0.92	0.92	0.92
Adj. Flow (vph)	576	1457	0	0	567	173	413	4	618	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	146	0	0	53	0	0	0
Lane Group Flow (vph)	576	1457	0	0	567	27	206	211	565	0	0	0
Heavy Vehicles (%)	1%	0%	0%	0%	1%	1%	1%	0%	0%	0%	0%	0%
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	40.2	65.0			18.8	18.8	43.0	43.0	43.0			
Effective Green, g (s)	40.2	65.0			18.8	18.8	43.0	43.0	43.0			
Actuated g/C Ratio	0.34	0.54			0.16	0.16	0.36	0.36	0.36			
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	5.0			5.0	5.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	598	1955			804	250	608	610	578			
v/s Ratio Prot	c0.32	c0.40			0.11							
v/s Ratio Perm						0.02	0.12	0.12	c0.35			
v/c Ratio	0.96	0.75			0.71	0.11	0.34	0.35	0.98			
Uniform Delay, d1	39.2	21.1			48.0	43.4	28.1	28.2	38.0			
Progression Factor	0.71	0.72			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	23.9	2.1			5.2	0.9	0.3	0.3	31.5			
Delay (s)	51.7	17.4			53.1	44.3	28.5	28.5	69.6			
Level of Service	D	B			D	D	C	C	E			
Approach Delay (s)		27.1			51.1			53.0			0.0	
Approach LOS		C			D			D			A	

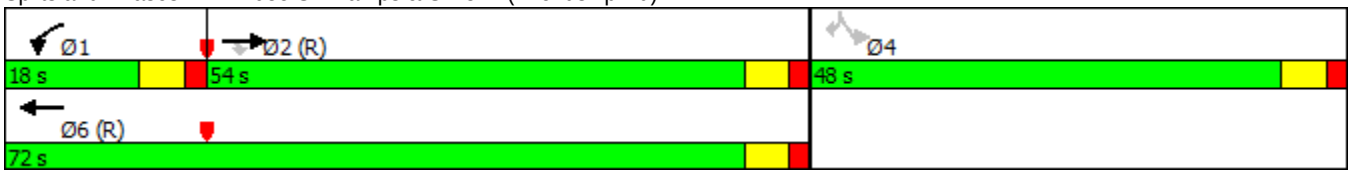
Intersection Summary			
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

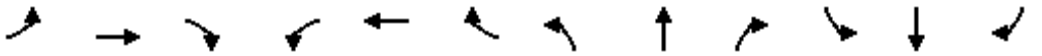
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1464	408	162	746	320	353
Future Volume (vph)	1464	408	162	746	320	353
Lane Group Flow (vph)	1541	504	198	820	421	420
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			4	4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	4.0	15.0	6.0	6.0
Minimum Split (s)	24.0	24.0	11.0	24.0	24.0	24.0
Total Split (s)	54.0	54.0	18.0	72.0	48.0	48.0
Total Split (%)	45.0%	45.0%	15.0%	60.0%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
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)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	None	C-Min	None	None
v/c Ratio	0.63	0.50	0.62	0.37	0.83	0.76
Control Delay	16.4	1.6	43.7	14.8	53.9	32.8
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0
Total Delay	16.4	1.6	43.7	14.8	53.9	32.8
Queue Length 50th (ft)	174	5	72	315	304	193
Queue Length 95th (ft)	m201	m1	91	394	310	252
Internal Link Dist (ft)	904			591		
Turn Bay Length (ft)		375	380			
Base Capacity (vph)	2463	1016	346	2207	631	653
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	57	0	0	0	5	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.50	0.57	0.37	0.67	0.64

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 6 (5%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-985 SB Ramps & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1464	408	162	746	0	0	0	0	320	0	353
Future Volume (vph)	0	1464	408	162	746	0	0	0	0	320	0	353
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Lane Util. Factor		0.91	1.00	0.97	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		5187	1583	3467	3574					1805		1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5187	1583	3467	3574					1805		1583
Peak-hour factor, PHF	0.92	0.95	0.81	0.82	0.91	0.92	0.92	0.92	0.92	0.76	0.92	0.84
Adj. Flow (vph)	0	1541	504	198	820	0	0	0	0	421	0	420
RTOR Reduction (vph)	0	0	265	0	0	0	0	0	0	0	0	110
Lane Group Flow (vph)	0	1541	239	198	820	0	0	0	0	421	0	310
Heavy Vehicles (%)	0%	0%	2%	1%	1%	0%	0%	0%	0%	0%	0%	2%
Turn Type		NA	Perm	Prot	NA					Perm		Perm
Protected Phases		2		1	6							
Permitted Phases			2							4		4
Actuated Green, G (s)		57.0	57.0	11.1	74.1					33.9		33.9
Effective Green, g (s)		57.0	57.0	11.1	74.1					33.9		33.9
Actuated g/C Ratio		0.48	0.48	0.09	0.62					0.28		0.28
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Vehicle Extension (s)		5.0	5.0	3.0	5.0					3.0		3.0
Lane Grp Cap (vph)		2463	751	320	2206					509		447
v/s Ratio Prot		c0.30		c0.06	0.23							
v/s Ratio Perm			0.15							c0.23		0.20
v/c Ratio		0.63	0.32	0.62	0.37					0.83		0.69
Uniform Delay, d1		23.5	19.5	52.4	11.4					40.3		38.4
Progression Factor		0.62	0.18	0.69	1.16					1.00		1.00
Incremental Delay, d2		0.9	0.8	3.0	0.4					10.6		4.6
Delay (s)		15.5	4.4	39.3	13.7					50.9		43.1
Level of Service		B	A	D	B					D		D
Approach Delay (s)		12.7			18.7			0.0			47.0	
Approach LOS		B			B			A			D	

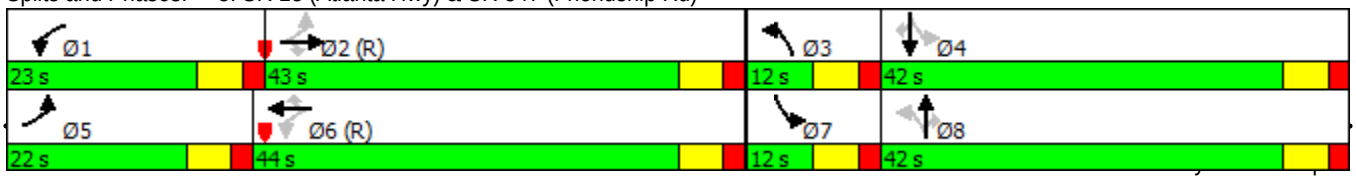
Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	871	75	301	612	237	114	356	356	173	160	103
Future Volume (vph)	193	871	75	301	612	237	114	356	356	173	160	103
Lane Group Flow (vph)	222	1075	89	338	703	279	123	445	424	184	193	110
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0	15.0	4.0	6.0	6.0	4.0	6.0	6.0
Minimum Split (s)	11.0	37.0	37.0	11.0	37.0	37.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (s)	22.0	43.0	43.0	23.0	44.0	44.0	12.0	42.0	42.0	12.0	42.0	42.0
Total Split (%)	18.3%	35.8%	35.8%	19.2%	36.7%	36.7%	10.0%	35.0%	35.0%	10.0%	35.0%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.58	0.89	0.15	1.07	0.53	0.37	0.33	0.88	0.64	1.12	0.39	0.21
Control Delay	23.1	48.4	1.7	105.7	23.1	4.1	18.9	53.3	16.6	135.2	37.4	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.1	48.4	1.7	105.7	23.1	4.1	18.9	53.3	16.6	135.2	37.4	3.7
Queue Length 50th (ft)	93	424	0	~227	282	44	58	339	184	~107	119	0
Queue Length 95th (ft)	141	451	5	#419	303	23	88	405	252	#230	168	27
Internal Link Dist (ft)		1576			3513			1183			1183	
Turn Bay Length (ft)	250		370	300		310			500	300		215
Base Capacity (vph)	426	1213	612	315	1328	753	370	558	697	165	543	574
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.89	0.15	1.07	0.53	0.37	0.33	0.80	0.61	1.12	0.36	0.19

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 68 (57%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 115
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: 3: SR 13 (Atlanta Hwy) & SR 347 (Friendship Rd)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	871	75	301	612	237	114	356	356	173	160	103
Future Volume (vph)	193	871	75	301	612	237	114	356	356	173	160	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3610	1553	1787	3610	1568	1787	1863	1599	1752	1810	1599
Flt Permitted	0.29	1.00	1.00	0.09	1.00	1.00	0.55	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	552	3610	1553	171	3610	1568	1033	1863	1599	286	1810	1599
Peak-hour factor, PHF	0.87	0.81	0.84	0.89	0.87	0.85	0.93	0.80	0.84	0.94	0.83	0.94
Adj. Flow (vph)	222	1075	89	338	703	279	123	445	424	184	193	110
RTOR Reduction (vph)	0	0	59	0	0	176	0	0	226	0	0	80
Lane Group Flow (vph)	222	1075	30	338	703	103	123	445	198	184	193	30
Heavy Vehicles (%)	0%	0%	4%	1%	0%	3%	1%	2%	1%	3%	5%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	53.5	40.3	40.3	61.1	44.1	44.1	38.7	32.7	32.7	38.7	32.7	32.7
Effective Green, g (s)	53.5	40.3	40.3	61.1	44.1	44.1	38.7	32.7	32.7	38.7	32.7	32.7
Actuated g/C Ratio	0.45	0.34	0.34	0.51	0.37	0.37	0.32	0.27	0.27	0.32	0.27	0.27
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	383	1212	521	316	1326	576	370	507	435	165	493	435
v/s Ratio Prot	0.06	0.30		c0.15	c0.19		0.02	0.24		c0.06	0.11	
v/s Ratio Perm	0.19		0.02	c0.39		0.07	0.09		0.12	c0.30		0.02
v/c Ratio	0.58	0.89	0.06	1.07	0.53	0.18	0.33	0.88	0.45	1.12	0.39	0.07
Uniform Delay, d1	21.6	37.7	27.0	37.2	29.8	25.7	29.7	41.7	36.2	38.7	35.5	32.4
Progression Factor	1.00	1.00	1.00	1.10	0.69	0.78	0.65	0.83	1.22	1.00	1.00	1.00
Incremental Delay, d2	2.1	9.8	0.2	68.2	1.4	0.6	0.5	15.2	0.7	104.3	0.5	0.1
Delay (s)	23.7	47.5	27.2	109.0	22.1	20.5	19.7	49.9	44.8	143.0	36.1	32.4
Level of Service	C	D	C	F	C	C	B	D	D	F	D	C
Approach Delay (s)		42.4			44.0			44.0			75.6	
Approach LOS		D			D			D			E	

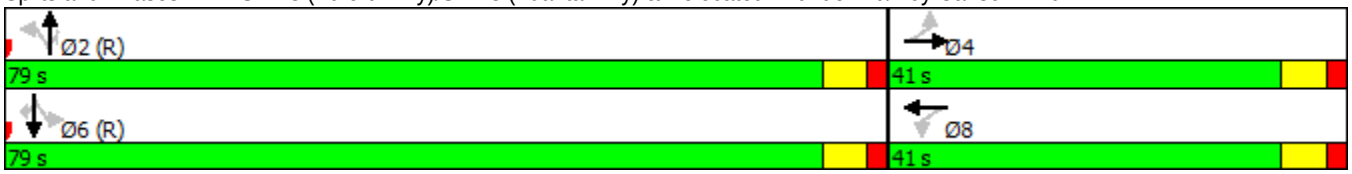
Intersection Summary			
HCM 2000 Control Delay	47.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

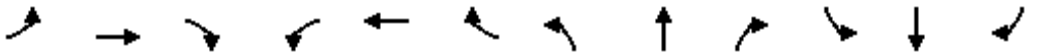
Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	12	80	14	18	778	21	15	471
Future Volume (vph)	12	80	14	18	778	21	15	471
Lane Group Flow (vph)	68	99	175	20	884	28	30	589
Turn Type	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases	4		8		2			6
Permitted Phases		8		2		2	6	
Detector Phase	4	8	8	2	2	2	6	6
Switch Phase								
Minimum Initial (s)	6.0	6.0	6.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	41.0	41.0	41.0	79.0	79.0	79.0	79.0	79.0
Total Split (%)	34.2%	34.2%	34.2%	65.8%	65.8%	65.8%	65.8%	65.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	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)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.26	0.63	0.51	0.03	0.32	0.02	0.07	0.21
Control Delay	18.0	66.9	14.3	0.8	0.9	0.0	5.8	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	66.9	14.3	0.8	0.9	0.0	5.8	5.8
Queue Length 50th (ft)	9	74	10	1	12	0	7	78
Queue Length 95th (ft)	49	112	73	m2	19	0	m8	m84
Internal Link Dist (ft)	491		1743		2367			498
Turn Bay Length (ft)				375		375	200	
Base Capacity (vph)	532	369	591	634	2747	1189	457	2747
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	0.13	0.27	0.30	0.03	0.32	0.02	0.07	0.21

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 15 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: SR 13 (Buford Hwy)/SR 13 (Atlanta Hwy) & Relocated Thunder Rd/Roy Carlson Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	51	80	14	91	18	778	21	15	471	0
Future Volume (vph)	0	12	51	80	14	91	18	778	21	15	471	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt		0.89		1.00	0.86		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1693		1687	1639		1805	3539	1524	1805	3539	
Flt Permitted		1.00		0.71	1.00		0.43	1.00	1.00	0.31	1.00	
Satd. Flow (perm)		1693		1266	1639		816	3539	1524	589	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.81	0.92	0.57	0.92	0.88	0.75	0.50	0.80	0.92
Adj. Flow (vph)	0	13	55	99	15	160	20	884	28	30	589	0
RTOR Reduction (vph)	0	48	0	0	140	0	0	0	6	0	0	0
Lane Group Flow (vph)	0	20	0	99	35	0	20	884	22	30	589	0
Heavy Vehicles (%)	0%	0%	0%	7%	0%	0%	0%	2%	6%	0%	2%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		14.8		14.8	14.8		93.2	93.2	93.2	93.2	93.2	
Effective Green, g (s)		14.8		14.8	14.8		93.2	93.2	93.2	93.2	93.2	
Actuated g/C Ratio		0.12		0.12	0.12		0.78	0.78	0.78	0.78	0.78	
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)		208		156	202		633	2748	1183	457	2748	
v/s Ratio Prot		0.01			0.02			c0.25			0.17	
v/s Ratio Perm				c0.08			0.02		0.01	0.05		
v/c Ratio		0.10		0.63	0.17		0.03	0.32	0.02	0.07	0.21	
Uniform Delay, d1		46.7		50.0	47.1		3.1	4.0	3.0	3.2	3.6	
Progression Factor		1.00		1.00	1.00		0.17	0.14	0.00	1.32	1.40	
Incremental Delay, d2		0.2		8.2	0.4		0.1	0.3	0.0	0.2	0.1	
Delay (s)		46.9		58.2	47.5		0.6	0.9	0.0	4.4	5.2	
Level of Service		D		E	D		A	A	A	A	A	
Approach Delay (s)		46.9			51.4			0.8			5.1	
Approach LOS		D			D			A			A	

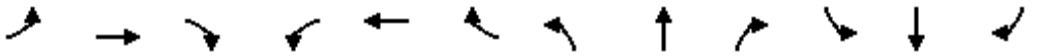
Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	23	17	21	287	7	118	6	695	384	168	490
Future Volume (vph)	23	17	21	287	7	118	6	695	384	168	490
Lane Group Flow (vph)	0	76	42	0	331	148	12	837	404	193	605
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		4			8			2			6
Permitted Phases	4		4	8		8	2		2	6	
Detector Phase	4	4	4	8	8	8	2	2	2	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	72.0	72.0	72.0	72.0	72.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio		0.20	0.09		0.88	0.26	0.03	0.39	0.35	0.57	0.28
Control Delay		31.3	8.3		63.7	5.6	6.5	6.1	0.7	19.4	6.5
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		31.3	8.3		63.7	5.6	6.5	6.1	0.7	19.4	6.5
Queue Length 50th (ft)		44	0		240	1	1	48	0	82	61
Queue Length 95th (ft)		33	4		131	31	m2	65	m4	216	73
Internal Link Dist (ft)		275			4179			3868			2104
Turn Bay Length (ft)			105			250	230		230	200	
Base Capacity (vph)		447	565		452	660	460	2172	1140	339	2130
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.17	0.07		0.73	0.22	0.03	0.39	0.35	0.57	0.28

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 62 (52%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: SR 13 (Buford Hwy) & Makita Co. Drwy/Thompson Mill Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	17	21	287	7	118	6	695	384	168	490	0
Future Volume (vph)	23	17	21	287	7	118	6	695	384	168	490	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98	1.00		0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1860	1538		1814	1615	1805	3574	1615	1805	3505	
Flt Permitted		0.67	1.00		0.68	1.00	0.40	1.00	1.00	0.29	1.00	
Satd. Flow (perm)		1278	1538		1295	1615	759	3574	1615	559	3505	
Peak-hour factor, PHF	0.69	0.40	0.50	0.91	0.44	0.80	0.50	0.83	0.95	0.87	0.81	0.73
Adj. Flow (vph)	33	42	42	315	16	148	12	837	404	193	605	0
RTOR Reduction (vph)	0	0	30	0	0	104	0	0	158	0	0	0
Lane Group Flow (vph)	0	76	12	0	331	44	12	837	246	193	605	0
Heavy Vehicles (%)	0%	0%	5%	0%	0%	0%	0%	1%	0%	0%	3%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		35.0	35.0		35.0	35.0	73.0	73.0	73.0	73.0	73.0	
Effective Green, g (s)		35.0	35.0		35.0	35.0	73.0	73.0	73.0	73.0	73.0	
Actuated g/C Ratio		0.29	0.29		0.29	0.29	0.61	0.61	0.61	0.61	0.61	
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)		372	448		377	471	461	2174	982	340	2132	
v/s Ratio Prot								0.23			0.17	
v/s Ratio Perm		0.06	0.01		c0.26	0.03	0.02		0.15	c0.35		
v/c Ratio		0.20	0.03		0.88	0.09	0.03	0.39	0.25	0.57	0.28	
Uniform Delay, d1		32.0	30.3		40.5	30.9	9.4	12.0	10.9	14.1	11.1	
Progression Factor		1.00	1.00		1.00	1.00	0.55	0.44	0.10	0.71	0.51	
Incremental Delay, d2		0.3	0.0		20.0	0.1	0.1	0.4	0.4	6.7	0.3	
Delay (s)		32.3	30.4		60.4	31.0	5.2	5.6	1.5	16.7	6.0	
Level of Service		C	C		E	C	A	A	A	B	A	
Approach Delay (s)		31.6			51.3			4.3			8.6	
Approach LOS		C			D			A			A	

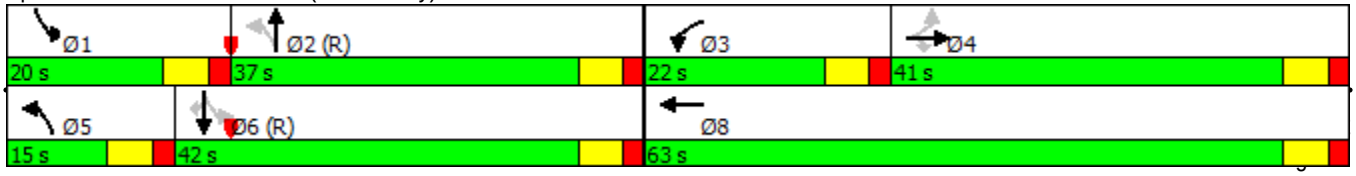
Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

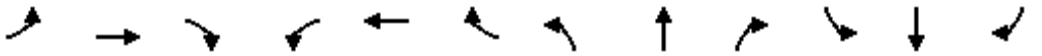
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	78	279	55	405	222	83	884	770	268	571	44
Future Volume (vph)	78	279	55	405	222	83	884	770	268	571	44
Lane Group Flow (vph)	89	291	68	460	500	122	971	837	315	680	50
Turn Type	Perm	NA	Perm	Prot	NA	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8	5	2		1	6	
Permitted Phases	4		4			2		Free	6		6
Detector Phase	4	4	4	3	8	5	2		1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	4.0	6.0	4.0	15.0		4.0	15.0	15.0
Minimum Split (s)	41.0	41.0	41.0	11.0	46.0	11.0	37.0		11.0	40.0	40.0
Total Split (s)	41.0	41.0	41.0	22.0	63.0	15.0	37.0		20.0	42.0	42.0
Total Split (%)	34.2%	34.2%	34.2%	18.3%	52.5%	12.5%	30.8%		16.7%	35.0%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min		None	C-Min	C-Min
v/c Ratio	0.50	0.77	0.16	1.04	0.72	0.35	0.78	0.53	1.11	0.48	0.07
Control Delay	51.2	58.5	0.8	102.9	34.0	20.1	40.9	1.3	110.3	25.5	0.7
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	51.2	58.5	0.8	102.9	34.0	20.1	40.9	1.3	110.3	25.5	0.7
Queue Length 50th (ft)	62	215	0	~197	295	47	350	0	~195	214	1
Queue Length 95th (ft)	105	290	0	#292	350	69	#525	0	#365	295	m5
Internal Link Dist (ft)		657			1618		1320			3868	
Turn Bay Length (ft)	180		300	250		240		1000	400		280
Base Capacity (vph)	260	554	567	444	844	357	1252	1568	284	1405	723
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	0.34	0.53	0.12	1.04	0.59	0.34	0.78	0.53	1.11	0.48	0.07

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 16 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 125
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.

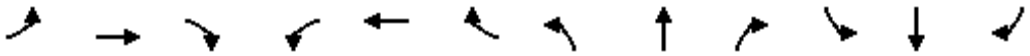
Splits and Phases: 6: SR 13 (Buford Hwy) & S. Hill St/Hamilton Mill Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	279	55	405	222	189	83	884	770	268	571	44
Future Volume (vph)	78	279	55	405	222	189	83	884	770	268	571	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	1900	1615	3335	1720		1805	3574	1568	1770	3539	1615
Flt Permitted	0.47	1.00	1.00	0.95	1.00		0.33	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	893	1900	1615	3335	1720		634	3574	1568	198	3539	1615
Peak-hour factor, PHF	0.88	0.96	0.81	0.88	0.86	0.78	0.68	0.91	0.92	0.85	0.84	0.88
Adj. Flow (vph)	89	291	68	460	258	242	122	971	837	315	680	50
RTOR Reduction (vph)	0	0	54	0	33	0	0	0	0	0	0	30
Lane Group Flow (vph)	89	291	14	460	467	0	122	971	837	315	680	20
Heavy Vehicles (%)	0%	0%	0%	5%	1%	4%	0%	1%	3%	2%	2%	0%
Turn Type	Perm	NA	Perm	Prot	NA		pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4				2		Free	6		6
Actuated Green, G (s)	23.9	23.9	23.9	16.0	45.9		50.5	42.1	120.0	61.7	47.7	47.7
Effective Green, g (s)	23.9	23.9	23.9	16.0	45.9		50.5	42.1	120.0	61.7	47.7	47.7
Actuated g/C Ratio	0.20	0.20	0.20	0.13	0.38		0.42	0.35	1.00	0.51	0.40	0.40
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0		3.0	5.0	5.0
Lane Grp Cap (vph)	177	378	321	444	657		348	1253	1568	285	1406	641
v/s Ratio Prot		0.15		c0.14	c0.27		0.02	0.27		c0.13	0.19	
v/s Ratio Perm	0.10		0.01				0.12		c0.53	c0.44		0.01
v/c Ratio	0.50	0.77	0.04	1.04	0.71		0.35	0.77	0.53	1.11	0.48	0.03
Uniform Delay, d1	42.8	45.4	38.8	52.0	31.4		21.8	34.7	0.0	32.6	27.0	22.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.81	0.86	1.00
Incremental Delay, d2	2.2	9.1	0.1	52.3	3.6		0.6	4.7	1.3	82.9	1.1	0.1
Delay (s)	45.0	54.6	38.9	104.3	35.0		22.4	39.5	1.3	109.2	24.2	22.1
Level of Service	D	D	D	F	D		C	D	A	F	C	C
Approach Delay (s)		50.3			68.2			21.8			49.8	
Approach LOS		D			E			C			D	

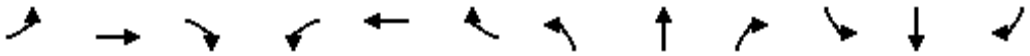
Intersection Summary			
HCM 2000 Control Delay	41.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	512	0	0	292	7	0	0	0	28	0	8
Future Volume (Veh/h)	5	512	0	0	292	7	0	0	0	28	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.31	0.80	0.25	0.92	0.96	0.58	0.92	0.92	0.92	0.61	0.92	0.67
Hourly flow rate (vph)	16	640	0	0	304	12	0	0	0	46	0	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	316			640			994	988	640	982	982	310
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	316			640			994	988	640	982	982	310
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	80	100	98
cM capacity (veh/h)	1256			954			220	246	479	228	248	735

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	656	316	0	58
Volume Left	16	0	0	46
Volume Right	0	12	0	12
cSH	1256	954	1700	266
Volume to Capacity	0.01	0.00	0.00	0.22
Queue Length 95th (ft)	1	0	0	20
Control Delay (s)	0.4	0.0	0.0	22.3
Lane LOS	A		A	C
Approach Delay (s)	0.4	0.0	0.0	22.3
Approach LOS			A	C

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	74	343	112	58	167	15	74	150	87	15	158	50
Future Volume (vph)	74	343	112	58	167	15	74	150	87	15	158	50
Peak Hour Factor	0.83	0.90	0.79	0.92	0.86	0.88	0.92	0.81	0.77	0.70	0.75	0.80
Hourly flow rate (vph)	89	381	142	63	194	17	80	185	113	21	211	63

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	470	142	274	265	113	232	63
Volume Left (vph)	89	0	63	80	0	21	0
Volume Right (vph)	0	142	17	0	113	0	63
Hadj (s)	0.04	-0.60	0.01	0.06	-0.58	0.02	-0.60
Departure Headway (s)	6.5	3.2	6.9	7.2	3.2	7.3	3.2
Degree Utilization, x	0.85	0.13	0.53	0.53	0.10	0.47	0.06
Capacity (veh/h)	534	1121	458	458	1121	448	1121
Control Delay (s)	35.5	6.7	17.4	18.0	6.6	16.5	6.4
Approach Delay (s)	28.8		17.4	14.6		14.3	
Approach LOS	D		C	B		B	

Intersection Summary				
Delay	20.6			
Level of Service	C			
Intersection Capacity Utilization	69.5%	ICU Level of Service	C	
Analysis Period (min)	15			

Intersection: 8: N. Bogan Rd & Thompson Mill Rd

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LTR	LT	LT
Maximum Queue (ft)	92	55	75	54	51
Average Queue (ft)	61	11	52	44	38
95th Queue (ft)	96	48	75	64	55
Link Distance (ft)	2455		1026	849	592
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		100			
Storage Blk Time (%)	0				
Queuing Penalty (veh)	0				

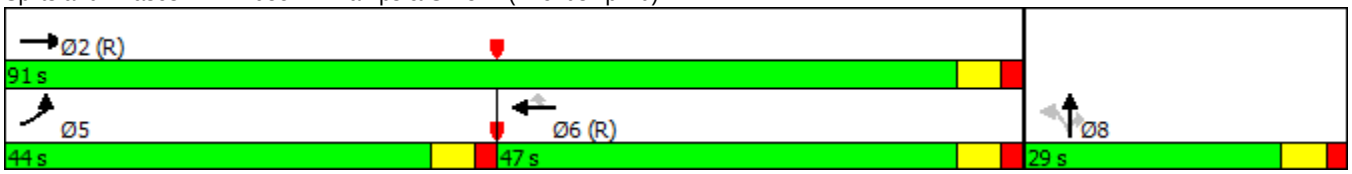
Future “Build” Intersection Analysis

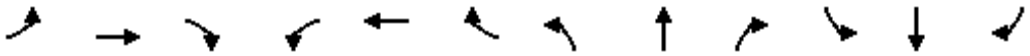
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Configurations							
Traffic Volume (vph)	398	416	1296	328	392	4	87
Future Volume (vph)	398	416	1296	328	392	4	87
Lane Group Flow (vph)	468	443	1507	426	233	231	121
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm
Protected Phases	5	2	6			8	
Permitted Phases				6	8		8
Detector Phase	5	2	6	6	8	8	8
Switch Phase							
Minimum Initial (s)	4.0	15.0	15.0	15.0	6.0	6.0	6.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	44.0	91.0	47.0	47.0	29.0	29.0	29.0
Total Split (%)	36.7%	75.8%	39.2%	39.2%	24.2%	24.2%	24.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?							
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.91	0.17	0.76	0.49	0.84	0.82	0.32
Control Delay	42.7	11.8	36.4	4.7	72.3	70.6	9.6
Queue Delay	0.0	0.0	0.0	0.0	2.9	2.7	0.0
Total Delay	42.7	11.8	36.4	4.7	75.2	73.4	9.6
Queue Length 50th (ft)	385	154	392	0	181	178	0
Queue Length 95th (ft)	#471	213	430	24	#277	137	24
Internal Link Dist (ft)		591	1139			825	
Turn Bay Length (ft)				840			510
Base Capacity (vph)	560	2598	1978	877	310	312	407
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	18	0	26	27	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.17	0.77	0.49	0.82	0.81	0.30

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 87 (73%), Referenced to phase 2:EBT and 6:WBT, 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: 1: I-985 NB Ramps & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	398	416	0	0	1296	328	392	4	87	0	0	0
Future Volume (vph)	398	416	0	0	1296	328	392	4	87	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Lane Util. Factor	1.00	0.95			0.91	1.00	0.95	0.95	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1770	3574			5136	1599	1618	1628	1615			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	1770	3574			5136	1599	1618	1628	1615			
Peak-hour factor, PHF	0.85	0.94	0.92	0.92	0.86	0.77	0.86	0.50	0.72	0.92	0.92	0.92
Adj. Flow (vph)	468	443	0	0	1507	426	456	8	121	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	262	0	0	100	0	0	0
Lane Group Flow (vph)	468	443	0	0	1507	164	233	231	21	0	0	0
Heavy Vehicles (%)	2%	1%	0%	0%	1%	1%	6%	0%	0%	0%	0%	0%
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	35.0	87.2			46.2	46.2	20.8	20.8	20.8			
Effective Green, g (s)	35.0	87.2			46.2	46.2	20.8	20.8	20.8			
Actuated g/C Ratio	0.29	0.73			0.39	0.39	0.17	0.17	0.17			
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	5.0			5.0	5.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	516	2597			1977	615	280	282	279			
v/s Ratio Prot	c0.26	0.12			c0.29							
v/s Ratio Perm						0.10	c0.14	0.14	0.01			
v/c Ratio	0.91	0.17			0.76	0.27	0.83	0.82	0.08			
Uniform Delay, d1	40.9	5.1			32.1	25.3	47.9	47.8	41.5			
Progression Factor	0.56	2.18			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	16.9	0.1			2.8	1.1	18.6	16.7	0.1			
Delay (s)	39.7	11.3			35.0	26.4	66.5	64.5	41.7			
Level of Service	D	B			C	C	E	E	D			
Approach Delay (s)		25.9			33.1			60.6			0.0	
Approach LOS		C			C			E			A	

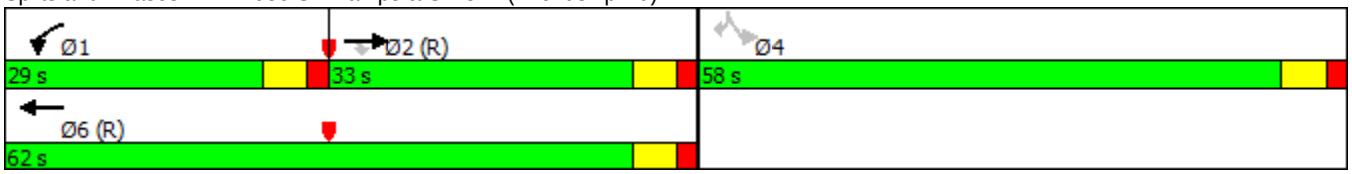
Intersection Summary			
HCM 2000 Control Delay	35.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

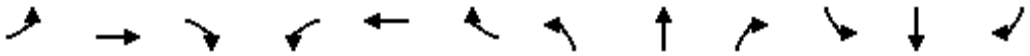
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	693	422	496	1221	118	548
Future Volume (vph)	693	422	496	1221	118	548
Lane Group Flow (vph)	806	469	570	1489	139	652
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			4	4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	4.0	15.0	6.0	6.0
Minimum Split (s)	24.0	24.0	11.0	24.0	24.0	24.0
Total Split (s)	33.0	33.0	29.0	62.0	58.0	58.0
Total Split (%)	27.5%	27.5%	24.2%	51.7%	48.3%	48.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
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)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	None	C-Min	None	None
v/c Ratio	0.63	0.63	0.88	0.87	0.19	0.95
Control Delay	39.8	9.7	47.3	17.8	22.4	54.6
Queue Delay	0.0	0.0	0.0	1.6	0.0	0.0
Total Delay	39.8	9.7	47.3	19.4	22.4	54.6
Queue Length 50th (ft)	126	20	162	508	65	420
Queue Length 95th (ft)	198	135	#258	541	101	#582
Internal Link Dist (ft)	904			591		
Turn Bay Length (ft)		375	380			
Base Capacity (vph)	1270	743	664	1703	782	712
Starvation Cap Reductn	0	0	0	93	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.63	0.86	0.92	0.18	0.92

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 15 (13%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: I-985 SB Ramps & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	693	422	496	1221	0	0	0	0	118	0	548
Future Volume (vph)	0	693	422	496	1221	0	0	0	0	118	0	548
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Lane Util. Factor		0.91	1.00	0.97	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		5085	1568	3467	3505					1805		1538
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5085	1568	3467	3505					1805		1538
Peak-hour factor, PHF	0.92	0.86	0.90	0.87	0.82	0.92	0.92	0.92	0.92	0.85	0.92	0.84
Adj. Flow (vph)	0	806	469	570	1489	0	0	0	0	139	0	652
RTOR Reduction (vph)	0	0	352	0	0	0	0	0	0	0	0	48
Lane Group Flow (vph)	0	806	117	570	1489	0	0	0	0	139	0	604
Heavy Vehicles (%)	0%	2%	3%	1%	3%	0%	0%	0%	0%	0%	0%	5%
Turn Type		NA	Perm	Prot	NA					Perm		Perm
Protected Phases		2		1	6							
Permitted Phases			2							4		4
Actuated Green, G (s)		30.0	30.0	22.3	58.3					49.7		49.7
Effective Green, g (s)		30.0	30.0	22.3	58.3					49.7		49.7
Actuated g/C Ratio		0.25	0.25	0.19	0.49					0.41		0.41
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Vehicle Extension (s)		5.0	5.0	3.0	5.0					3.0		3.0
Lane Grp Cap (vph)		1271	392	644	1702					747		636
v/s Ratio Prot		0.16		0.16	c0.42							
v/s Ratio Perm			0.07							0.08		c0.39
v/c Ratio		0.63	0.30	0.89	0.87					0.19		0.95
Uniform Delay, d1		40.1	36.5	47.6	27.6					22.3		33.9
Progression Factor		0.92	1.71	0.74	0.44					1.00		1.00
Incremental Delay, d2		2.0	1.6	9.9	4.6					0.1		23.6
Delay (s)		38.8	64.1	45.0	16.8					22.4		57.6
Level of Service		D	E	D	B					C		E
Approach Delay (s)		48.1			24.6			0.0			51.4	
Approach LOS		D			C			A			D	

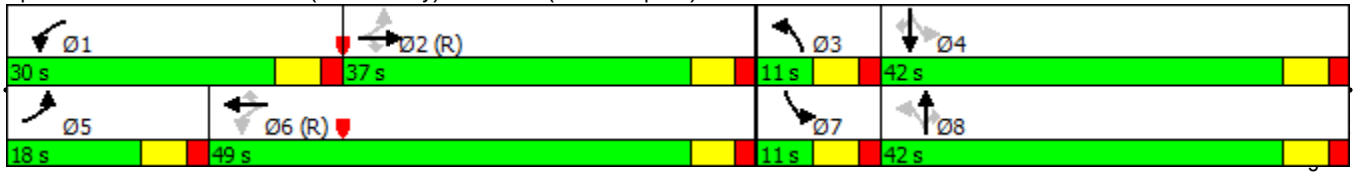
Intersection Summary			
HCM 2000 Control Delay	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	599	113	607	607	78	95	153	222	244	333	129
Future Volume (vph)	142	599	113	607	607	78	95	153	222	244	333	129
Lane Group Flow (vph)	165	689	149	660	723	110	122	172	258	252	387	159
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0	15.0	4.0	6.0	6.0	4.0	6.0	6.0
Minimum Split (s)	11.0	37.0	37.0	11.0	37.0	37.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (s)	18.0	37.0	37.0	30.0	49.0	49.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (%)	15.0%	30.8%	30.8%	25.0%	40.8%	40.8%	9.2%	35.0%	35.0%	9.2%	35.0%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.44	0.61	0.24	1.44	0.47	0.15	0.73	0.37	0.46	0.76	0.85	0.30
Control Delay	19.9	39.2	2.9	232.4	15.8	0.4	47.9	30.2	12.2	50.0	59.9	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	39.2	2.9	232.4	15.8	0.4	47.9	30.2	12.2	50.0	59.9	3.8
Queue Length 50th (ft)	60	241	0	~586	128	0	80	124	102	148	284	0
Queue Length 95th (ft)	103	314	3	m#754	m202	m2	46	193	181	208	357	17
Internal Link Dist (ft)		1576			3513			1183			1183	
Turn Bay Length (ft)	250		370	300		310			500	300		215
Base Capacity (vph)	398	1121	623	458	1533	731	166	558	629	333	553	608
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.61	0.24	1.44	0.47	0.15	0.73	0.31	0.41	0.76	0.70	0.26

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 78 (65%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 145
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: 3: SR 13 (Atlanta Hwy) & SR 347 (Friendship Rd)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	599	113	607	607	78	95	153	222	244	333	129
Future Volume (vph)	142	599	113	607	607	78	95	153	222	244	333	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3610	1583	1656	3610	1538	1787	1863	1495	1752	1845	1583
Flt Permitted	0.38	1.00	1.00	0.20	1.00	1.00	0.20	1.00	1.00	0.57	1.00	1.00
Satd. Flow (perm)	709	3610	1583	352	3610	1538	370	1863	1495	1054	1845	1583
Peak-hour factor, PHF	0.86	0.87	0.76	0.92	0.84	0.71	0.78	0.89	0.86	0.97	0.86	0.81
Adj. Flow (vph)	165	689	149	660	723	110	122	172	258	252	387	159
RTOR Reduction (vph)	0	0	103	0	0	63	0	0	194	0	0	120
Lane Group Flow (vph)	165	689	46	660	723	47	122	172	64	252	387	39
Heavy Vehicles (%)	1%	0%	2%	9%	0%	5%	1%	2%	8%	3%	3%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	47.6	37.3	37.3	67.3	51.0	51.0	34.7	29.7	29.7	34.7	29.7	29.7
Effective Green, g (s)	47.6	37.3	37.3	67.3	51.0	51.0	34.7	29.7	29.7	34.7	29.7	29.7
Actuated g/C Ratio	0.40	0.31	0.31	0.56	0.42	0.42	0.29	0.25	0.25	0.29	0.25	0.25
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	373	1122	492	458	1534	653	166	461	370	333	456	391
v/s Ratio Prot	0.04	0.19		c0.29	0.20		0.03	0.09		c0.03	c0.21	
v/s Ratio Perm	0.14		0.03	c0.52		0.03	0.18		0.04	0.19		0.02
v/c Ratio	0.44	0.61	0.09	1.44	0.47	0.07	0.73	0.37	0.17	0.76	0.85	0.10
Uniform Delay, d1	24.1	35.2	29.4	26.9	24.8	20.5	37.3	37.4	35.5	38.8	43.0	34.8
Progression Factor	1.00	1.00	1.00	1.31	0.58	0.08	0.74	0.77	2.40	1.00	1.00	1.00
Incremental Delay, d2	0.8	2.5	0.4	203.9	0.5	0.1	15.3	0.5	0.2	9.4	13.7	0.1
Delay (s)	24.9	37.7	29.7	239.3	14.8	1.8	42.9	29.2	85.4	48.3	56.7	35.0
Level of Service	C	D	C	F	B	A	D	C	F	D	E	C
Approach Delay (s)		34.4			113.1			58.5			49.7	
Approach LOS		C			F			E			D	

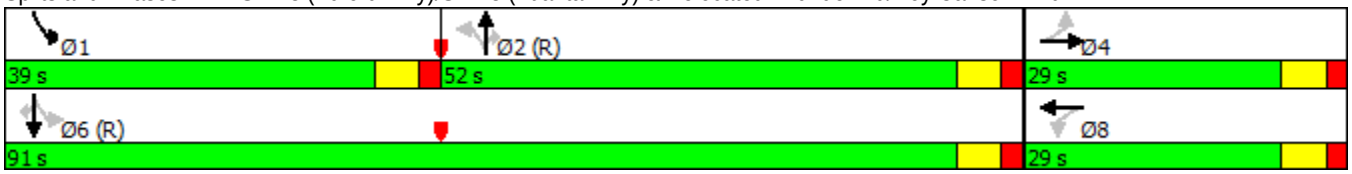
Intersection Summary			
HCM 2000 Control Delay	71.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	13	75	8	41	377	295	310	727	2
Future Volume (vph)	13	75	8	41	377	295	310	727	2
Lane Group Flow (vph)	60	82	116	45	424	321	337	845	2
Turn Type	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8		2		1	6	
Permitted Phases		8		2		2	6		6
Detector Phase	4	8	8	2	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	6.0	6.0	6.0	15.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	29.0	29.0	29.0	52.0	52.0	52.0	39.0	91.0	91.0
Total Split (%)	24.2%	24.2%	24.2%	43.3%	43.3%	43.3%	32.5%	75.8%	75.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag				Lag	Lag	Lag	Lead		
Lead-Lag Optimize?									
Recall Mode	None	None	None	C-Min	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.26	0.59	0.45	0.13	0.21	0.34	0.47	0.30	0.00
Control Delay	20.6	67.1	16.3	9.6	7.8	4.0	2.4	1.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.6	67.1	16.3	9.6	7.8	4.0	2.4	1.2	0.0
Queue Length 50th (ft)	10	61	6	5	32	2	11	13	0
Queue Length 95th (ft)	49	110	60	51	155	182	m28	m32	m0
Internal Link Dist (ft)	491		1743		2367			498	
Turn Bay Length (ft)				375		375	200		200
Base Capacity (vph)	363	242	366	353	1988	951	782	2823	1281
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.34	0.32	0.13	0.21	0.34	0.43	0.30	0.00

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 30 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: SR 13 (Buford Hwy)/SR 13 (Atlanta Hwy) & Relocated Thunder Rd/Roy Carlson Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	13	42	75	8	98	41	377	295	310	727	2
Future Volume (vph)	0	13	42	75	8	98	41	377	295	310	727	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.90		1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1703		1671	1462		1805	3574	1455	1504	3574	1615
Flt Permitted		1.00		0.72	1.00		0.33	1.00	1.00	0.45	1.00	1.00
Satd. Flow (perm)		1703		1263	1462		635	3574	1455	716	3574	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.92	0.92	0.86	0.92
Adj. Flow (vph)	0	14	46	82	9	107	45	424	321	337	845	2
RTOR Reduction (vph)	0	41	0	0	95	0	0	0	143	0	0	0
Lane Group Flow (vph)	0	19	0	82	21	0	45	424	178	337	845	2
Heavy Vehicles (%)	0%	0%	0%	8%	0%	13%	0%	1%	11%	20%	1%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		13.2		13.2	13.2		66.7	66.7	66.7	94.8	94.8	94.8
Effective Green, g (s)		13.2		13.2	13.2		66.7	66.7	66.7	94.8	94.8	94.8
Actuated g/C Ratio		0.11		0.11	0.11		0.56	0.56	0.56	0.79	0.79	0.79
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0		3.0	3.0		5.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)		187		138	160		352	1986	808	710	2823	1275
v/s Ratio Prot		0.01			0.01			0.12		c0.09	0.24	
v/s Ratio Perm				c0.06			0.07		0.12	c0.29		0.00
v/c Ratio		0.10		0.59	0.13		0.13	0.21	0.22	0.47	0.30	0.00
Uniform Delay, d1		48.1		50.8	48.2		12.7	13.4	13.5	3.8	3.5	2.6
Progression Factor		1.00		1.00	1.00		0.51	0.49	1.39	0.56	0.30	1.00
Incremental Delay, d2		0.2		6.7	0.4		0.7	0.2	0.6	0.0	0.0	0.0
Delay (s)		48.3		57.6	48.6		7.2	6.8	19.3	2.2	1.1	2.6
Level of Service		D		E	D		A	A	B	A	A	A
Approach Delay (s)		48.3			52.3			11.9			1.4	
Approach LOS		D			D			B			A	

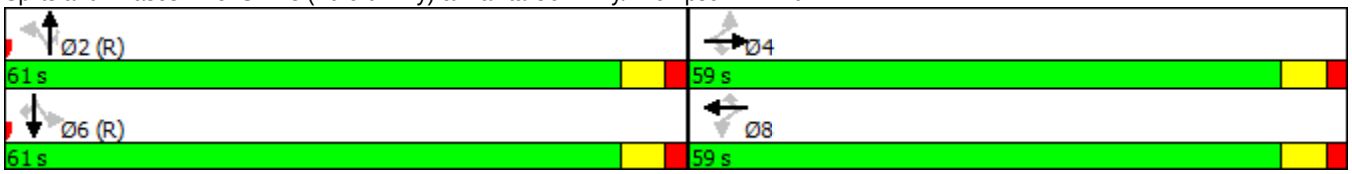
Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	1	6	416	26	236	22	691	185	120	687	40
Future Volume (vph)	1	6	416	26	236	22	691	185	120	687	40
Lane Group Flow (vph)	4	12	0	485	265	38	735	201	162	763	55
Turn Type	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	4			8			2			6	
Permitted Phases		4	8		8	2		2	6		6
Detector Phase	4	4	8	8	8	2	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	15.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	59.0	59.0	59.0	59.0	59.0	61.0	61.0	61.0	61.0	61.0	61.0
Total Split (%)	49.2%	49.2%	49.2%	49.2%	49.2%	50.8%	50.8%	50.8%	50.8%	50.8%	50.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.01	0.02		0.89	0.38	0.13	0.42	0.22	0.54	0.42	0.06
Control Delay	19.0	2.5		53.4	13.2	13.1	14.3	1.0	22.6	13.6	2.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	2.5		53.4	13.2	13.1	14.3	1.0	22.6	13.6	2.4
Queue Length 50th (ft)	2	0		336	66	8	184	3	73	176	5
Queue Length 95th (ft)	3	0		300	122	m13	107	m8	94	215	11
Internal Link Dist (ft)	275			4179			3868			2104	
Turn Bay Length (ft)		105			250	230		230	200		185
Base Capacity (vph)	839	624		620	786	291	1745	917	300	1796	854
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.02		0.78	0.34	0.13	0.42	0.22	0.54	0.42	0.06

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 64 (53%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: SR 13 (Buford Hwy) & Makita Co. Drwy/Thompson Mill Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1	6	416	26	236	22	691	185	120	687	40
Future Volume (vph)	0	1	6	416	26	236	22	691	185	120	687	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1900	1380		1816	1615	1805	3406	1599	1787	3505	1615
Flt Permitted		1.00	1.00		0.74	1.00	0.30	1.00	1.00	0.31	1.00	1.00
Satd. Flow (perm)		1900	1380		1406	1615	568	3406	1599	587	3505	1615
Peak-hour factor, PHF	0.54	0.25	0.50	0.93	0.69	0.89	0.58	0.94	0.92	0.74	0.90	0.73
Adj. Flow (vph)	0	4	12	447	38	265	38	735	201	162	763	55
RTOR Reduction (vph)	0	0	7	0	0	80	0	0	98	0	0	27
Lane Group Flow (vph)	0	4	5	0	485	185	38	735	103	162	763	28
Heavy Vehicles (%)	0%	0%	17%	0%	0%	0%	0%	6%	1%	1%	3%	0%
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		46.5	46.5		46.5	46.5	61.5	61.5	61.5	61.5	61.5	61.5
Effective Green, g (s)		46.5	46.5		46.5	46.5	61.5	61.5	61.5	61.5	61.5	61.5
Actuated g/C Ratio		0.39	0.39		0.39	0.39	0.51	0.51	0.51	0.51	0.51	0.51
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)		736	534		544	625	291	1745	819	300	1796	827
v/s Ratio Prot		0.00						0.22			0.22	
v/s Ratio Perm			0.00		c0.34	0.11	0.07		0.06	c0.28		0.02
v/c Ratio		0.01	0.01		0.89	0.30	0.13	0.42	0.13	0.54	0.42	0.03
Uniform Delay, d1		22.6	22.6		34.4	25.4	15.3	18.2	15.2	19.7	18.2	14.5
Progression Factor		1.00	1.00		1.00	1.00	0.67	0.70	0.22	0.68	0.66	0.47
Incremental Delay, d2		0.0	0.0		16.7	0.3	0.7	0.6	0.3	6.6	0.7	0.1
Delay (s)		22.6	22.6		51.1	25.7	10.9	13.4	3.5	20.0	12.7	6.8
Level of Service		C	C		D	C	B	B	A	C	B	A
Approach Delay (s)		22.6			42.1			11.3			13.6	
Approach LOS		C			D			B			B	

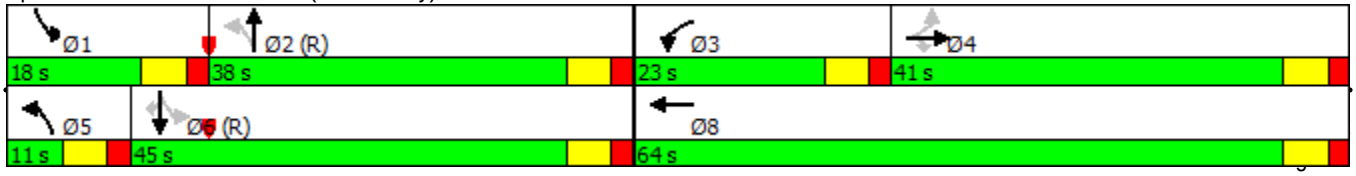
Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

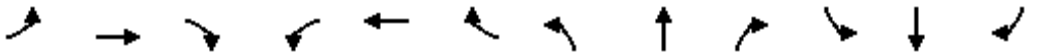
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	38	166	68	509	250	44	645	320	241	831	57
Future Volume (vph)	38	166	68	509	250	44	645	320	241	831	57
Lane Group Flow (vph)	70	263	96	553	613	59	701	432	339	894	63
Turn Type	Perm	NA	Perm	Prot	NA	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8	5	2		1	6	
Permitted Phases	4		4			2		Free	6		6
Detector Phase	4	4	4	3	8	5	2		1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	4.0	6.0	4.0	15.0		4.0	15.0	15.0
Minimum Split (s)	41.0	41.0	41.0	11.0	46.0	11.0	37.0		11.0	40.0	40.0
Total Split (s)	41.0	41.0	41.0	23.0	64.0	11.0	38.0		18.0	45.0	45.0
Total Split (%)	34.2%	34.2%	34.2%	19.2%	53.3%	9.2%	31.7%		15.0%	37.5%	37.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min		None	C-Min	C-Min
v/c Ratio	0.67	0.68	0.20	1.17	0.87	0.25	0.57	0.28	0.98	0.59	0.08
Control Delay	71.9	52.5	0.9	142.8	43.1	21.4	35.1	0.5	62.0	25.0	0.4
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	71.9	52.5	0.9	142.8	43.1	21.4	35.1	0.5	62.0	25.0	0.4
Queue Length 50th (ft)	51	193	0	~263	406	22	225	0	113	293	1
Queue Length 95th (ft)	51	164	0	#376	396	45	335	0	#232	425	m3
Internal Link Dist (ft)		657			1618		1320			3868	
Turn Bay Length (ft)	180		300	250		240		1000	400		280
Base Capacity (vph)	150	554	606	472	854	232	1223	1538	346	1516	749
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	0.47	0.47	0.16	1.17	0.72	0.25	0.57	0.28	0.98	0.59	0.08

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 15 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 125
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.

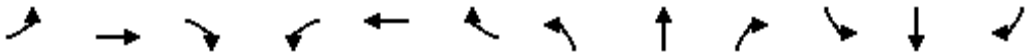
Splits and Phases: 6: SR 13 (Buford Hwy) & S. Hill St/Hamilton Mill Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	166	68	509	250	231	44	645	320	241	831	57
Future Volume (vph)	38	166	68	509	250	231	44	645	320	241	831	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	1900	1615	3335	1708		1770	3438	1538	1752	3505	1553
Flt Permitted	0.28	1.00	1.00	0.95	1.00		0.24	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	517	1900	1615	3335	1708		447	3438	1538	420	3505	1553
Peak-hour factor, PHF	0.54	0.63	0.71	0.92	0.81	0.76	0.75	0.92	0.74	0.71	0.93	0.91
Adj. Flow (vph)	70	263	96	553	309	304	59	701	432	339	894	63
RTOR Reduction (vph)	0	0	77	0	35	0	0	0	0	0	0	36
Lane Group Flow (vph)	70	263	19	553	578	0	59	701	432	339	894	27
Heavy Vehicles (%)	3%	0%	0%	5%	1%	5%	2%	5%	5%	3%	3%	4%
Turn Type	Perm	NA	Perm	Prot	NA		pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4				2		Free	6		6
Actuated Green, G (s)	24.3	24.3	24.3	17.0	47.3		46.7	42.7	120.0	60.7	50.7	50.7
Effective Green, g (s)	24.3	24.3	24.3	17.0	47.3		46.7	42.7	120.0	60.7	50.7	50.7
Actuated g/C Ratio	0.20	0.20	0.20	0.14	0.39		0.39	0.36	1.00	0.51	0.42	0.42
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0		3.0	5.0	5.0
Lane Grp Cap (vph)	104	384	327	472	673		218	1223	1538	345	1480	656
v/s Ratio Prot		0.14		c0.17	c0.34		0.01	0.20		c0.10	0.26	
v/s Ratio Perm	0.14		0.01				0.10		0.28	c0.40		0.02
v/c Ratio	0.67	0.68	0.06	1.17	0.86		0.27	0.57	0.28	0.98	0.60	0.04
Uniform Delay, d1	44.2	44.3	38.6	51.5	33.3		23.7	31.3	0.0	24.5	26.9	20.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.79	0.83	1.00
Incremental Delay, d2	15.8	5.0	0.1	97.8	10.6		0.7	2.0	0.5	40.2	1.6	0.1
Delay (s)	60.0	49.3	38.7	149.3	44.0		24.3	33.2	0.5	59.7	23.8	20.5
Level of Service	E	D	D	F	D		C	C	A	E	C	C
Approach Delay (s)		48.7			93.9			20.9			33.1	
Approach LOS		D			F			C			C	

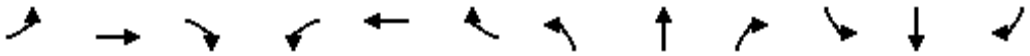
Intersection Summary			
HCM 2000 Control Delay	48.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	213	1	0	621	30	0	0	0	14	0	6
Future Volume (Veh/h)	5	213	1	0	621	30	0	0	0	14	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.42	0.83	0.25	0.92	0.94	0.68	0.92	0.92	0.92	0.60	0.92	0.75
Hourly flow rate (vph)	12	257	4	0	661	44	0	0	0	23	0	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	705			261			974	988	259	966	968	683
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	705			261			974	988	259	966	968	683
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	90	100	98
cM capacity (veh/h)	902			1315			227	246	785	234	252	453

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	273	705	0	31
Volume Left	12	0	0	23
Volume Right	4	44	0	8
cSH	902	1315	1700	267
Volume to Capacity	0.01	0.00	0.00	0.12
Queue Length 95th (ft)	1	0	0	10
Control Delay (s)	0.5	0.0	0.0	20.2
Lane LOS	A		A	C
Approach Delay (s)	0.5	0.0	0.0	20.2
Approach LOS			A	C

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	44.5%	ICU Level of Service	A	
Analysis Period (min)	15			



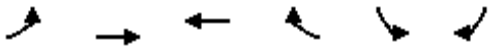
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	56	120	69	54	438	9	119	69	17	8	98	127
Future Volume (vph)	56	120	69	54	438	9	119	69	17	8	98	127
Peak Hour Factor	0.74	0.80	0.75	0.85	0.95	0.45	0.72	0.87	0.80	0.50	0.93	0.78
Hourly flow rate (vph)	76	150	92	64	461	20	165	79	21	16	105	163

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	318	545	265	284
Volume Left (vph)	76	64	165	16
Volume Right (vph)	92	20	21	163
Hadj (s)	-0.12	0.00	0.08	-0.33
Departure Headway (s)	7.4	7.0	7.9	7.5
Degree Utilization, x	0.65	1.07	0.58	0.59
Capacity (veh/h)	458	506	431	449
Control Delay (s)	23.1	84.7	21.2	20.6
Approach Delay (s)	23.1	84.7	21.2	20.6
Approach LOS	C	F	C	C

Intersection Summary				
Delay	46.0			
Level of Service	E			
Intersection Capacity Utilization	64.6%	ICU Level of Service	C	
Analysis Period (min)	15			

Intersection: 8: N. Bogan Rd & Thompson Mill Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	120	203	55	71
Average Queue (ft)	72	115	44	57
95th Queue (ft)	121	200	62	75
Link Distance (ft)	2178	1031	846	591
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	227	652	28	7	0
Future Volume (Veh/h)	0	227	652	28	7	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.83	0.94	0.92	0.92	0.92
Hourly flow rate (vph)	0	273	694	30	8	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	694				967	694
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	694				967	694
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				97	100
cM capacity (veh/h)	911				284	446

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	273	694	30	8
Volume Left	0	0	0	8
Volume Right	0	0	30	0
cSH	1700	1700	1700	284
Volume to Capacity	0.16	0.41	0.02	0.03
Queue Length 95th (ft)	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	18.0
Lane LOS				C
Approach Delay (s)	0.0	0.0		18.0
Approach LOS				C

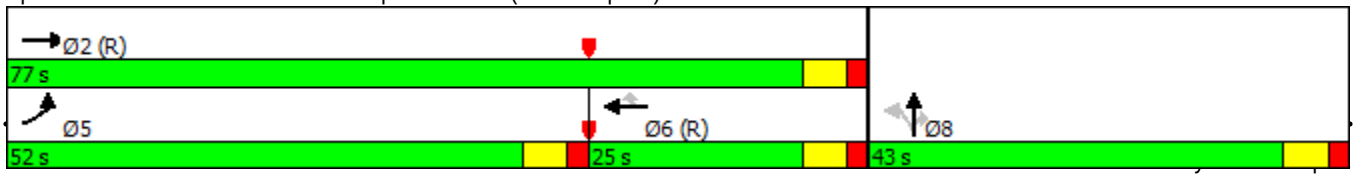
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Configurations							
Traffic Volume (vph)	573	1332	564	135	379	1	562
Future Volume (vph)	573	1332	564	135	379	1	562
Lane Group Flow (vph)	699	1497	581	173	225	230	618
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm
Protected Phases	5	2	6			8	
Permitted Phases				6	8		8
Detector Phase	5	2	6	6	8	8	8
Switch Phase							
Minimum Initial (s)	4.0	15.0	15.0	15.0	6.0	6.0	6.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	52.0	77.0	25.0	25.0	43.0	43.0	43.0
Total Split (%)	43.3%	64.2%	20.8%	20.8%	35.8%	35.8%	35.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?							
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	1.06	0.71	0.71	0.43	0.44	0.45	1.12
Control Delay	74.2	12.5	53.5	10.2	36.5	36.7	108.2
Queue Delay	0.0	2.4	0.0	0.0	0.0	0.0	0.0
Total Delay	74.2	14.8	53.5	10.2	36.5	36.7	108.2
Queue Length 50th (ft)	~610	467	158	0	146	150	~504
Queue Length 95th (ft)	#702	300	201	38	207	54	#733
Internal Link Dist (ft)		591	1139			825	
Turn Bay Length (ft)				840			510
Base Capacity (vph)	658	2114	813	398	513	515	554
Starvation Cap Reductn	0	463	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	1.06	0.91	0.71	0.43	0.44	0.45	1.12

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 69 (58%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 130
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: I-985 NB Ramps & SR 347 (Friendship Rd)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	573	1332	0	0	564	135	379	1	562	0	0	0
Future Volume (vph)	573	1332	0	0	564	135	379	1	562	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Lane Util. Factor	1.00	0.95			0.91	1.00	0.95	0.95	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1719	3574			5136	1599	1665	1671	1615			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	1719	3574			5136	1599	1665	1671	1615			
Peak-hour factor, PHF	0.82	0.89	0.92	0.92	0.97	0.78	0.84	0.25	0.91	0.92	0.92	0.92
Adj. Flow (vph)	699	1497	0	0	581	173	451	4	618	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	146	0	0	57	0	0	0
Lane Group Flow (vph)	699	1497	0	0	581	27	225	230	561	0	0	0
Heavy Vehicles (%)	5%	1%	0%	0%	1%	1%	3%	0%	0%	0%	0%	0%
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	46.0	71.0			19.0	19.0	37.0	37.0	37.0			
Effective Green, g (s)	46.0	71.0			19.0	19.0	37.0	37.0	37.0			
Actuated g/C Ratio	0.38	0.59			0.16	0.16	0.31	0.31	0.31			
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	5.0			5.0	5.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	658	2114			813	253	513	515	497			
v/s Ratio Prot	c0.41	c0.42			0.11							
v/s Ratio Perm						0.02	0.14	0.14	c0.35			
v/c Ratio	1.06	0.71			0.71	0.11	0.44	0.45	1.13			
Uniform Delay, d1	37.0	17.2			47.9	43.2	33.2	33.3	41.5			
Progression Factor	0.65	0.62			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	48.3	1.5			5.3	0.9	0.6	0.6	80.9			
Delay (s)	72.5	12.2			53.3	44.1	33.8	33.9	122.4			
Level of Service	E	B			D	D	C	C	F			
Approach Delay (s)		31.4			51.2			84.9			0.0	
Approach LOS		C			D			F			A	

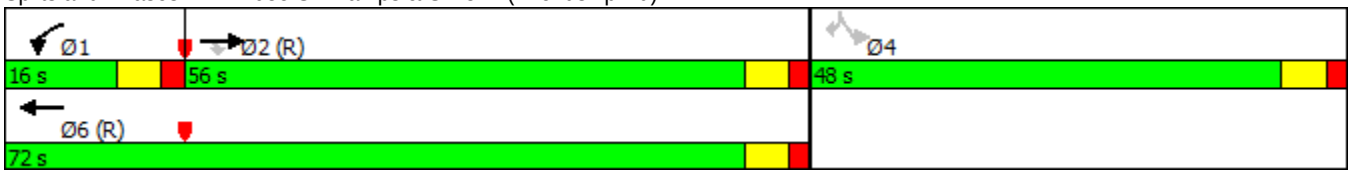
Intersection Summary			
HCM 2000 Control Delay	49.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

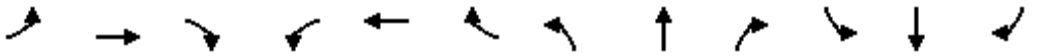
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1601	490	162	792	320	393
Future Volume (vph)	1601	490	162	792	320	393
Lane Group Flow (vph)	1685	605	198	870	421	468
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			4	4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	4.0	15.0	6.0	6.0
Minimum Split (s)	24.0	24.0	11.0	24.0	24.0	24.0
Total Split (s)	56.0	56.0	16.0	72.0	48.0	48.0
Total Split (%)	46.7%	46.7%	13.3%	60.0%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
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)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	None	C-Min	None	None
v/c Ratio	0.69	0.57	0.70	0.40	0.82	0.87
Control Delay	17.6	1.3	45.0	21.1	52.6	44.8
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	1.3	45.0	21.1	52.6	44.8
Queue Length 50th (ft)	191	0	63	355	301	252
Queue Length 95th (ft)	m258	m0	97	440	310	320
Internal Link Dist (ft)	904			591		
Turn Bay Length (ft)		375	380			
Base Capacity (vph)	2455	1055	288	2174	631	631
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	72	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.57	0.69	0.40	0.67	0.74

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 7 (6%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-985 SB Ramps & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1601	490	162	792	0	0	0	0	320	0	393
Future Volume (vph)	0	1601	490	162	792	0	0	0	0	320	0	393
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Lane Util. Factor		0.91	1.00	0.97	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		5085	1538	3467	3539					1805		1553
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5085	1538	3467	3539					1805		1553
Peak-hour factor, PHF	0.92	0.95	0.81	0.82	0.91	0.92	0.92	0.92	0.92	0.76	0.92	0.84
Adj. Flow (vph)	0	1685	605	198	870	0	0	0	0	421	0	468
RTOR Reduction (vph)	0	0	313	0	0	0	0	0	0	0	0	97
Lane Group Flow (vph)	0	1685	292	198	870	0	0	0	0	421	0	371
Heavy Vehicles (%)	0%	2%	5%	1%	2%	0%	0%	0%	0%	0%	0%	4%
Turn Type		NA	Perm	Prot	NA					Perm		Perm
Protected Phases		2		1	6							
Permitted Phases			2							4		4
Actuated Green, G (s)		57.9	57.9	9.8	73.7					34.3		34.3
Effective Green, g (s)		57.9	57.9	9.8	73.7					34.3		34.3
Actuated g/C Ratio		0.48	0.48	0.08	0.61					0.29		0.29
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Vehicle Extension (s)		5.0	5.0	3.0	5.0					3.0		3.0
Lane Grp Cap (vph)		2453	742	283	2173					515		443
v/s Ratio Prot		c0.33		c0.06	0.25							
v/s Ratio Perm			0.19							0.23		c0.24
v/c Ratio		0.69	0.39	0.70	0.40					0.82		0.84
Uniform Delay, d1		24.0	19.8	53.7	11.8					39.9		40.2
Progression Factor		0.67	0.19	0.62	1.60					1.00		1.00
Incremental Delay, d2		0.6	0.6	6.1	0.5					9.7		12.9
Delay (s)		16.7	4.4	39.3	19.5					49.7		53.2
Level of Service		B	A	D	B					D		D
Approach Delay (s)		13.4			23.1			0.0			51.5	
Approach LOS		B			C			A			D	

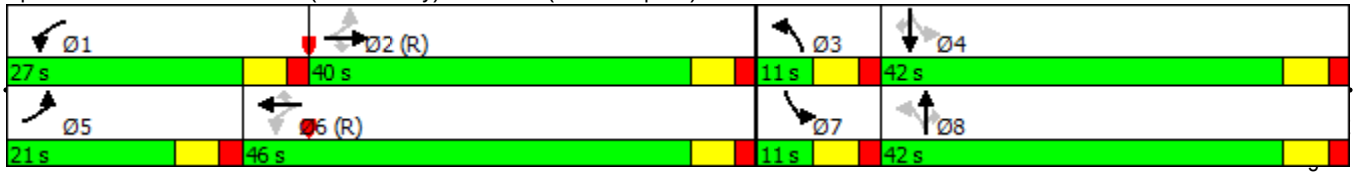
Intersection Summary			
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

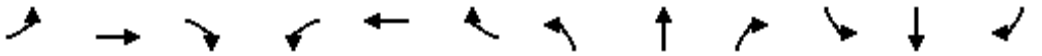
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	871	82	386	612	237	129	414	574	173	184	103
Future Volume (vph)	193	871	82	386	612	237	129	414	574	173	184	103
Lane Group Flow (vph)	222	1075	98	434	703	279	139	518	683	184	222	110
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0	15.0	4.0	6.0	6.0	4.0	6.0	6.0
Minimum Split (s)	11.0	37.0	37.0	11.0	37.0	37.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (s)	21.0	40.0	40.0	27.0	46.0	46.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (%)	17.5%	33.3%	33.3%	22.5%	38.3%	38.3%	9.2%	35.0%	35.0%	9.2%	35.0%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.61	1.05	0.18	1.19	0.56	0.39	0.38	0.95	1.03	1.37	0.41	0.19
Control Delay	25.4	84.6	2.8	146.6	16.1	3.0	15.7	50.0	51.7	235.2	36.4	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	84.6	2.8	146.6	16.1	3.0	15.7	50.0	51.7	235.2	36.4	3.6
Queue Length 50th (ft)	93	~477	0	~341	162	11	32	414	~389	~136	137	0
Queue Length 95th (ft)	138	#507	12	#566	130	19	m55	#482	#517	#288	191	27
Internal Link Dist (ft)		1576			3513			1183			1183	
Turn Bay Length (ft)	250		370	300		310			500	300		215
Base Capacity (vph)	394	1022	537	364	1262	709	367	548	662	134	537	574
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	1.05	0.18	1.19	0.56	0.39	0.38	0.95	1.03	1.37	0.41	0.19

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 63 (53%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 145
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: 3: SR 13 (Atlanta Hwy) & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	871	82	386	612	237	129	414	574	173	184	103
Future Volume (vph)	193	871	82	386	612	237	129	414	574	173	184	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3610	1553	1736	3610	1568	1787	1827	1482	1752	1792	1599
Flt Permitted	0.31	1.00	1.00	0.10	1.00	1.00	0.52	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	597	3610	1553	183	3610	1568	977	1827	1482	205	1792	1599
Peak-hour factor, PHF	0.87	0.81	0.84	0.89	0.87	0.85	0.93	0.80	0.84	0.94	0.83	0.94
Adj. Flow (vph)	222	1075	98	434	703	279	139	518	683	184	222	110
RTOR Reduction (vph)	0	0	70	0	0	161	0	0	218	0	0	77
Lane Group Flow (vph)	222	1075	28	434	703	118	139	518	465	184	222	33
Heavy Vehicles (%)	0%	0%	4%	4%	0%	3%	1%	4%	9%	3%	6%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	47.0	34.0	34.0	61.0	42.0	42.0	41.0	36.0	36.0	41.0	36.0	36.0
Effective Green, g (s)	47.0	34.0	34.0	61.0	42.0	42.0	41.0	36.0	36.0	41.0	36.0	36.0
Actuated g/C Ratio	0.39	0.28	0.28	0.51	0.35	0.35	0.34	0.30	0.30	0.34	0.30	0.30
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	364	1022	440	364	1263	548	367	548	444	134	537	479
v/s Ratio Prot	0.07	0.30		c0.21	0.19		0.02	0.28		c0.06	0.12	
v/s Ratio Perm	0.17		0.02	c0.40		0.08	0.11		0.31	c0.41		0.02
v/c Ratio	0.61	1.05	0.06	1.19	0.56	0.22	0.38	0.95	1.05	1.37	0.41	0.07
Uniform Delay, d1	25.5	43.0	31.4	37.5	31.5	27.4	29.5	41.0	42.0	37.2	33.6	30.0
Progression Factor	1.00	1.00	1.00	1.26	0.45	0.28	0.51	0.61	0.37	1.00	1.00	1.00
Incremental Delay, d2	2.9	42.8	0.3	108.2	1.6	0.8	0.5	21.7	51.3	207.8	0.5	0.1
Delay (s)	28.4	85.8	31.7	155.5	15.7	8.6	15.5	46.6	66.9	245.0	34.1	30.1
Level of Service	C	F	C	F	B	A	B	D	E	F	C	C
Approach Delay (s)		72.9			57.2			53.7			108.4	
Approach LOS		E			E			D			F	

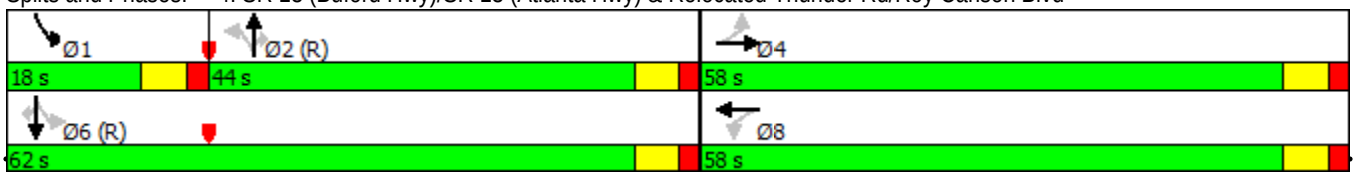
Intersection Summary			
HCM 2000 Control Delay	66.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	96.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

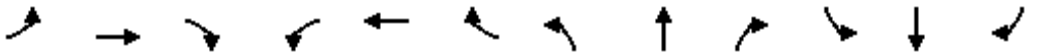
Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	12	375	14	18	746	166	150	451
Future Volume (vph)	12	375	14	18	746	166	150	451
Lane Group Flow (vph)	68	408	468	20	848	180	163	564
Turn Type	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		8		2		1	6
Permitted Phases		8		2		2	6	
Detector Phase	4	8	8	2	2	2	1	6
Switch Phase								
Minimum Initial (s)	6.0	6.0	6.0	15.0	15.0	15.0	5.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	11.0	24.0
Total Split (s)	58.0	58.0	58.0	44.0	44.0	44.0	18.0	62.0
Total Split (%)	48.3%	48.3%	48.3%	36.7%	36.7%	36.7%	15.0%	51.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	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)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag				Lag	Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	C-Min	C-Min	C-Min	None	C-Min
v/c Ratio	0.10	0.89	0.64	0.06	0.64	0.27	0.58	0.31
Control Delay	7.5	56.5	14.7	14.4	21.1	3.9	18.4	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	56.5	14.7	14.4	21.1	3.9	18.4	12.0
Queue Length 50th (ft)	6	281	106	7	311	11	51	94
Queue Length 95th (ft)	33	#437	210	m15	378	20	m58	m88
Internal Link Dist (ft)	491		1743		2367			498
Turn Bay Length (ft)				375		375	200	
Base Capacity (vph)	764	519	786	311	1319	660	289	1831
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	0.09	0.79	0.60	0.06	0.64	0.27	0.56	0.31

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 22 (18%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
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: 4: SR 13 (Buford Hwy)/SR 13 (Atlanta Hwy) & Relocated Thunder Rd/Roy Carlson Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	51	375	14	417	18	746	166	150	451	0
Future Volume (vph)	0	12	51	375	14	417	18	746	166	150	451	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt		0.89		1.00	0.85		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1693		1597	1443		1805	3539	1468	1641	3539	
Flt Permitted		1.00		0.71	1.00		0.44	1.00	1.00	0.17	1.00	
Satd. Flow (perm)		1693		1198	1443		837	3539	1468	295	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.92	0.92	0.80	0.92
Adj. Flow (vph)	0	13	55	408	15	453	20	848	180	163	564	0
RTOR Reduction (vph)	0	34	0	0	175	0	0	0	113	0	0	0
Lane Group Flow (vph)	0	34	0	408	293	0	20	848	67	163	564	0
Heavy Vehicles (%)	0%	0%	0%	13%	0%	13%	0%	2%	10%	10%	2%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		45.9		45.9	45.9		44.8	44.8	44.8	62.1	62.1	
Effective Green, g (s)		45.9		45.9	45.9		44.8	44.8	44.8	62.1	62.1	
Actuated g/C Ratio		0.38		0.38	0.38		0.37	0.37	0.37	0.52	0.52	
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		5.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		647		458	551		312	1321	548	279	1831	
v/s Ratio Prot		0.02			0.20			c0.24		c0.05	0.16	
v/s Ratio Perm				c0.34			0.02		0.05	0.25		
v/c Ratio		0.05		0.89	0.53		0.06	0.64	0.12	0.58	0.31	
Uniform Delay, d1		23.3		34.7	28.7		24.1	31.0	24.7	19.1	16.6	
Progression Factor		1.00		1.00	1.00		0.49	0.57	0.68	0.79	0.66	
Incremental Delay, d2		0.0		19.0	1.0		0.4	2.2	0.4	1.7	0.2	
Delay (s)		23.4		53.7	29.7		12.2	19.9	17.2	16.8	11.2	
Level of Service		C		D	C		B	B	B	B	B	
Approach Delay (s)		23.4			40.9			19.3			12.5	
Approach LOS		C			D			B			B	

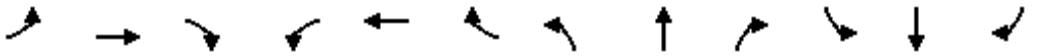
Intersection Summary			
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	23	17	21	287	7	122	6	797	384	172	745
Future Volume (vph)	23	17	21	287	7	122	6	797	384	172	745
Lane Group Flow (vph)	0	76	42	0	331	153	12	960	404	198	920
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		4			8			2			6
Permitted Phases	4		4	8		8	2		2	6	
Detector Phase	4	4	4	8	8	8	2	2	2	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	44.0	44.0	44.0	44.0	44.0	44.0	76.0	76.0	76.0	76.0	76.0
Total Split (%)	36.7%	36.7%	36.7%	36.7%	36.7%	36.7%	63.3%	63.3%	63.3%	63.3%	63.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio		0.21	0.09		0.90	0.28	0.04	0.44	0.35	0.68	0.44
Control Delay		33.0	9.1		69.0	9.5	5.2	5.8	0.6	23.1	7.7
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		33.0	9.1		69.0	9.5	5.2	5.8	0.6	23.1	7.7
Queue Length 50th (ft)		43	0		239	16	2	97	0	74	153
Queue Length 95th (ft)		34	4		138	49	m2	101	m0	m219	138
Internal Link Dist (ft)		275			4179			3868			2104
Turn Bay Length (ft)			105			250	230		230	200	
Base Capacity (vph)		395	515		409	596	309	2180	1149	292	2078
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.19	0.08		0.81	0.26	0.04	0.44	0.35	0.68	0.44

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 36 (30%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: SR 13 (Buford Hwy) & Makita Co. Drwy/Thompson Mill Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	17	21	287	7	122	6	797	384	172	745	0
Future Volume (vph)	23	17	21	287	7	122	6	797	384	172	745	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98	1.00		0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1860	1538		1814	1615	1805	3539	1615	1805	3374	
Flt Permitted		0.66	1.00		0.68	1.00	0.26	1.00	1.00	0.25	1.00	
Satd. Flow (perm)		1248	1538		1295	1615	502	3539	1615	475	3374	
Peak-hour factor, PHF	0.69	0.40	0.50	0.91	0.44	0.80	0.50	0.83	0.95	0.87	0.81	0.73
Adj. Flow (vph)	33	42	42	315	16	152	12	960	404	198	920	0
RTOR Reduction (vph)	0	0	30	0	0	89	0	0	155	0	0	0
Lane Group Flow (vph)	0	76	12	0	331	64	12	960	249	198	920	0
Heavy Vehicles (%)	0%	0%	5%	0%	0%	0%	0%	2%	0%	0%	7%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		34.1	34.1		34.1	34.1	73.9	73.9	73.9	73.9	73.9	
Effective Green, g (s)		34.1	34.1		34.1	34.1	73.9	73.9	73.9	73.9	73.9	
Actuated g/C Ratio		0.28	0.28		0.28	0.28	0.62	0.62	0.62	0.62	0.62	
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)		354	437		367	458	309	2179	994	292	2077	
v/s Ratio Prot								0.27			0.27	
v/s Ratio Perm		0.06	0.01		c0.26	0.04	0.02		0.15	c0.42		
v/c Ratio		0.21	0.03		0.90	0.14	0.04	0.44	0.25	0.68	0.44	
Uniform Delay, d1		32.7	31.0		41.3	32.0	9.1	12.2	10.5	15.2	12.2	
Progression Factor		1.00	1.00		1.00	1.00	0.46	0.42	0.06	0.61	0.55	
Incremental Delay, d2		0.3	0.0		24.4	0.1	0.1	0.4	0.4	11.0	0.6	
Delay (s)		33.0	31.0		65.7	32.2	4.3	5.5	1.0	20.2	7.3	
Level of Service		C	C		E	C	A	A	A	C	A	
Approach Delay (s)		32.3			55.1			4.2			9.6	
Approach LOS		C			E			A			A	

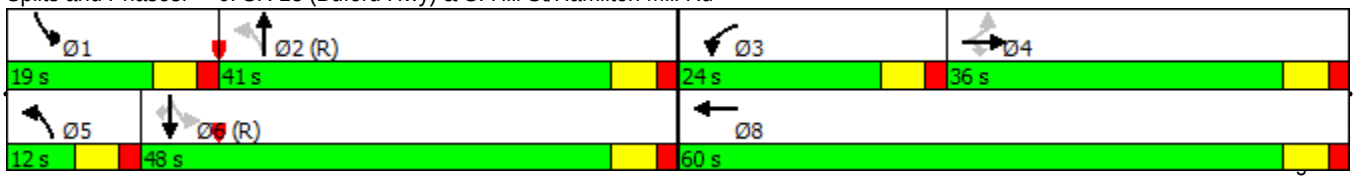
Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

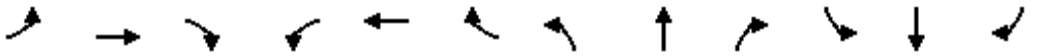
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	82	279	55	405	222	83	970	770	297	786	54
Future Volume (vph)	82	279	55	405	222	83	970	770	297	786	54
Lane Group Flow (vph)	93	291	68	460	516	122	1066	837	349	936	61
Turn Type	Perm	NA	Perm	Prot	NA	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8	5	2		1	6	
Permitted Phases	4		4			2		Free	6		6
Detector Phase	4	4	4	3	8	5	2		1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	4.0	6.0	4.0	15.0		4.0	15.0	15.0
Minimum Split (s)	41.0	41.0	41.0	11.0	46.0	11.0	37.0		11.0	40.0	40.0
Total Split (s)	36.0	36.0	36.0	24.0	60.0	12.0	41.0		19.0	48.0	48.0
Total Split (%)	30.0%	30.0%	30.0%	20.0%	50.0%	10.0%	34.2%		15.8%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min		None	C-Min	C-Min
v/c Ratio	0.53	0.78	0.14	0.92	0.73	0.54	0.86	0.53	1.39	0.67	0.08
Control Delay	53.5	60.6	0.7	75.2	33.3	29.4	45.7	1.3	222.9	36.9	1.9
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	53.5	60.6	0.7	75.2	33.3	29.4	45.7	1.3	222.9	36.9	1.9
Queue Length 50th (ft)	65	216	0	183	300	49	403	0	~300	375	1
Queue Length 95th (ft)	112	296	0	#270	366	69	#596	0	m#462	418	m7
Internal Link Dist (ft)		657			1618		1320			3868	
Turn Bay Length (ft)	180		300	250		240		1000	400		280
Base Capacity (vph)	224	475	547	500	802	224	1238	1568	251	1391	734
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	0.42	0.61	0.12	0.92	0.64	0.54	0.86	0.53	1.39	0.67	0.08

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 17 (14%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
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.

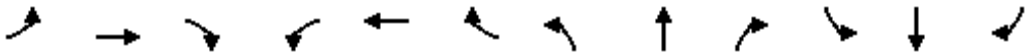
Splits and Phases: 6: SR 13 (Buford Hwy) & S. Hill St/Hamilton Mill Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	279	55	405	222	201	83	970	770	297	786	54
Future Volume (vph)	82	279	55	405	222	201	83	970	770	297	786	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	1900	1615	3335	1715		1805	3574	1568	1752	3438	1615
Flt Permitted	0.47	1.00	1.00	0.95	1.00		0.20	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	899	1900	1615	3335	1715		386	3574	1568	155	3438	1615
Peak-hour factor, PHF	0.88	0.96	0.81	0.88	0.86	0.78	0.68	0.91	0.92	0.85	0.84	0.88
Adj. Flow (vph)	93	291	68	460	258	258	122	1066	837	349	936	61
RTOR Reduction (vph)	0	0	55	0	33	0	0	0	0	0	0	36
Lane Group Flow (vph)	93	291	13	460	483	0	122	1066	837	349	936	25
Heavy Vehicles (%)	0%	0%	0%	5%	1%	4%	0%	1%	3%	3%	5%	0%
Turn Type	Perm	NA	Perm	Prot	NA		pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4				2		Free	6		6
Actuated Green, G (s)	23.4	23.4	23.4	18.0	47.4		47.6	41.6	120.0	60.6	48.6	48.6
Effective Green, g (s)	23.4	23.4	23.4	18.0	47.4		47.6	41.6	120.0	60.6	48.6	48.6
Actuated g/C Ratio	0.19	0.19	0.19	0.15	0.39		0.40	0.35	1.00	0.51	0.41	0.41
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0		3.0	5.0	5.0
Lane Grp Cap (vph)	175	370	314	500	677		224	1238	1568	251	1392	654
v/s Ratio Prot		0.15		c0.14	c0.28		0.03	0.30		c0.15	0.27	
v/s Ratio Perm	0.10		0.01				0.19		0.53	c0.55		0.02
v/c Ratio	0.53	0.79	0.04	0.92	0.71		0.54	0.86	0.53	1.39	0.67	0.04
Uniform Delay, d1	43.4	45.9	39.2	50.3	30.6		24.4	36.5	0.0	35.9	29.2	21.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.85	1.13	1.00
Incremental Delay, d2	3.1	10.5	0.1	22.3	3.6		2.7	8.0	1.3	195.9	2.3	0.1
Delay (s)	46.5	56.5	39.3	72.6	34.1		27.1	44.5	1.3	226.2	35.3	21.7
Level of Service	D	E	D	E	C		C	D	A	F	D	C
Approach Delay (s)		51.8			52.3			25.6			84.2	
Approach LOS		D			D			C			F	

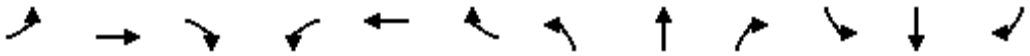
Intersection Summary			
HCM 2000 Control Delay	49.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	516	0	0	296	11	0	0	0	32	0	8
Future Volume (Veh/h)	5	516	0	0	296	11	0	0	0	32	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.31	0.80	0.25	0.92	0.96	0.58	0.92	0.92	0.92	0.61	0.92	0.67
Hourly flow rate (vph)	16	645	0	0	308	19	0	0	0	52	0	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	327			645			1006	1004	645	994	994	318
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	327			645			1006	1004	645	994	994	318
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	77	100	98
cM capacity (veh/h)	1244			950			216	241	476	224	244	728

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	661	327	0	64
Volume Left	16	0	0	52
Volume Right	0	19	0	12
cSH	1244	950	1700	257
Volume to Capacity	0.01	0.00	0.00	0.25
Queue Length 95th (ft)	1	0	0	24
Control Delay (s)	0.4	0.0	0.0	23.6
Lane LOS	A		A	C
Approach Delay (s)	0.4	0.0	0.0	23.6
Approach LOS			A	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		



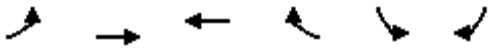
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	74	380	112	58	182	15	74	150	87	15	158	50
Future Volume (vph)	74	380	112	58	182	15	74	150	87	15	158	50
Peak Hour Factor	0.83	0.90	0.79	0.92	0.86	0.88	0.92	0.81	0.77	0.70	0.75	0.80
Hourly flow rate (vph)	89	422	142	63	212	17	80	185	113	21	211	63

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	653	292	378	295
Volume Left (vph)	89	63	80	21
Volume Right (vph)	142	17	113	63
Hadj (s)	-0.10	0.01	-0.13	-0.11
Departure Headway (s)	7.7	8.3	7.9	8.2
Degree Utilization, x	1.40	0.68	0.83	0.68
Capacity (veh/h)	469	408	436	413
Control Delay (s)	213.4	27.0	39.0	26.8
Approach Delay (s)	213.4	27.0	39.0	26.8
Approach LOS	F	D	E	D

Intersection Summary			
Delay	105.0		
Level of Service	F		
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

Intersection: 8: N. Bogan Rd & Thompson Mill Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	202	116	78	71
Average Queue (ft)	120	50	70	51
95th Queue (ft)	201	107	85	73
Link Distance (ft)	2178	1031	846	591
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	548	307	8	29	0
Future Volume (Veh/h)	0	548	307	8	29	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.80	0.96	0.92	0.92	0.92
Hourly flow rate (vph)	0	685	320	9	32	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	320				1005	320
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	320				1005	320
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				88	100
cM capacity (veh/h)	1240				268	721

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	685	320	9	32
Volume Left	0	0	0	32
Volume Right	0	0	9	0
cSH	1700	1700	1700	268
Volume to Capacity	0.40	0.19	0.01	0.12
Queue Length 95th (ft)	0	0	0	10
Control Delay (s)	0.0	0.0	0.0	20.3
Lane LOS				C
Approach Delay (s)	0.0	0.0		20.3
Approach LOS				C

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		

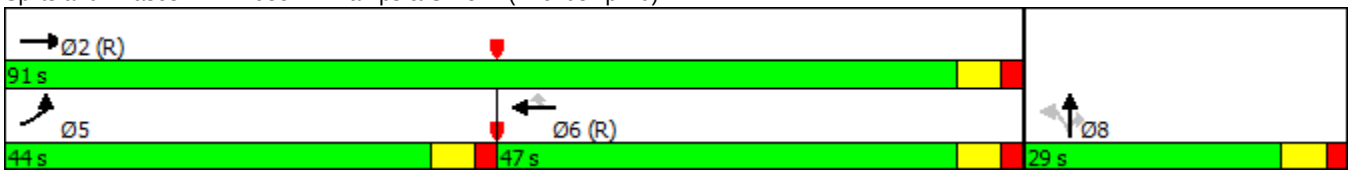
Future “Build” Improved Intersection Analysis

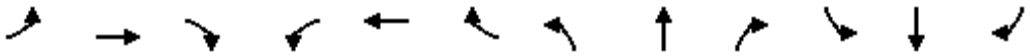
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Configurations							
Traffic Volume (vph)	398	416	1296	328	392	4	87
Future Volume (vph)	398	416	1296	328	392	4	87
Lane Group Flow (vph)	468	443	1507	426	233	231	121
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm
Protected Phases	5	2	6			8	
Permitted Phases				6	8		8
Detector Phase	5	2	6	6	8	8	8
Switch Phase							
Minimum Initial (s)	4.0	15.0	15.0	15.0	6.0	6.0	6.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	44.0	91.0	47.0	47.0	29.0	29.0	29.0
Total Split (%)	36.7%	75.8%	39.2%	39.2%	24.2%	24.2%	24.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?							
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.91	0.17	0.76	0.49	0.84	0.82	0.32
Control Delay	42.8	11.9	36.4	4.7	72.3	70.6	9.6
Queue Delay	0.0	0.0	0.0	0.0	2.9	2.7	0.0
Total Delay	42.8	11.9	36.4	4.7	75.2	73.4	9.6
Queue Length 50th (ft)	385	158	392	0	181	178	0
Queue Length 95th (ft)	#471	213	430	24	#277	137	24
Internal Link Dist (ft)		591	1139			825	
Turn Bay Length (ft)	100			840			510
Base Capacity (vph)	560	2598	1978	877	310	312	407
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	18	0	26	27	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.17	0.77	0.49	0.82	0.81	0.30

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 87 (73%), Referenced to phase 2:EBT and 6:WBT, 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: 1: I-985 NB Ramps & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	398	416	0	0	1296	328	392	4	87	0	0	0
Future Volume (vph)	398	416	0	0	1296	328	392	4	87	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Lane Util. Factor	1.00	0.95			0.91	1.00	0.95	0.95	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1770	3574			5136	1599	1618	1628	1615			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	1770	3574			5136	1599	1618	1628	1615			
Peak-hour factor, PHF	0.85	0.94	0.92	0.92	0.86	0.77	0.86	0.50	0.72	0.92	0.92	0.92
Adj. Flow (vph)	468	443	0	0	1507	426	456	8	121	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	262	0	0	100	0	0	0
Lane Group Flow (vph)	468	443	0	0	1507	164	233	231	21	0	0	0
Heavy Vehicles (%)	2%	1%	0%	0%	1%	1%	6%	0%	0%	0%	0%	0%
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	35.0	87.2			46.2	46.2	20.8	20.8	20.8			
Effective Green, g (s)	35.0	87.2			46.2	46.2	20.8	20.8	20.8			
Actuated g/C Ratio	0.29	0.73			0.39	0.39	0.17	0.17	0.17			
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	5.0			5.0	5.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	516	2597			1977	615	280	282	279			
v/s Ratio Prot	c0.26	0.12			c0.29							
v/s Ratio Perm						0.10	c0.14	0.14	0.01			
v/c Ratio	0.91	0.17			0.76	0.27	0.83	0.82	0.08			
Uniform Delay, d1	40.9	5.1			32.1	25.3	47.9	47.8	41.5			
Progression Factor	0.56	2.19			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	16.9	0.1			2.8	1.1	18.6	16.7	0.1			
Delay (s)	39.8	11.3			35.0	26.4	66.5	64.5	41.7			
Level of Service	D	B			C	C	E	E	D			
Approach Delay (s)		26.0			33.1			60.6			0.0	
Approach LOS		C			C			E			A	

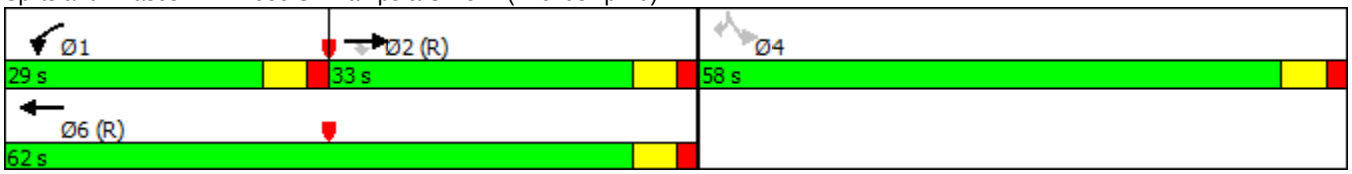
Intersection Summary			
HCM 2000 Control Delay	35.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

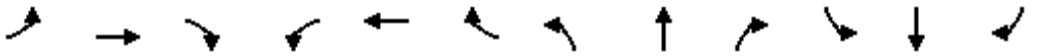
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	693	422	496	1221	118	548
Future Volume (vph)	693	422	496	1221	118	548
Lane Group Flow (vph)	806	469	570	1489	139	652
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			4	4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	4.0	15.0	6.0	6.0
Minimum Split (s)	24.0	24.0	11.0	24.0	24.0	24.0
Total Split (s)	33.0	33.0	29.0	62.0	58.0	58.0
Total Split (%)	27.5%	27.5%	24.2%	51.7%	48.3%	48.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
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)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	None	C-Min	None	None
v/c Ratio	0.63	0.63	0.88	0.87	0.19	0.95
Control Delay	39.2	9.2	47.3	17.8	22.4	54.6
Queue Delay	0.0	0.0	0.0	1.6	0.0	0.0
Total Delay	39.2	9.2	47.3	19.4	22.4	54.6
Queue Length 50th (ft)	125	34	162	508	65	420
Queue Length 95th (ft)	193	124	#258	541	101	#582
Internal Link Dist (ft)	904			591		
Turn Bay Length (ft)		375	380			
Base Capacity (vph)	1270	743	664	1703	782	712
Starvation Cap Reductn	0	0	0	93	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.63	0.86	0.92	0.18	0.92

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 15 (13%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: I-985 SB Ramps & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	693	422	496	1221	0	0	0	0	118	0	548
Future Volume (vph)	0	693	422	496	1221	0	0	0	0	118	0	548
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Lane Util. Factor		0.91	1.00	0.97	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		5085	1568	3467	3505					1805		1538
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5085	1568	3467	3505					1805		1538
Peak-hour factor, PHF	0.92	0.86	0.90	0.87	0.82	0.92	0.92	0.92	0.92	0.85	0.92	0.84
Adj. Flow (vph)	0	806	469	570	1489	0	0	0	0	139	0	652
RTOR Reduction (vph)	0	0	352	0	0	0	0	0	0	0	0	48
Lane Group Flow (vph)	0	806	117	570	1489	0	0	0	0	139	0	604
Heavy Vehicles (%)	0%	2%	3%	1%	3%	0%	0%	0%	0%	0%	0%	5%
Turn Type		NA	Perm	Prot	NA					Perm		Perm
Protected Phases		2		1	6							
Permitted Phases			2							4		4
Actuated Green, G (s)		30.0	30.0	22.3	58.3					49.7		49.7
Effective Green, g (s)		30.0	30.0	22.3	58.3					49.7		49.7
Actuated g/C Ratio		0.25	0.25	0.19	0.49					0.41		0.41
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Vehicle Extension (s)		5.0	5.0	3.0	5.0					3.0		3.0
Lane Grp Cap (vph)		1271	392	644	1702					747		636
v/s Ratio Prot		0.16		0.16	c0.42							
v/s Ratio Perm			0.07							0.08		c0.39
v/c Ratio		0.63	0.30	0.89	0.87					0.19		0.95
Uniform Delay, d1		40.1	36.5	47.6	27.6					22.3		33.9
Progression Factor		0.90	1.57	0.74	0.44					1.00		1.00
Incremental Delay, d2		2.0	1.6	9.9	4.6					0.1		23.6
Delay (s)		38.2	59.1	45.0	16.8					22.4		57.6
Level of Service		D	E	D	B					C		E
Approach Delay (s)		45.9			24.6			0.0			51.4	
Approach LOS		D			C			A			D	

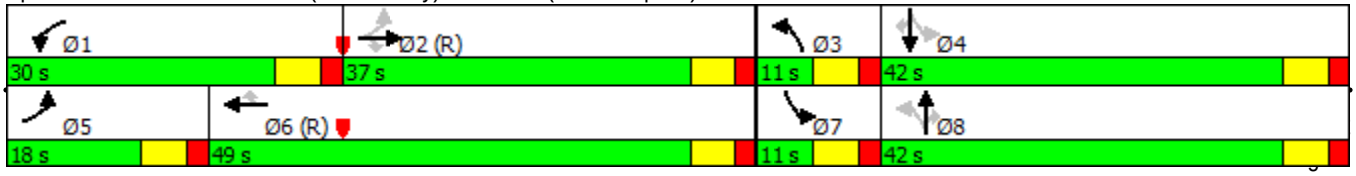
Intersection Summary			
HCM 2000 Control Delay	36.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

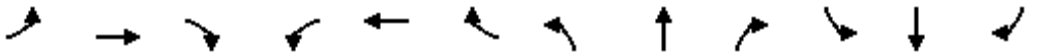
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	599	113	607	607	78	95	153	222	244	333	129
Future Volume (vph)	142	599	113	607	607	78	95	153	222	244	333	129
Lane Group Flow (vph)	165	689	149	660	723	110	122	172	258	252	387	159
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0	15.0	4.0	6.0	6.0	4.0	6.0	6.0
Minimum Split (s)	11.0	37.0	37.0	11.0	37.0	37.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (s)	18.0	37.0	37.0	30.0	49.0	49.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (%)	15.0%	30.8%	30.8%	25.0%	40.8%	40.8%	9.2%	35.0%	35.0%	9.2%	35.0%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.44	0.61	0.24	1.03	0.47	0.15	0.73	0.37	0.46	0.76	0.85	0.30
Control Delay	19.9	39.2	2.9	85.5	15.9	0.4	46.7	29.6	13.2	50.0	59.9	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	39.2	2.9	85.5	15.9	0.4	46.7	29.6	13.2	50.0	59.9	3.8
Queue Length 50th (ft)	60	241	0	~263	125	0	79	123	107	148	284	0
Queue Length 95th (ft)	103	314	3	m#347	m202	m1	44	184	170	208	357	17
Internal Link Dist (ft)		1576			3513			1183			1183	
Turn Bay Length (ft)	250		370	300		310			500	300		215
Base Capacity (vph)	398	1121	623	642	1533	731	166	558	629	333	553	608
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.61	0.24	1.03	0.47	0.15	0.73	0.31	0.41	0.76	0.70	0.26

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 77 (64%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 115
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: 3: SR 13 (Atlanta Hwy) & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	599	113	607	607	78	95	153	222	244	333	129
Future Volume (vph)	142	599	113	607	607	78	95	153	222	244	333	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3610	1583	3213	3610	1538	1787	1863	1495	1752	1845	1583
Flt Permitted	0.38	1.00	1.00	0.95	1.00	1.00	0.20	1.00	1.00	0.57	1.00	1.00
Satd. Flow (perm)	709	3610	1583	3213	3610	1538	370	1863	1495	1054	1845	1583
Peak-hour factor, PHF	0.86	0.87	0.76	0.92	0.84	0.71	0.78	0.89	0.86	0.97	0.86	0.81
Adj. Flow (vph)	165	689	149	660	723	110	122	172	258	252	387	159
RTOR Reduction (vph)	0	0	103	0	0	63	0	0	194	0	0	120
Lane Group Flow (vph)	165	689	46	660	723	47	122	172	64	252	387	39
Heavy Vehicles (%)	1%	0%	2%	9%	0%	5%	1%	2%	8%	3%	3%	2%
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2			6	8		8	4		4
Actuated Green, G (s)	47.6	37.3	37.3	24.0	51.0	51.0	34.7	29.7	29.7	34.7	29.7	29.7
Effective Green, g (s)	47.6	37.3	37.3	24.0	51.0	51.0	34.7	29.7	29.7	34.7	29.7	29.7
Actuated g/C Ratio	0.40	0.31	0.31	0.20	0.42	0.42	0.29	0.25	0.25	0.29	0.25	0.25
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	373	1122	492	642	1534	653	166	461	370	333	456	391
v/s Ratio Prot	0.04	c0.19		c0.21	0.20		0.03	0.09		c0.03	c0.21	
v/s Ratio Perm	0.14		0.03			0.03	0.18		0.04	0.19		0.02
v/c Ratio	0.44	0.61	0.09	1.03	0.47	0.07	0.73	0.37	0.17	0.76	0.85	0.10
Uniform Delay, d1	24.1	35.2	29.4	48.0	24.8	20.5	37.3	37.4	35.5	38.8	43.0	34.8
Progression Factor	1.00	1.00	1.00	1.18	0.59	0.08	0.70	0.75	2.65	1.00	1.00	1.00
Incremental Delay, d2	0.8	2.5	0.4	31.0	0.5	0.1	15.3	0.5	0.2	9.4	13.7	0.1
Delay (s)	24.9	37.7	29.7	87.5	15.0	1.6	41.4	28.6	94.4	48.3	56.7	35.0
Level of Service	C	D	C	F	B	A	D	C	F	D	E	C
Approach Delay (s)		34.4			46.0			62.2			49.7	
Approach LOS		C			D			E			D	

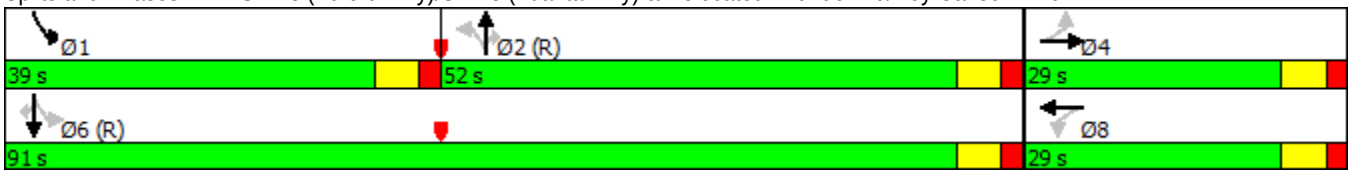
Intersection Summary			
HCM 2000 Control Delay	46.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

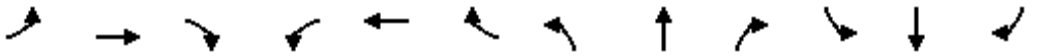
Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	13	75	8	41	377	295	310	727	2
Future Volume (vph)	13	75	8	41	377	295	310	727	2
Lane Group Flow (vph)	60	82	116	45	424	321	337	845	2
Turn Type	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8		2		1	6	
Permitted Phases		8		2		2	6		6
Detector Phase	4	8	8	2	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	6.0	6.0	6.0	15.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	29.0	29.0	29.0	52.0	52.0	52.0	39.0	91.0	91.0
Total Split (%)	24.2%	24.2%	24.2%	43.3%	43.3%	43.3%	32.5%	75.8%	75.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag				Lag	Lag	Lag	Lead		
Lead-Lag Optimize?									
Recall Mode	None	None	None	C-Min	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.26	0.59	0.45	0.13	0.21	0.34	0.47	0.30	0.00
Control Delay	20.6	67.1	16.3	10.5	9.3	6.0	5.4	0.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.6	67.1	16.3	10.5	9.3	6.0	5.4	0.7	0.0
Queue Length 50th (ft)	10	61	6	12	76	72	39	7	0
Queue Length 95th (ft)	49	110	60	54	163	210	m64	m21	m0
Internal Link Dist (ft)	491		1743		2367			498	
Turn Bay Length (ft)		150		375		375	200		200
Base Capacity (vph)	363	242	366	353	1988	951	782	2823	1281
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.34	0.32	0.13	0.21	0.34	0.43	0.30	0.00

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 27 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: SR 13 (Buford Hwy)/SR 13 (Atlanta Hwy) & Relocated Thunder Rd/Roy Carlson Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	13	42	75	8	98	41	377	295	310	727	2
Future Volume (vph)	0	13	42	75	8	98	41	377	295	310	727	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.90		1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1703		1671	1462		1805	3574	1455	1504	3574	1615
Flt Permitted		1.00		0.72	1.00		0.33	1.00	1.00	0.45	1.00	1.00
Satd. Flow (perm)		1703		1263	1462		635	3574	1455	716	3574	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.92	0.92	0.86	0.92
Adj. Flow (vph)	0	14	46	82	9	107	45	424	321	337	845	2
RTOR Reduction (vph)	0	41	0	0	95	0	0	0	143	0	0	0
Lane Group Flow (vph)	0	19	0	82	21	0	45	424	178	337	845	2
Heavy Vehicles (%)	0%	0%	0%	8%	0%	13%	0%	1%	11%	20%	1%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		13.2		13.2	13.2		66.7	66.7	66.7	94.8	94.8	94.8
Effective Green, g (s)		13.2		13.2	13.2		66.7	66.7	66.7	94.8	94.8	94.8
Actuated g/C Ratio		0.11		0.11	0.11		0.56	0.56	0.56	0.79	0.79	0.79
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0		3.0	3.0		5.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)		187		138	160		352	1986	808	710	2823	1275
v/s Ratio Prot		0.01			0.01			0.12		c0.09	0.24	
v/s Ratio Perm				c0.06			0.07		0.12	c0.29		0.00
v/c Ratio		0.10		0.59	0.13		0.13	0.21	0.22	0.47	0.30	0.00
Uniform Delay, d1		48.1		50.8	48.2		12.7	13.4	13.5	3.8	3.5	2.6
Progression Factor		1.00		1.00	1.00		0.56	0.59	2.31	1.04	0.14	1.00
Incremental Delay, d2		0.2		6.7	0.4		0.7	0.2	0.6	0.3	0.1	0.0
Delay (s)		48.3		57.6	48.6		7.9	8.2	31.8	4.3	0.6	2.6
Level of Service		D		E	D		A	A	C	A	A	A
Approach Delay (s)		48.3			52.3			17.7			1.7	
Approach LOS		D			D			B			A	

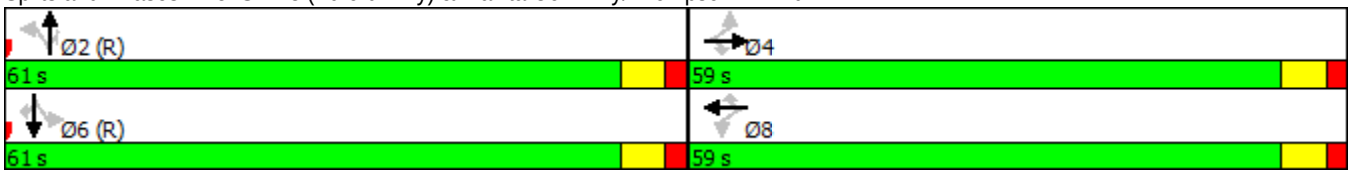
Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

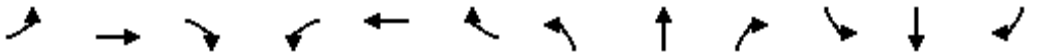
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	1	6	416	26	236	22	691	185	120	687	40
Future Volume (vph)	1	6	416	26	236	22	691	185	120	687	40
Lane Group Flow (vph)	4	12	0	485	265	38	735	201	162	763	55
Turn Type	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	4			8			2			6	
Permitted Phases		4	8		8	2		2	6		6
Detector Phase	4	4	8	8	8	2	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	15.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	59.0	59.0	59.0	59.0	59.0	61.0	61.0	61.0	61.0	61.0	61.0
Total Split (%)	49.2%	49.2%	49.2%	49.2%	49.2%	50.8%	50.8%	50.8%	50.8%	50.8%	50.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.01	0.02		0.89	0.38	0.13	0.42	0.22	0.54	0.42	0.06
Control Delay	19.0	2.5		53.4	13.2	13.1	14.1	1.0	15.2	7.5	1.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	2.5		53.4	13.2	13.1	14.1	1.0	15.2	7.5	1.4
Queue Length 50th (ft)	2	0		336	66	8	161	3	52	112	3
Queue Length 95th (ft)	3	0		300	122	m13	110	m8	75	151	5
Internal Link Dist (ft)	275			4179			3868			2104	
Turn Bay Length (ft)		105			250	230		230	200		185
Base Capacity (vph)	839	624		620	786	291	1745	917	300	1796	854
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.02		0.78	0.34	0.13	0.42	0.22	0.54	0.42	0.06

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 56 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: SR 13 (Buford Hwy) & Makita Co. Drwy/Thompson Mill Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1	6	416	26	236	22	691	185	120	687	40
Future Volume (vph)	0	1	6	416	26	236	22	691	185	120	687	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1900	1380		1816	1615	1805	3406	1599	1787	3505	1615
Flt Permitted		1.00	1.00		0.74	1.00	0.30	1.00	1.00	0.31	1.00	1.00
Satd. Flow (perm)		1900	1380		1406	1615	568	3406	1599	587	3505	1615
Peak-hour factor, PHF	0.54	0.25	0.50	0.93	0.69	0.89	0.58	0.94	0.92	0.74	0.90	0.73
Adj. Flow (vph)	0	4	12	447	38	265	38	735	201	162	763	55
RTOR Reduction (vph)	0	0	7	0	0	80	0	0	98	0	0	27
Lane Group Flow (vph)	0	4	5	0	485	185	38	735	103	162	763	28
Heavy Vehicles (%)	0%	0%	17%	0%	0%	0%	0%	6%	1%	1%	3%	0%
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		46.5	46.5		46.5	46.5	61.5	61.5	61.5	61.5	61.5	61.5
Effective Green, g (s)		46.5	46.5		46.5	46.5	61.5	61.5	61.5	61.5	61.5	61.5
Actuated g/C Ratio		0.39	0.39		0.39	0.39	0.51	0.51	0.51	0.51	0.51	0.51
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)		736	534		544	625	291	1745	819	300	1796	827
v/s Ratio Prot		0.00						0.22			0.22	
v/s Ratio Perm			0.00		c0.34	0.11	0.07		0.06	c0.28		0.02
v/c Ratio		0.01	0.01		0.89	0.30	0.13	0.42	0.13	0.54	0.42	0.03
Uniform Delay, d1		22.6	22.6		34.4	25.4	15.3	18.2	15.2	19.7	18.2	14.5
Progression Factor		1.00	1.00		1.00	1.00	0.67	0.70	0.21	0.36	0.35	0.27
Incremental Delay, d2		0.0	0.0		16.7	0.3	0.7	0.6	0.3	6.6	0.7	0.1
Delay (s)		22.6	22.6		51.1	25.7	10.9	13.2	3.5	13.8	7.1	3.9
Level of Service		C	C		D	C	B	B	A	B	A	A
Approach Delay (s)		22.6			42.1			11.1			8.0	
Approach LOS		C			D			B			A	

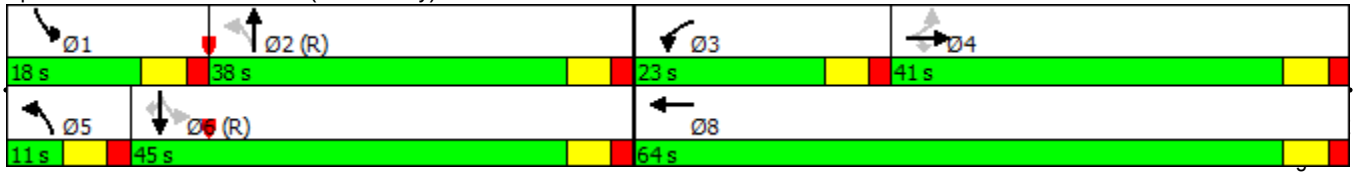
Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

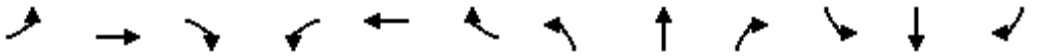
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	38	166	68	509	250	44	645	320	241	831	57
Future Volume (vph)	38	166	68	509	250	44	645	320	241	831	57
Lane Group Flow (vph)	70	263	96	553	613	59	701	432	339	894	63
Turn Type	Perm	NA	Perm	Prot	NA	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8	5	2		1	6	
Permitted Phases	4		4			2		Free	6		6
Detector Phase	4	4	4	3	8	5	2		1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	4.0	6.0	4.0	15.0		4.0	15.0	15.0
Minimum Split (s)	41.0	41.0	41.0	11.0	46.0	11.0	37.0		11.0	40.0	40.0
Total Split (s)	41.0	41.0	41.0	23.0	64.0	11.0	38.0		18.0	45.0	45.0
Total Split (%)	34.2%	34.2%	34.2%	19.2%	53.3%	9.2%	31.7%		15.0%	37.5%	37.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min		None	C-Min	C-Min
v/c Ratio	0.67	0.68	0.20	1.17	0.87	0.25	0.57	0.28	0.98	0.59	0.08
Control Delay	71.9	52.5	0.9	142.8	43.1	21.4	35.1	0.5	61.6	23.2	0.5
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	71.9	52.5	0.9	142.8	43.1	21.4	35.1	0.5	61.6	23.2	0.5
Queue Length 50th (ft)	51	193	0	~263	406	22	225	0	111	263	1
Queue Length 95th (ft)	51	164	0	#376	396	45	335	0	#230	364	m4
Internal Link Dist (ft)		657			1618		1320			3868	
Turn Bay Length (ft)	180		300	250		240		1000	400		280
Base Capacity (vph)	150	554	606	472	854	232	1223	1538	346	1516	749
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	0.47	0.47	0.16	1.17	0.72	0.25	0.57	0.28	0.98	0.59	0.08

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 8 (7%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 125
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.

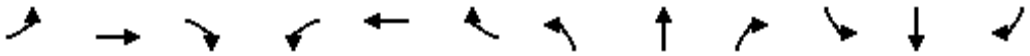
Splits and Phases: 6: SR 13 (Buford Hwy) & S. Hill St/Hamilton Mill Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	166	68	509	250	231	44	645	320	241	831	57
Future Volume (vph)	38	166	68	509	250	231	44	645	320	241	831	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	1900	1615	3335	1708		1770	3438	1538	1752	3505	1553
Flt Permitted	0.28	1.00	1.00	0.95	1.00		0.24	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	517	1900	1615	3335	1708		447	3438	1538	420	3505	1553
Peak-hour factor, PHF	0.54	0.63	0.71	0.92	0.81	0.76	0.75	0.92	0.74	0.71	0.93	0.91
Adj. Flow (vph)	70	263	96	553	309	304	59	701	432	339	894	63
RTOR Reduction (vph)	0	0	77	0	35	0	0	0	0	0	0	36
Lane Group Flow (vph)	70	263	19	553	578	0	59	701	432	339	894	27
Heavy Vehicles (%)	3%	0%	0%	5%	1%	5%	2%	5%	5%	3%	3%	4%
Turn Type	Perm	NA	Perm	Prot	NA		pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4				2		Free	6		6
Actuated Green, G (s)	24.3	24.3	24.3	17.0	47.3		46.7	42.7	120.0	60.7	50.7	50.7
Effective Green, g (s)	24.3	24.3	24.3	17.0	47.3		46.7	42.7	120.0	60.7	50.7	50.7
Actuated g/C Ratio	0.20	0.20	0.20	0.14	0.39		0.39	0.36	1.00	0.51	0.42	0.42
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0		3.0	5.0	5.0
Lane Grp Cap (vph)	104	384	327	472	673		218	1223	1538	345	1480	656
v/s Ratio Prot		0.14		c0.17	c0.34		0.01	0.20		c0.10	0.26	
v/s Ratio Perm	0.14		0.01				0.10		0.28	c0.40		0.02
v/c Ratio	0.67	0.68	0.06	1.17	0.86		0.27	0.57	0.28	0.98	0.60	0.04
Uniform Delay, d1	44.2	44.3	38.6	51.5	33.3		23.7	31.3	0.0	24.5	26.9	20.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.77	0.76	1.00
Incremental Delay, d2	15.8	5.0	0.1	97.8	10.6		0.7	2.0	0.5	40.2	1.6	0.1
Delay (s)	60.0	49.3	38.7	149.3	44.0		24.3	33.2	0.5	59.1	22.1	20.5
Level of Service	E	D	D	F	D		C	C	A	E	C	C
Approach Delay (s)		48.7			93.9			20.9			31.7	
Approach LOS		D			F			C			C	

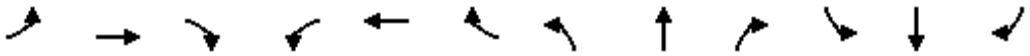
Intersection Summary			
HCM 2000 Control Delay	48.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	213	1	0	621	30	0	0	0	14	0	6
Future Volume (Veh/h)	5	213	1	0	621	30	0	0	0	14	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.42	0.83	0.25	0.92	0.94	0.68	0.92	0.92	0.92	0.60	0.92	0.75
Hourly flow rate (vph)	12	257	4	0	661	44	0	0	0	23	0	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	705			261			974	988	259	966	968	683
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	705			261			974	988	259	966	968	683
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	90	100	98
cM capacity (veh/h)	902			1315			227	246	785	234	252	453

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	273	705	0	31
Volume Left	12	0	0	23
Volume Right	4	44	0	8
cSH	902	1315	1700	267
Volume to Capacity	0.01	0.00	0.00	0.12
Queue Length 95th (ft)	1	0	0	10
Control Delay (s)	0.5	0.0	0.0	20.2
Lane LOS	A		A	C
Approach Delay (s)	0.5	0.0	0.0	20.2
Approach LOS			A	C

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	44.5%	ICU Level of Service	A	
Analysis Period (min)	15			



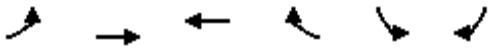
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	56	120	69	54	438	9	119	69	17	8	98	127
Future Volume (vph)	56	120	69	54	438	9	119	69	17	8	98	127
Peak Hour Factor	0.74	0.80	0.75	0.85	0.95	0.45	0.72	0.87	0.80	0.50	0.93	0.78
Hourly flow rate (vph)	76	150	92	64	461	20	165	79	21	16	105	163

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	226	92	545	244	21	121	163
Volume Left (vph)	76	0	64	165	0	16	0
Volume Right (vph)	0	92	20	0	21	0	163
Hadj (s)	0.08	-0.60	0.00	0.14	-0.60	0.03	-0.60
Departure Headway (s)	6.3	3.2	5.6	6.6	3.2	6.9	3.2
Degree Utilization, x	0.39	0.08	0.85	0.45	0.02	0.23	0.14
Capacity (veh/h)	534	1121	629	504	1121	466	1121
Control Delay (s)	13.3	6.5	32.3	14.9	6.3	11.9	6.7
Approach Delay (s)	11.3		32.3	14.2		8.9	
Approach LOS	B		D	B		A	

Intersection Summary				
Delay	19.5			
Level of Service	C			
Intersection Capacity Utilization	56.8%	ICU Level of Service	B	
Analysis Period (min)	15			

Intersection: 8: N. Bogan Rd & Thompson Mill Rd

Movement	EB	WB	NB	SB	SB
Directions Served	LT	LTR	LT	LT	R
Maximum Queue (ft)	54	143	31	55	54
Average Queue (ft)	39	93	31	38	17
95th Queue (ft)	59	143	31	58	54
Link Distance (ft)	2179	1026	850	591	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					100
Storage Blk Time (%)					
Queuing Penalty (veh)					



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	227	652	28	7	0
Future Volume (Veh/h)	0	227	652	28	7	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.83	0.94	0.92	0.92	0.92
Hourly flow rate (vph)	0	273	694	30	8	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	694				967	694
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	694				967	694
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				97	100
cM capacity (veh/h)	911				284	446

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	273	694	30	8
Volume Left	0	0	0	8
Volume Right	0	0	30	0
cSH	1700	1700	1700	284
Volume to Capacity	0.16	0.41	0.02	0.03
Queue Length 95th (ft)	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	18.0
Lane LOS				C
Approach Delay (s)	0.0	0.0		18.0
Approach LOS				C

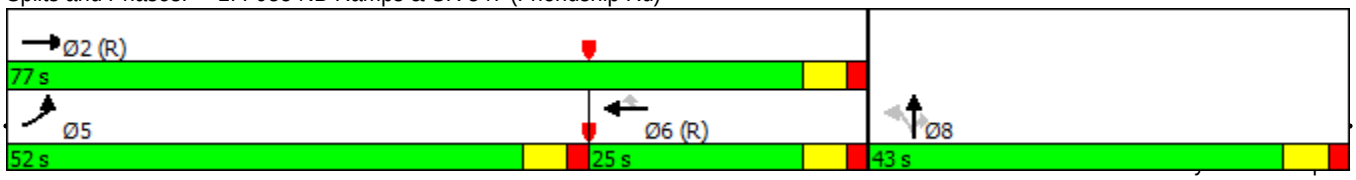
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

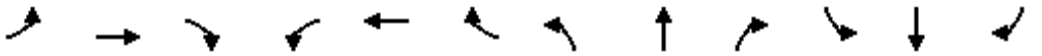
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Configurations							
Traffic Volume (vph)	573	1332	564	135	379	1	562
Future Volume (vph)	573	1332	564	135	379	1	562
Lane Group Flow (vph)	699	1497	581	173	225	230	618
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm
Protected Phases	5	2	6			8	
Permitted Phases				6	8		8
Detector Phase	5	2	6	6	8	8	8
Switch Phase							
Minimum Initial (s)	4.0	15.0	15.0	15.0	6.0	6.0	6.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	52.0	77.0	25.0	25.0	43.0	43.0	43.0
Total Split (%)	43.3%	64.2%	20.8%	20.8%	35.8%	35.8%	35.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?							
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	1.06	0.71	0.71	0.43	0.44	0.45	1.12
Control Delay	73.6	11.4	53.5	10.2	36.5	36.7	108.2
Queue Delay	0.0	1.8	0.0	0.0	0.0	0.0	0.0
Total Delay	73.6	13.1	53.5	10.2	36.5	36.7	108.2
Queue Length 50th (ft)	~589	344	158	0	146	150	~504
Queue Length 95th (ft)	#699	103	201	38	207	54	#733
Internal Link Dist (ft)		591	1139			825	
Turn Bay Length (ft)	100			840			510
Base Capacity (vph)	658	2114	813	398	513	515	554
Starvation Cap Reductn	0	425	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	1.06	0.89	0.71	0.43	0.44	0.45	1.12

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 59 (49%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 130
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: I-985 NB Ramps & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	573	1332	0	0	564	135	379	1	562	0	0	0
Future Volume (vph)	573	1332	0	0	564	135	379	1	562	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Lane Util. Factor	1.00	0.95			0.91	1.00	0.95	0.95	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1719	3574			5136	1599	1665	1671	1615			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	1719	3574			5136	1599	1665	1671	1615			
Peak-hour factor, PHF	0.82	0.89	0.92	0.92	0.97	0.78	0.84	0.25	0.91	0.92	0.92	0.92
Adj. Flow (vph)	699	1497	0	0	581	173	451	4	618	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	146	0	0	57	0	0	0
Lane Group Flow (vph)	699	1497	0	0	581	27	225	230	561	0	0	0
Heavy Vehicles (%)	5%	1%	0%	0%	1%	1%	3%	0%	0%	0%	0%	0%
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	46.0	71.0			19.0	19.0	37.0	37.0	37.0			
Effective Green, g (s)	46.0	71.0			19.0	19.0	37.0	37.0	37.0			
Actuated g/C Ratio	0.38	0.59			0.16	0.16	0.31	0.31	0.31			
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	5.0			5.0	5.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	658	2114			813	253	513	515	497			
v/s Ratio Prot	c0.41	c0.42			0.11							
v/s Ratio Perm						0.02	0.14	0.14	c0.35			
v/c Ratio	1.06	0.71			0.71	0.11	0.44	0.45	1.13			
Uniform Delay, d1	37.0	17.2			47.9	43.2	33.2	33.3	41.5			
Progression Factor	0.63	0.56			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	48.3	1.5			5.3	0.9	0.6	0.6	80.9			
Delay (s)	71.7	11.2			53.3	44.1	33.8	33.9	122.4			
Level of Service	E	B			D	D	C	C	F			
Approach Delay (s)		30.4			51.2			84.9			0.0	
Approach LOS		C			D			F			A	

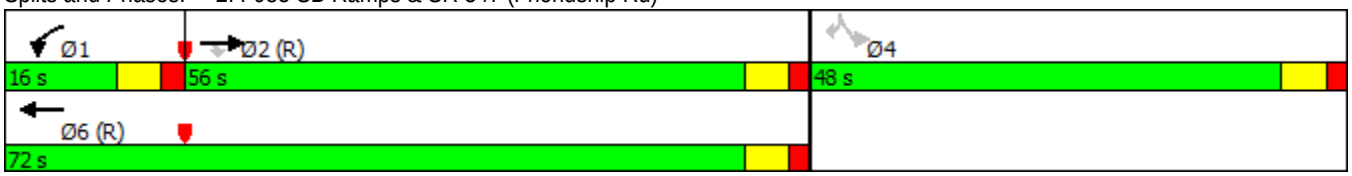
Intersection Summary			
HCM 2000 Control Delay	48.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

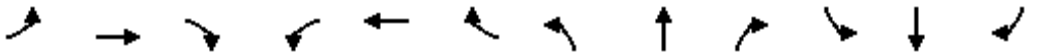
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1601	490	162	792	320	393
Future Volume (vph)	1601	490	162	792	320	393
Lane Group Flow (vph)	1685	605	198	870	421	468
Turn Type	NA	Perm	Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2			4	4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	15.0	15.0	4.0	15.0	6.0	6.0
Minimum Split (s)	24.0	24.0	11.0	24.0	24.0	24.0
Total Split (s)	56.0	56.0	16.0	72.0	48.0	48.0
Total Split (%)	46.7%	46.7%	13.3%	60.0%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
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)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	None	C-Min	None	None
v/c Ratio	0.69	0.57	0.70	0.40	0.82	0.87
Control Delay	17.9	1.5	42.3	23.0	52.6	44.8
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	17.9	1.5	42.3	23.0	52.6	44.8
Queue Length 50th (ft)	215	1	60	358	301	252
Queue Length 95th (ft)	m230	m1	97	443	310	320
Internal Link Dist (ft)	904			591		
Turn Bay Length (ft)		375	380			
Base Capacity (vph)	2455	1055	288	2174	631	631
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	59	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.57	0.69	0.40	0.67	0.74

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 119 (99%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-985 SB Ramps & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1601	490	162	792	0	0	0	0	320	0	393
Future Volume (vph)	0	1601	490	162	792	0	0	0	0	320	0	393
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Lane Util. Factor		0.91	1.00	0.97	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		5085	1538	3467	3539					1805		1553
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5085	1538	3467	3539					1805		1553
Peak-hour factor, PHF	0.92	0.95	0.81	0.82	0.91	0.92	0.92	0.92	0.92	0.76	0.92	0.84
Adj. Flow (vph)	0	1685	605	198	870	0	0	0	0	421	0	468
RTOR Reduction (vph)	0	0	313	0	0	0	0	0	0	0	0	97
Lane Group Flow (vph)	0	1685	292	198	870	0	0	0	0	421	0	371
Heavy Vehicles (%)	0%	2%	5%	1%	2%	0%	0%	0%	0%	0%	0%	4%
Turn Type		NA	Perm	Prot	NA					Perm		Perm
Protected Phases		2		1	6							
Permitted Phases			2							4		4
Actuated Green, G (s)		57.9	57.9	9.8	73.7					34.3		34.3
Effective Green, g (s)		57.9	57.9	9.8	73.7					34.3		34.3
Actuated g/C Ratio		0.48	0.48	0.08	0.61					0.29		0.29
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Vehicle Extension (s)		5.0	5.0	3.0	5.0					3.0		3.0
Lane Grp Cap (vph)		2453	742	283	2173					515		443
v/s Ratio Prot		c0.33		c0.06	0.25							
v/s Ratio Perm			0.19							0.23		c0.24
v/c Ratio		0.69	0.39	0.70	0.40					0.82		0.84
Uniform Delay, d1		24.0	19.8	53.7	11.8					39.9		40.2
Progression Factor		0.67	0.19	0.57	1.75					1.00		1.00
Incremental Delay, d2		0.8	0.8	6.1	0.5					9.7		12.9
Delay (s)		17.0	4.5	36.5	21.2					49.7		53.2
Level of Service		B	A	D	C					D		D
Approach Delay (s)		13.7			24.0			0.0			51.5	
Approach LOS		B			C			A			D	

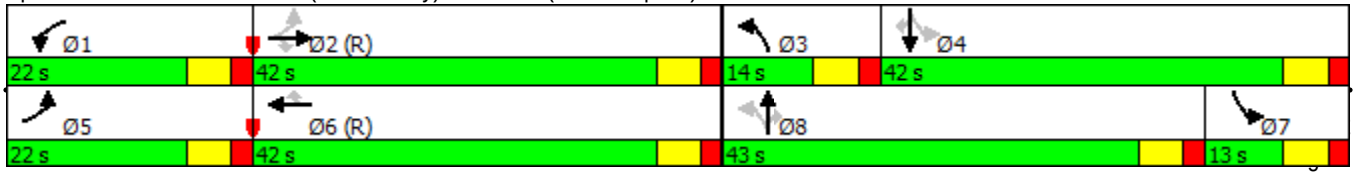
Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

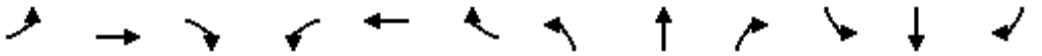
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	871	82	386	612	237	129	414	574	173	184	103
Future Volume (vph)	193	871	82	386	612	237	129	414	574	173	184	103
Lane Group Flow (vph)	222	1075	98	434	703	279	139	518	683	184	222	110
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0	15.0	4.0	6.0	6.0	4.0	6.0	6.0
Minimum Split (s)	11.0	37.0	37.0	11.0	37.0	37.0	11.0	42.0	42.0	11.0	42.0	42.0
Total Split (s)	22.0	42.0	42.0	22.0	42.0	42.0	14.0	43.0	43.0	13.0	42.0	42.0
Total Split (%)	18.3%	35.0%	35.0%	18.3%	35.0%	35.0%	11.7%	35.8%	35.8%	10.8%	35.0%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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	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	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.64	0.99	0.16	0.97	0.61	0.40	0.49	0.92	1.01	0.86	0.41	0.19
Control Delay	27.9	67.8	0.6	84.2	27.6	4.9	21.3	44.5	45.2	79.5	36.4	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.9	67.8	0.6	84.2	27.6	4.9	21.3	44.5	45.2	79.5	36.4	3.6
Queue Length 50th (ft)	98	436	0	145	297	44	34	410	~388	111	137	0
Queue Length 95th (ft)	146	#482	0	#267	297	26	m57	#388	#151	#232	191	27
Internal Link Dist (ft)		1576			3513			1183			1183	
Turn Bay Length (ft)	250		370	300		310			500	300		215
Base Capacity (vph)	382	1083	599	448	1154	691	285	563	676	214	537	574
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.99	0.16	0.97	0.61	0.40	0.49	0.92	1.01	0.86	0.41	0.19

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 63 (53%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 105
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: 3: SR 13 (Atlanta Hwy) & SR 347 (Friendship Rd)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	871	82	386	612	237	129	414	574	173	184	103
Future Volume (vph)	193	871	82	386	612	237	129	414	574	173	184	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3610	1553	3367	3610	1568	1787	1827	1482	1752	1792	1599
Flt Permitted	0.25	1.00	1.00	0.95	1.00	1.00	0.37	1.00	1.00	0.25	1.00	1.00
Satd. Flow (perm)	472	3610	1553	3367	3610	1568	691	1827	1482	465	1792	1599
Peak-hour factor, PHF	0.87	0.81	0.84	0.89	0.87	0.85	0.93	0.80	0.84	0.94	0.83	0.94
Adj. Flow (vph)	222	1075	98	434	703	279	139	518	683	184	222	110
RTOR Reduction (vph)	0	0	69	0	0	190	0	0	220	0	0	77
Lane Group Flow (vph)	222	1075	29	434	703	89	139	518	463	184	222	33
Heavy Vehicles (%)	0%	0%	4%	4%	0%	3%	1%	4%	9%	3%	6%	1%
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2			6	8		8	4		4
Actuated Green, G (s)	49.6	36.0	36.0	16.0	38.4	38.4	37.0	37.0	37.0	36.0	36.0	36.0
Effective Green, g (s)	49.6	36.0	36.0	16.0	38.4	38.4	37.0	37.0	37.0	36.0	36.0	36.0
Actuated g/C Ratio	0.41	0.30	0.30	0.13	0.32	0.32	0.31	0.31	0.31	0.30	0.30	0.30
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	346	1083	465	448	1155	501	286	563	456	214	537	479
v/s Ratio Prot	0.07	c0.30		c0.13	0.19		0.03	0.28		c0.05	0.12	
v/s Ratio Perm	0.19		0.02			0.06	0.12		c0.31	0.21		0.02
v/c Ratio	0.64	0.99	0.06	0.97	0.61	0.18	0.49	0.92	1.02	0.86	0.41	0.07
Uniform Delay, d1	24.5	41.9	30.0	51.8	34.5	29.4	31.8	40.1	41.5	46.8	33.6	30.0
Progression Factor	1.00	1.00	1.00	0.98	0.72	0.88	0.52	0.59	0.39	1.00	1.00	1.00
Incremental Delay, d2	4.0	25.6	0.3	31.7	2.1	0.7	1.0	17.3	41.5	27.3	0.5	0.1
Delay (s)	28.5	67.5	30.2	82.6	27.0	26.7	17.6	40.9	57.6	74.1	34.1	30.1
Level of Service	C	E	C	F	C	C	B	D	E	E	C	C
Approach Delay (s)		58.7			44.0			47.0			47.5	
Approach LOS		E			D			D			D	

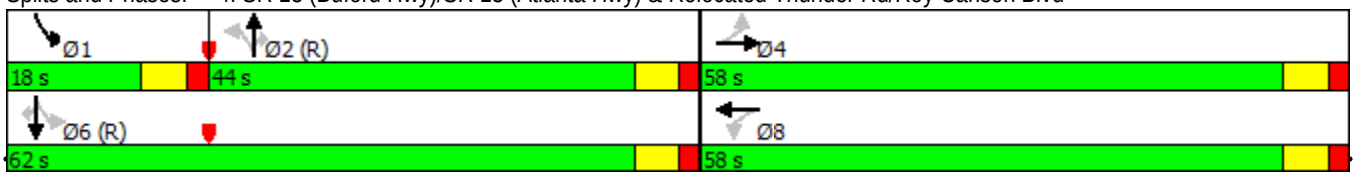
Intersection Summary			
HCM 2000 Control Delay	49.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

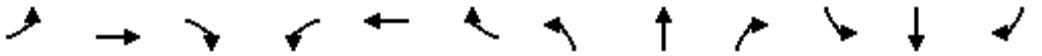
Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	12	375	14	18	746	166	150	451
Future Volume (vph)	12	375	14	18	746	166	150	451
Lane Group Flow (vph)	68	408	468	20	848	180	163	564
Turn Type	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		8		2		1	6
Permitted Phases		8		2		2	6	
Detector Phase	4	8	8	2	2	2	1	6
Switch Phase								
Minimum Initial (s)	6.0	6.0	6.0	15.0	15.0	15.0	5.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	11.0	24.0
Total Split (s)	58.0	58.0	58.0	44.0	44.0	44.0	18.0	62.0
Total Split (%)	48.3%	48.3%	48.3%	36.7%	36.7%	36.7%	15.0%	51.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	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)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag				Lag	Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	C-Min	C-Min	C-Min	None	C-Min
v/c Ratio	0.10	0.89	0.64	0.06	0.64	0.27	0.58	0.31
Control Delay	7.5	56.5	14.7	15.5	24.0	4.8	28.9	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	56.5	14.7	15.5	24.0	4.8	28.9	6.8
Queue Length 50th (ft)	6	281	106	8	341	20	47	81
Queue Length 95th (ft)	33	#437	210	m18	396	38	m83	m90
Internal Link Dist (ft)	491		1743		2367			498
Turn Bay Length (ft)		150		375		375	200	
Base Capacity (vph)	764	519	786	311	1319	660	289	1831
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	0.09	0.79	0.60	0.06	0.64	0.27	0.56	0.31

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
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: 4: SR 13 (Buford Hwy)/SR 13 (Atlanta Hwy) & Relocated Thunder Rd/Roy Carlson Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	51	375	14	417	18	746	166	150	451	0
Future Volume (vph)	0	12	51	375	14	417	18	746	166	150	451	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt		0.89		1.00	0.85		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1693		1597	1443		1805	3539	1468	1641	3539	
Flt Permitted		1.00		0.71	1.00		0.44	1.00	1.00	0.17	1.00	
Satd. Flow (perm)		1693		1198	1443		837	3539	1468	295	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.92	0.92	0.80	0.92
Adj. Flow (vph)	0	13	55	408	15	453	20	848	180	163	564	0
RTOR Reduction (vph)	0	34	0	0	175	0	0	0	113	0	0	0
Lane Group Flow (vph)	0	34	0	408	293	0	20	848	67	163	564	0
Heavy Vehicles (%)	0%	0%	0%	13%	0%	13%	0%	2%	10%	10%	2%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		45.9		45.9	45.9		44.8	44.8	44.8	62.1	62.1	
Effective Green, g (s)		45.9		45.9	45.9		44.8	44.8	44.8	62.1	62.1	
Actuated g/C Ratio		0.38		0.38	0.38		0.37	0.37	0.37	0.52	0.52	
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		5.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		647		458	551		312	1321	548	279	1831	
v/s Ratio Prot		0.02			0.20			c0.24		c0.05	0.16	
v/s Ratio Perm				c0.34			0.02		0.05	0.25		
v/c Ratio		0.05		0.89	0.53		0.06	0.64	0.12	0.58	0.31	
Uniform Delay, d1		23.3		34.7	28.7		24.1	31.0	24.7	19.1	16.6	
Progression Factor		1.00		1.00	1.00		0.53	0.66	0.89	1.31	0.37	
Incremental Delay, d2		0.0		19.0	1.0		0.4	2.2	0.4	2.2	0.3	
Delay (s)		23.4		53.7	29.7		13.1	22.7	22.3	27.2	6.4	
Level of Service		C		D	C		B	C	C	C	A	
Approach Delay (s)		23.4			40.9			22.4			11.1	
Approach LOS		C			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	23	17	21	287	7	122	6	797	384	172	745
Future Volume (vph)	23	17	21	287	7	122	6	797	384	172	745
Lane Group Flow (vph)	0	76	42	0	331	153	12	960	404	198	920
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		4			8			2			6
Permitted Phases	4		4	8		8	2		2	6	
Detector Phase	4	4	4	8	8	8	2	2	2	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	44.0	44.0	44.0	44.0	44.0	44.0	76.0	76.0	76.0	76.0	76.0
Total Split (%)	36.7%	36.7%	36.7%	36.7%	36.7%	36.7%	63.3%	63.3%	63.3%	63.3%	63.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio		0.21	0.09		0.90	0.28	0.04	0.44	0.35	0.68	0.44
Control Delay		33.0	9.1		69.0	9.5	5.2	5.8	0.6	21.5	5.2
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		33.0	9.1		69.0	9.5	5.2	5.8	0.6	21.5	5.2
Queue Length 50th (ft)		43	0		239	16	2	97	0	64	115
Queue Length 95th (ft)		34	4		138	49	m2	101	m0	m123	106
Internal Link Dist (ft)		275			4179			3868			2104
Turn Bay Length (ft)			105			250	230		230	200	
Base Capacity (vph)		395	515		409	596	309	2180	1149	292	2078
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.19	0.08		0.81	0.26	0.04	0.44	0.35	0.68	0.44

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 23 (19%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: SR 13 (Buford Hwy) & Makita Co. Drwy/Thompson Mill Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	17	21	287	7	122	6	797	384	172	745	0
Future Volume (vph)	23	17	21	287	7	122	6	797	384	172	745	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98	1.00		0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1860	1538		1814	1615	1805	3539	1615	1805	3374	
Flt Permitted		0.66	1.00		0.68	1.00	0.26	1.00	1.00	0.25	1.00	
Satd. Flow (perm)		1248	1538		1295	1615	502	3539	1615	475	3374	
Peak-hour factor, PHF	0.69	0.40	0.50	0.91	0.44	0.80	0.50	0.83	0.95	0.87	0.81	0.73
Adj. Flow (vph)	33	42	42	315	16	152	12	960	404	198	920	0
RTOR Reduction (vph)	0	0	30	0	0	89	0	0	155	0	0	0
Lane Group Flow (vph)	0	76	12	0	331	64	12	960	249	198	920	0
Heavy Vehicles (%)	0%	0%	5%	0%	0%	0%	0%	2%	0%	0%	7%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		34.1	34.1		34.1	34.1	73.9	73.9	73.9	73.9	73.9	
Effective Green, g (s)		34.1	34.1		34.1	34.1	73.9	73.9	73.9	73.9	73.9	
Actuated g/C Ratio		0.28	0.28		0.28	0.28	0.62	0.62	0.62	0.62	0.62	
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)		354	437		367	458	309	2179	994	292	2077	
v/s Ratio Prot								0.27			0.27	
v/s Ratio Perm		0.06	0.01		c0.26	0.04	0.02		0.15	c0.42		
v/c Ratio		0.21	0.03		0.90	0.14	0.04	0.44	0.25	0.68	0.44	
Uniform Delay, d1		32.7	31.0		41.3	32.0	9.1	12.2	10.5	15.2	12.2	
Progression Factor		1.00	1.00		1.00	1.00	0.46	0.42	0.06	0.52	0.35	
Incremental Delay, d2		0.3	0.0		24.4	0.1	0.1	0.4	0.4	11.0	0.6	
Delay (s)		33.0	31.0		65.7	32.2	4.3	5.5	1.0	18.8	4.9	
Level of Service		C	C		E	C	A	A	A	B	A	
Approach Delay (s)		32.3			55.1			4.2			7.4	
Approach LOS		C			E			A			A	

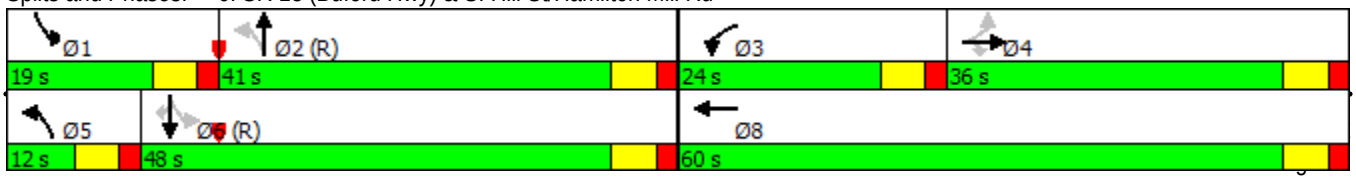
Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

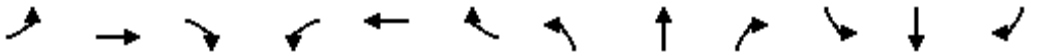
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	82	279	55	405	222	83	970	770	297	786	54
Future Volume (vph)	82	279	55	405	222	83	970	770	297	786	54
Lane Group Flow (vph)	93	291	68	460	516	122	1066	837	349	936	61
Turn Type	Perm	NA	Perm	Prot	NA	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8	5	2		1	6	
Permitted Phases	4		4			2		Free	6		6
Detector Phase	4	4	4	3	8	5	2		1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	4.0	6.0	4.0	15.0		4.0	15.0	15.0
Minimum Split (s)	41.0	41.0	41.0	11.0	46.0	11.0	37.0		11.0	40.0	40.0
Total Split (s)	36.0	36.0	36.0	24.0	60.0	12.0	41.0		19.0	48.0	48.0
Total Split (%)	30.0%	30.0%	30.0%	20.0%	50.0%	10.0%	34.2%		15.8%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	C-Min		None	C-Min	C-Min
v/c Ratio	0.53	0.78	0.14	0.92	0.73	0.54	0.86	0.53	1.39	0.67	0.08
Control Delay	53.5	60.6	0.7	75.2	33.3	29.4	45.7	1.3	226.2	33.3	1.3
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	53.5	60.6	0.7	75.2	33.3	29.4	45.7	1.3	226.2	33.3	1.3
Queue Length 50th (ft)	65	216	0	183	300	49	403	0	~310	292	1
Queue Length 95th (ft)	112	296	0	#270	366	69	#596	0	m#462	406	m5
Internal Link Dist (ft)		660			1618		1320			3868	
Turn Bay Length (ft)	180		300	250		240		1000	400		280
Base Capacity (vph)	224	475	547	500	802	224	1238	1568	251	1391	734
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	0.42	0.61	0.12	0.92	0.64	0.54	0.86	0.53	1.39	0.67	0.08

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 4 (3%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145
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.

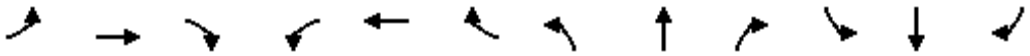
Splits and Phases: 6: SR 13 (Buford Hwy) & S. Hill St/Hamilton Mill Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	279	55	405	222	201	83	970	770	297	786	54
Future Volume (vph)	82	279	55	405	222	201	83	970	770	297	786	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	1900	1615	3335	1715		1805	3574	1568	1752	3438	1615
Flt Permitted	0.47	1.00	1.00	0.95	1.00		0.20	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	899	1900	1615	3335	1715		386	3574	1568	155	3438	1615
Peak-hour factor, PHF	0.88	0.96	0.81	0.88	0.86	0.78	0.68	0.91	0.92	0.85	0.84	0.88
Adj. Flow (vph)	93	291	68	460	258	258	122	1066	837	349	936	61
RTOR Reduction (vph)	0	0	55	0	33	0	0	0	0	0	0	36
Lane Group Flow (vph)	93	291	13	460	483	0	122	1066	837	349	936	25
Heavy Vehicles (%)	0%	0%	0%	5%	1%	4%	0%	1%	3%	3%	5%	0%
Turn Type	Perm	NA	Perm	Prot	NA		pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4				2		Free	6		6
Actuated Green, G (s)	23.4	23.4	23.4	18.0	47.4		47.6	41.6	120.0	60.6	48.6	48.6
Effective Green, g (s)	23.4	23.4	23.4	18.0	47.4		47.6	41.6	120.0	60.6	48.6	48.6
Actuated g/C Ratio	0.19	0.19	0.19	0.15	0.39		0.40	0.35	1.00	0.51	0.41	0.41
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0		3.0	5.0	5.0
Lane Grp Cap (vph)	175	370	314	500	677		224	1238	1568	251	1392	654
v/s Ratio Prot		0.15		c0.14	c0.28		0.03	0.30		c0.15	0.27	
v/s Ratio Perm	0.10		0.01				0.19		0.53	c0.55		0.02
v/c Ratio	0.53	0.79	0.04	0.92	0.71		0.54	0.86	0.53	1.39	0.67	0.04
Uniform Delay, d1	43.4	45.9	39.2	50.3	30.6		24.4	36.5	0.0	35.9	29.2	21.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.06	1.01	1.00
Incremental Delay, d2	3.1	10.5	0.1	22.3	3.6		2.7	8.0	1.3	195.9	2.3	0.1
Delay (s)	46.5	56.5	39.3	72.6	34.1		27.1	44.5	1.3	233.9	31.9	21.7
Level of Service	D	E	D	E	C		C	D	A	F	C	C
Approach Delay (s)		51.8			52.3			25.6			83.8	
Approach LOS		D			D			C			F	

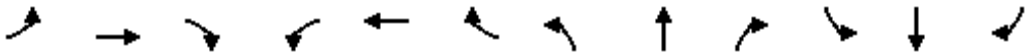
Intersection Summary			
HCM 2000 Control Delay	49.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	516	0	0	296	11	0	0	0	32	0	8
Future Volume (Veh/h)	5	516	0	0	296	11	0	0	0	32	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.31	0.80	0.25	0.92	0.96	0.58	0.92	0.92	0.92	0.61	0.92	0.67
Hourly flow rate (vph)	16	645	0	0	308	19	0	0	0	52	0	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	327			645			1006	1004	645	994	994	318
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	327			645			1006	1004	645	994	994	318
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	77	100	98
cM capacity (veh/h)	1244			950			216	241	476	224	244	728

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	661	327	0	64
Volume Left	16	0	0	52
Volume Right	0	19	0	12
cSH	1244	950	1700	257
Volume to Capacity	0.01	0.00	0.00	0.25
Queue Length 95th (ft)	1	0	0	24
Control Delay (s)	0.4	0.0	0.0	23.6
Lane LOS	A		A	C
Approach Delay (s)	0.4	0.0	0.0	23.6
Approach LOS			A	C

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	41.1%	ICU Level of Service	A	
Analysis Period (min)	15			



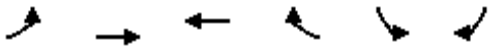
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	74	380	112	58	182	15	74	150	87	15	158	50
Future Volume (vph)	74	380	112	58	182	15	74	150	87	15	158	50
Peak Hour Factor	0.83	0.90	0.79	0.92	0.86	0.88	0.92	0.81	0.77	0.70	0.75	0.80
Hourly flow rate (vph)	89	422	142	63	212	17	80	185	113	21	211	63

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	511	142	292	265	113	232	63
Volume Left (vph)	89	0	63	80	0	21	0
Volume Right (vph)	0	142	17	0	113	0	63
Hadj (s)	0.03	-0.60	0.01	0.06	-0.58	0.02	-0.60
Departure Headway (s)	6.7	3.2	7.2	7.5	3.2	7.6	3.2
Degree Utilization, x	0.95	0.13	0.58	0.55	0.10	0.49	0.06
Capacity (veh/h)	533	1121	474	452	1121	442	1121
Control Delay (s)	52.1	6.7	19.8	19.5	6.6	17.7	6.4
Approach Delay (s)	42.2		19.8	15.6		15.3	
Approach LOS	E		C	C		C	

Intersection Summary				
Delay	27.1			
Level of Service	D			
Intersection Capacity Utilization	72.3%	ICU Level of Service	C	
Analysis Period (min)	15			

Intersection: 8: N. Bogan Rd & Thompson Mill Rd

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LTR	LT	LT
Maximum Queue (ft)	224	150	85	76	86
Average Queue (ft)	105	30	49	50	45
95th Queue (ft)	210	129	83	78	82
Link Distance (ft)	2179		1026	850	591
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		100			
Storage Blk Time (%)	12				0
Queuing Penalty (veh)	13				0



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	548	307	8	29	0
Future Volume (Veh/h)	0	548	307	8	29	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.80	0.96	0.92	0.92	0.92
Hourly flow rate (vph)	0	685	320	9	32	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	320				1005	320
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	320				1005	320
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				88	100
cM capacity (veh/h)	1240				268	721

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	685	320	9	32
Volume Left	0	0	0	32
Volume Right	0	0	9	0
cSH	1700	1700	1700	268
Volume to Capacity	0.40	0.19	0.01	0.12
Queue Length 95th (ft)	0	0	0	10
Control Delay (s)	0.0	0.0	0.0	20.3
Lane LOS				C
Approach Delay (s)	0.0	0.0		20.3
Approach LOS				C

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		

Traffic Volume Worksheets

16-106 Longacre Development - SR 13 (Buford Hwy) - Buford, GA

Traffic Volumes
Future Conditions

A&R Engineering
November 2016

1. SR 347 @ I-985 NB Ramps

A.M. Peak Hour

	Northbound				Southbound				Eastbound				Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	303	4	83	390	0	0	0	0	355	387	0	742	0	1203	312	1515
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition:	318	4	87	409	0	0	0	0	373	407	0	780	0	1265	328	1593
Industrial Car Trips:	48	0	0	48	0	0	0	0	14	6	0	20	0	24	0	24
Industrial Truck Trips:	20	0	0	20	0	0	0	0	6	1	0	7	0	4	0	4
Retail Trips:	6	0	0	6	0	0	0	0	5	2	0	7	0	3	0	3
Total New Trips:	74	0	0	74	0	0	0	0	25	9	0	34	0	31	0	31
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	392	4	87	483	0	0	0	0	398	416	0	814	0	1296	328	1624

P.M. Peak Hour

	Northbound				Southbound				Eastbound				Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	330	1	535	866	0	0	0	0	449	1234	0	1683	0	523	128	651
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition:	347	1	562	910	0	0	0	0	472	1297	0	1769	0	550	135	685
Industrial Car Trips:	14	0	0	14	0	0	0	0	62	25	0	87	0	7	0	7
Industrial Truck Trips:	6	0	0	6	0	0	0	0	23	4	0	27	0	1	0	1
Retail Trips:	12	0	0	12	0	0	0	0	16	6	0	22	0	6	0	6
Total New Trips:	32	0	0	32	0	0	0	0	101	35	0	136	0	14	0	14
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	379	1	562	942	0	0	0	0	573	1332	0	1905	0	564	135	699

16-106 Longacre Development - SR 13 (Buford Hwy) - Buford, GA

Traffic Volumes
Future Conditions

A&R Engineering
November 2016

2. SR 347 @ I-985 SB Ramps

A.M. Peak Hour

	Northbound				Southbound				Eastbound				Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	0	0	0	0	112	0	435	547	0	627	382	1009	472	1061	0	1533
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition:	0	0	0	0	118	0	457	575	0	659	402	1061	496	1115	0	1611
Industrial Car Trips:	0	0	0	0	0	0	60	60	0	20	11	31	0	73	0	73
Industrial Truck Trips:	0	0	0	0	0	0	23	23	0	7	5	12	0	23	0	23
Retail Trips:	0	0	0	0	0	0	8	8	0	7	4	11	0	10	0	10
Total New Trips:	0	0	0	0	0	0	91	91	0	34	20	54	0	106	0	106
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	0	0	0	0	118	0	548	666	0	693	422	1115	496	1221	0	1717

P.M. Peak Hour

	Northbound				Southbound				Eastbound				Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	0	0	0	0	304	0	336	640	0	1393	388	1781	154	710	0	864
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition:	0	0	0	0	320	0	353	673	0	1464	408	1872	162	746	0	908
Industrial Car Trips:	0	0	0	0	0	0	18	18	0	87	50	137	0	21	0	21
Industrial Truck Trips:	0	0	0	0	0	0	7	7	0	27	19	46	0	7	0	7
Retail Trips:	0	0	0	0	0	0	15	15	0	23	13	36	0	18	0	18
Total New Trips:	0	0	0	0	0	0	40	40	0	137	82	219	0	46	0	46
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	0	0	0	0	320	0	393	713	0	1601	490	2091	162	792	0	954

16-106 Longacre Development - SR 13 (Buford Hwy) - Buford, GA

Traffic Volumes
Future Conditions

A&R Engineering
November 2016

3. SR 347 @ SR 13 (Atlanta Hwy)

A.M. Peak Hour

	Northbound				Southbound				Eastbound				Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	87	131	161	379	232	268	123	623	135	570	94	799	389	577	74	1040
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition:	91	138	169	398	244	282	129	655	142	599	99	840	409	607	78	1094
Industrial Car Trips:	3	10	31	44	0	40	0	40	0	0	12	12	133	0	0	133
Industrial Truck Trips:	0	2	11	13	0	6	0	6	0	0	0	0	47	0	0	47
Retail Trips:	1	3	11	15	0	5	0	5	0	0	2	2	18	0	0	18
Total New Trips:	4	15	53	72	0	51	0	51	0	0	14	14	198	0	0	198
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	95	153	222	470	244	333	129	706	142	599	113	854	607	607	78	1292

P.M. Peak Hour

	Northbound				Southbound				Eastbound				Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	108	339	339	786	165	152	98	415	184	829	71	1084	286	582	225	1093
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition:	114	356	356	826	173	160	103	436	193	871	75	1139	301	612	237	1150
Industrial Car Trips:	12	41	136	189	0	12	0	12	0	0	4	4	39	0	0	39
Industrial Truck Trips:	0	6	46	52	0	2	0	2	0	0	0	0	13	0	0	13
Retail Trips:	3	11	36	50	0	10	0	10	0	0	3	3	33	0	0	33
Total New Trips:	15	58	218	291	0	24	0	24	0	0	7	7	85	0	0	85
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	129	414	574	1117	173	184	103	460	193	871	82	1146	386	612	237	1235

16-106 Longacre Development - SR 13 (Buford Hwy) - Buford, GA

Traffic Volumes
Future Conditions

A&R Engineering
November 2016

4. SR 13 @ Roy Carlson Blvd

A.M. Peak Hour

	Northbound				Southbound				Eastbound				Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	0	379	49	428	35	703	0	738	0	0	0	0	7	0	5	12
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	41	-21	2	22	10	-12	2	0	0	13	42	55	0	8	21	29
Base Condition:	41	377	54	472	47	727	2	776	0	13	42	55	7	8	26	41
Industrial Car Trips:	0	0	189	189	185	0	0	185	0	0	0	0	45	0	44	89
Industrial Truck Trips:	0	0	25	25	53	0	0	53	0	0	0	0	6	0	13	19
Retail Trips:	0	0	27	27	25	0	0	25	0	0	0	0	17	0	15	32
Total New Trips:	0	0	241	241	263	0	0	263	0	0	0	0	68	0	72	140
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	41	377	295	713	310	727	2	1039	0	13	42	55	75	8	98	181

P.M. Peak Hour

	Northbound				Southbound				Eastbound				Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	0	750	18	768	4	459	0	463	0	0	0	0	75	0	77	152
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	18	-10	2	10	11	-11	0	0	0	12	51	63	1	14	10	25
Base Condition:	18	778	21	817	15	471	0	486	0	12	51	63	80	14	91	185
Industrial Car Trips:	0	0	55	55	54	0	0	54	0	0	0	0	194	0	190	384
Industrial Truck Trips:	0	0	7	7	15	0	0	15	0	0	0	0	25	0	52	77
Retail Trips:	0	0	51	51	46	0	0	46	0	0	0	0	55	0	50	105
Total New Trips:	0	0	113	113	115	0	0	115	0	0	0	0	274	0	292	566
Pass-by Trips:	0	-32	32	0	20	-20	0	0	0	0	0	0	21	0	34	55
Future Traffic Volumes:	18	746	166	930	150	451	0	601	0	12	51	63	375	14	417	806

16-106 Longacre Development - SR 13 (Buford Hwy) - Buford, GA

Traffic Volumes
Future Conditions

A&R Engineering
November 2016

5. SR 13 @ Thompson Mill Rd

A.M. Peak Hour

Condition	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	21	442	176	639	113	594	38	745	0	1	6	7	396	25	223	644
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition:	22	465	185	672	119	624	40	783	0	1	6	7	416	26	234	676
Industrial Car Trips:	0	177	0	177	0	42	0	42	0	0	0	0	0	0	0	0
Industrial Truck Trips:	0	25	0	25	0	6	0	6	0	0	0	0	0	0	0	0
Retail Trips:	0	24	0	24	1	15	0	16	0	0	0	0	0	0	2	2
Total New Trips:	0	226	0	226	1	63	0	64	0	0	0	0	0	0	2	2
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	22	691	185	898	120	687	40	847	0	1	6	7	416	26	236	678

P.M. Peak Hour

Condition	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	6	661	365	1032	160	466	0	626	22	16	20	58	273	7	112	392
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition:	6	695	384	1085	168	490	0	658	23	17	21	61	287	7	118	412
Industrial Car Trips:	0	51	0	51	0	182	0	182	0	0	0	0	0	0	0	0
Industrial Truck Trips:	0	7	0	7	0	25	0	25	0	0	0	0	0	0	0	0
Retail Trips:	0	44	0	44	4	48	0	52	0	0	0	0	0	0	4	4
Total New Trips:	0	102	0	102	4	255	0	259	0	0	0	0	0	0	4	4
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	6	797	384	1187	172	745	0	917	23	17	21	61	287	7	122	416

16-106 Longacre Development - SR 13 (Buford Hwy) - Buford, GA

Traffic Volumes
Future Conditions

A&R Engineering
November 2016

6. SR 13 @ Hamilton Mill Rd

A.M. Peak Hour

	Northbound				Southbound				Eastbound				Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	42	432	304	778	222	741	51	1014	28	158	65	251	484	238	195	917
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition:	44	454	320	818	233	779	54	1066	29	166	68	263	509	250	205	964
Industrial Car Trips:	0	149	0	149	5	35	2	42	8	0	0	8	0	0	20	20
Industrial Truck Trips:	0	22	0	22	1	5	0	6	0	0	0	0	0	0	3	3
Retail Trips:	0	20	0	20	2	12	1	15	1	0	0	1	0	0	3	3
Total New Trips:	0	191	0	191	8	52	3	63	9	0	0	9	0	0	26	26
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	44	645	320	1009	241	831	57	1129	38	166	68	272	509	250	231	990

P.M. Peak Hour

	Northbound				Southbound				Eastbound				Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	79	841	733	1653	255	543	42	840	74	265	52	391	385	211	180	776
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition:	83	884	770	1737	268	571	44	883	78	279	55	412	405	222	189	816
Industrial Car Trips:	0	43	0	43	21	153	8	182	2	0	0	2	0	0	6	6
Industrial Truck Trips:	0	6	0	6	3	22	0	25	0	0	0	0	0	0	1	1
Retail Trips:	0	37	0	37	5	40	2	47	2	0	0	2	0	0	5	5
Total New Trips:	0	86	0	86	29	215	10	254	4	0	0	4	0	0	12	12
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	83	970	770	1823	297	786	54	1137	82	279	55	416	405	222	201	828

16-106 Longacre Development - SR 13 (Buford Hwy) - Buford, GA

Traffic Volumes
Future Conditions

A&R Engineering
November 2016

7. Thompson Mill Rd @ Bryant Rd

A.M. Peak Hour

	Northbound				Southbound				Eastbound				Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	0	0	0	0	12	0	6	18	5	202	1	208	0	589	27	616
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition:	0	0	0	0	13	0	6	19	5	212	1	218	0	619	28	647
Industrial Car Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial Truck Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retail Trips:	0	0	0	0	1	0	0	1	0	1	0	1	0	2	2	4
Total New Trips:	0	0	0	0	1	0	0	1	0	1	0	1	0	2	2	4
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	0	0	0	0	14	0	6	20	5	213	1	219	0	621	30	651

P.M. Peak Hour

	Northbound				Southbound				Eastbound				Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	0	0	0	0	27	0	8	35	5	487	0	492	0	278	7	285
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition:	0	0	0	0	28	0	8	36	5	512	0	517	0	292	7	299
Industrial Car Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial Truck Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retail Trips:	0	0	0	0	4	0	0	4	0	4	0	4	0	4	4	8
Total New Trips:	0	0	0	0	4	0	0	4	0	4	0	4	0	4	4	8
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	0	0	0	0	32	0	8	40	5	516	0	521	0	296	11	307

16-106 Longacre Development - SR 13 (Buford Hwy) - Buford, GA

Traffic Volumes
Future Conditions

A&R Engineering
November 2016

8. Thompson Mill @ N. Bogan Rd

A.M. Peak Hour

	Northbound				Southbound				Eastbound				Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	113	66	16	195	8	93	121	222	53	106	66	225	51	386	9	446
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition:	119	69	17	205	8	98	127	233	56	111	69	236	54	406	9	469
Industrial Car Trips:	0	0	0	0	0	0	0	0	0	7	0	7	0	28	0	28
Industrial Truck Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retail Trips:	0	0	0	0	0	0	0	0	0	2	0	2	0	4	0	4
Total New Trips:	0	0	0	0	0	0	0	0	0	9	0	9	0	32	0	32
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	119	69	17	205	8	98	127	233	56	120	69	245	54	438	9	501

P.M. Peak Hour

	Northbound				Southbound				Eastbound				Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	70	143	83	296	14	150	48	212	70	326	107	503	55	159	14	228
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition:	74	150	87	311	15	158	50	223	74	343	112	529	58	167	15	240
Industrial Car Trips:	0	0	0	0	0	0	0	0	0	29	0	29	0	8	0	8
Industrial Truck Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retail Trips:	0	0	0	0	0	0	0	0	0	8	0	8	0	7	0	7
Total New Trips:	0	0	0	0	0	0	0	0	0	37	0	37	0	15	0	15
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	74	150	87	311	15	158	50	223	74	380	112	566	58	182	15	255

16-106 Longacre Development - SR 13 (Buford Hwy) - Buford, GA

Traffic Volumes
Future Conditions

A&R Engineering
November 2016

9. Thompson Mill @ Site Drwy

A.M. Peak Hour

	Northbound				Southbound				Eastbound				Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	0	0	0	0	0	0	0	0	0	214	0	214	0	616	0	616
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition:	0	0	0	0	0	0	0	0	0	225	0	225	0	648	0	648
Industrial Car Trips:	0	0	0	0	7	0	0	7	0	0	0	0	0	0	28	28
Industrial Truck Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retail Trips:	0	0	0	0	0	0	0	0	0	2	0	2	0	4	0	4
Total New Trips:	0	0	0	0	7	0	0	7	0	2	0	2	0	4	28	32
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	0	0	0	0	7	0	0	7	0	227	0	227	0	652	28	680

P.M. Peak Hour

	Northbound				Southbound				Eastbound				Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	0	0	0	0	0	0	0	0	0	514	0	514	0	285	0	285
Growth Factor (%):	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
Shifted Bryant Rd Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition:	0	0	0	0	0	0	0	0	0	540	0	540	0	300	0	300
Industrial Car Trips:	0	0	0	0	29	0	0	29	0	0	0	0	0	0	8	8
Industrial Truck Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retail Trips:	0	0	0	0	0	0	0	0	0	8	0	8	0	7	0	7
Total New Trips:	0	0	0	0	29	0	0	29	0	8	0	8	0	7	8	15
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes:	0	0	0	0	29	0	0	29	0	548	0	548	0	307	8	315