



The Exchange at Gwinnett DRI 2834

September 12, 2018

Prepared For:

Fuqua Development, LP
Fifteen Piedmont Center
3575 Piedmont Rd NE, Suite 800
Atlanta, GA 30305
(404)907-1708

Prepared By:

Lowe Engineers
990 Hammond Drive, Suite 900
Atlanta, GA 30328
(770)857-8401

Table of Contents

Tables	ii
Figures.....	ii
Executive Summary.....	iii
1 Project Description.....	1
1.1 Site Plan Summary	4
1.2 Site Access.....	4
1.3 Zoning and Land Use.....	4
1.4 Nearby Project and Local Plan	5
2 Existing Conditions.....	6
2.1 Bicycle and Pedestrian Facilities Description.....	6
2.2 Transportation Facilities Description	6
2.3 Study Network	6
2.4 Traffic Data.....	7
2.5 Existing Capacity Analysis	10
2.6 Existing Conditions Required Improvements.....	13
2.7 Existing Segment Capacity Analysis	13
3 Background Conditions	14
3.1 Background Traffic Growth.....	14
3.2 Background Lane Geometry.....	14
3.3 Background Capacity Analysis.....	14
3.4 Background Conditions Required Improvements.....	19
3.5 Background Segment Capacity Analysis	20
4 Future Conditions	21
4.1 Trip Generation.....	21
4.1.1 Internal Capture Reduction.....	22
4.1.2 Reductions for Modal Split.....	22
4.1.3 Pass-by Trip Reduction.....	22
4.2 Trip Distribution	22
4.3 Build Traffic Volumes	23
4.4 Turn Lane Warrant Analysis.....	23
4.4.1 Turn Lane Required Lengths	23
4.5 Signal Warrant Analysis.....	23

4.6	Build Capacity Analysis.....	30
4.7	Build Conditions Required Improvements.....	33
4.8	Build Segment Capacity Analysis	35
5	Recommendations and Conclusions.....	36

Tables

Table 1:	Land-use Summary.....	4
Table 2:	Projects in Study Network.....	5
Table 3:	Study Intersections.....	7
Table 4:	Study Segments.....	7
Table 5:	Existing Conditions Capacity Analysis	11
Table 6:	Existing Segment Capacity Analysis.....	13
Table 7:	Background Conditions Capacity Analysis.....	17
Table 8:	Background Conditions Capacity Analysis with Required Improvement.....	20
Table 9:	Background Segment Capacity Analysis.....	21
Table 10:	Trip Generation Summary.....	21
Table 11:	Build Conditions Capacity Analysis.....	31
Table 12:	Build Conditions Capacity Analysis with Required Improvements	34
Table 13:	Build Segment Capacity Analysis.....	35

Figures

Figure 1:	Vicinity Map	2
Figure 2:	Aerial Map.....	3
Figure 3:	Zoning Map	5
Figure 4:	Existing Lane Geometry	8
Figure 5:	Existing Traffic Volumes.....	9
Figure 6:	Background (2021) Traffic Volumes.....	15
Figure 7:	Background (2021) Lane Geometry	16
Figure 8:	Trip Distribution	24
Figure 9:	Pass-By Trip Distribution AM	25
Figure 10:	Pass-By Trip Distribution PM	26
Figure 11:	Project Trips	27
Figure 12:	Build (2021) Traffic Volumes.....	28
Figure 13:	Build (2021) Lane Geometry	29

Appendix

Appendix A:	Site Plan
Appendix B:	Traffic Counts
Appendix C:	Traffic Counts
Appendix D:	Synchro, HCS, and Signal Timing
Appendix E:	Trip Generation and Internal Capture
Appendix F:	NCHRP Turn Lane Warrants
Appendix G:	Signal Warrant Analysis

Executive Summary

The proposed development is a mixed-use site located in northern Gwinnett County, GA, near the Mall of Georgia and I-85. The development will be located to the east of SR 20 between I-85 and Laurel Crossing Pkwy. The proposed development will access the external roadway network via four proposed driveway locations. Driveway 2 will build the fourth left to the existing signalized intersection of SR 20 at Brandsmart Way. The proposed development is anticipated to have a full build-out in 2021. The full build scenario is analyzed for this report. An aerial of the proposed development is shown in Figure i. The full site plan can be found in Appendix A. The proposed development trip generation is summarized in Table i.

Figure i: Site Aerial



Table i: Site Trip Generation

ITE Code	Project Land Use	Density / Variable	Daily			AM Peak Hour			PM Peak Hour		
			Total	In	Out	Total	In	Out	Total	In	Out
960	Super Convenience Market / Gas Station	20 /Pumps	4,610	2,305	2,305	562	281	281	459	230	229
937	Coffee/Doughnut Shop with Drive-Through Window	2500 /1000 S.F.	2,051	1,026	1,025	222	113	109	108	54	54
492	Health / Fitness Club	34000 /1000 S.F.	1,120	560	560	45	23	22	122	70	52
820	Shopping Center	87200 /1000 S.F.	5,477	2,739	2,738	195	121	74	491	236	255
890	Furniture Store	56000 /1000 S.F.	336	168	168	14	10	4	26	12	14
310	Hotel	123 /Rooms	962	481	481	56	33	23	66	34	32
435	Multipurpose Recreational Facility	90000 /1000 S.F.	1,073	537	536	11	9	2	322	177	145
N/A	Golf Driving Range (Non ITE Trip Generation)	1 /Unit	2,495	1,248	1,247	32	28	4	183	91	92
252	Senior Adult Housing - Attached	120 /Dwelling Units	457	229	228	24	8	16	31	17	14
221	Multifamily Housing (Mid-Rise)	380 /Dwelling Units	2,069	1,035	1,034	127	33	94	160	98	62
Total Trips			20,650	10,328	10,322	1,288	659	629	1,968	1,019	949
Reductions for Internal Capture			3,817	1,909	1,908	10	5	5	300	150	150
Reductions for Modal Split			338	168	170	25	13	12	32	17	15
Reductions for Pass-By Trips			4,467	2,246	2,221	478	243	235	435	215	220
Total Net New Project Trips			12,028	6,005	6,023	775	398	377	1,201	637	564

The proposed development is anticipated to generate 20,650 daily vehicle trips (10,328 inbound, 10,322 outbound) with 1,288 AM peak hour vehicle trips (659 inbound, 629 outbound), and 1,968 PM peak hour trips (1,019 inbound, 949 outbound). After vehicle trip reductions the net anticipated daily vehicle volume impacting the external roadway network is 12,028 vehicle trips (6,005 inbound, 6,023 outbound) with an AM peak hour vehicle volume of 775 vehicles (398 inbound, 377 outbound), and a PM peak hour vehicle volume of 1,201 vehicles (637 inbound, 564 outbound).

A comparison on intersection capacity Level of Service (LOS) for Existing, Background and Build is shown for signalized intersections in Table ii, unsignalized intersections in Table iii, proposed site driveways in Table iv, and signalized intersections with required improvements in Table v.

Table ii: Signalized Intersection Capacity Analysis Comparison

Signalized Intersection	Existing		Background		Build	
	AM	PM	AM	PM	AM	PM
Buford Dr NE at Woodward Crossing Blvd	B	C	B	C	B	C
Buford Dr NE at Mall of Georgia Blvd	C	D	D	D	D	E
Buford Dr NE at I-85 SB Ramps	-	-	A	A	A	B
Buford Dr NE at Brand Smart Way/Driveway 2	A	B	B	C	C	E
Buford Dr NE at Rock Springs Rd	D	B	E	A	F	C
Buford Dr NE at Tech Center Pkwy NE	A	A	A	A	A	A
Buford Dr NE at Braves Ave	A	A	A	A	A	A
Buford Dr NE at Old Peachtree Rd NE	E	D	E	E	E	F

Table iii: Un-Signalized Intersection Capacity Analysis Comparison

Intersection	Lane Group Movement	Existing				Background				Build			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
SR 20 @ Laurel Crossing Pkwy	WBL	3068.6	F	8746.6	F	4445.3	F	8746.6	F	11050.0	F	61.4	F
	WBR	32.6	D	30.6	D	37.7	E	34.7	D	55.2	F	0.0	A
	NBT	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
	NBR	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
	SBL	21.7	C	31.4	D	24.2	C	37.3	E	31.1	D	110.9	F
	SBT	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
	Intersection	29.3	-	47.5	-	39.8	-	45.0	-	141.9	-	2.6	-

Table iv: Proposed Driveway Capacity Analysis

Intersection	Lane Group Movement	Build			
		AM Peak Hour		PM Peak Hour	
		Delay (s)	LOS	Delay (s)	LOS
SR 20 @ Driveway 1	NBT	0.0	A	0.0	A
	NBR	0.0	A	0.0	A
	WBR	108.2	F	210.4	F
	SBT	0.0	A	0.0	A
	Intersection	2.5	-	4.6	-
SR 20 @ Driveway 3	NBT	0.0	A	0.0	A
	NBR	0.0	A	0.0	A
	WBR	82.3	F	149.5	F
	SBT	0.0	A	0.0	A
	Intersection	2.1	-	3.4	-
Laurel Crossing Pkwy @ Driveway 4	EB	7.5	A	7.5	A
	WB	0.0	A	0.0	A
	SB	9.0	A	8.9	A
	Intersection	2.9	-	3.0	-

Table v: Proposed Driveway Capacity Analysis

Signalized Intersection	Background		Build	
	AM	PM	AM	PM
Buford Dr NE at Mall of Georgia Blvd	-	-	D	D
Buford Dr NE at Rock Springs Rd	B	A	C	A
Buford Dr NE at Old Peachtree Rd NE	E	D	E	D

The conclusions and recommendations of this report by intersection are as follows.

Woodward Crossing Blvd at SR 20

- Existing signalized intersection
- The intersection operates at a level of service (LOS) of B and C for all analysis conditions

Mall of Georgia Blvd at SR 20

- Existing signalized intersection
- Due to additional background and build traffic volumes the intersection delay drops to LOS E during the build conditions
 - Improvements in the form of signal timing may fix intersection LOS, however to improve LOS with geometric improvements a southbound right-turn lane should be added

I-85 SB at SR 20

- The existing intersection becomes signalized in background conditions
- The intersection operates at acceptable LOS for both AM and PM peak hours

Brand Smart Way / Driveway 2 at SR 20

- A fourth leg is added to the existing signalized intersection under build conditions
- AM peak hour LOS degrades from LOS B to LOS C
- PM peak hour LOS degrades from LOS C to LOS E
- Dual southbound left-turn lanes are recommended and should be able to contain the 327 foot 95th percentile queue
 - Minimum GDOT required length is 235 feet of storage and a 100-foot taper
- Dual westbound left-turn lanes are recommended for vehicles exiting the proposed development
- A northbound right-turn deceleration lane should be added consisting of 175 feet of full width storage and a 100-foot taper.

Laurel Crossing Way at SR 20

- Existing side-street stop-controlled intersection
- Synchro experiences difficulty in modeling side-street stop movements with a median crossover, Synchro will not stage vehicles in the median which causes a return in delay that is worse than field conditions. Vehicles that experience long delays may choose to re-route to the intersection to the north to make a U-turn movement
- A traffic signal at the intersection is not warranted
- Left-turning vehicles will have the option to use the proposed development to access a signalized intersection to help with left-turns

Rock Springs Rd at SR 20

- Existing signalized intersection
- Under background conditions the LOS for the AM peak hour drops to LOS E
- To improve background intersection LOS a westbound right-turn lane was added, this improvement was sufficient to handle addition build conditions traffic volumes

Tech Center Pkwy at SR 20

- Existing signalized intersection
- There is no change in intersection LOS from existing conditions

Braves Ave at SR 20

- Existing signalized intersection
- There is no change in intersection LOS from existing conditions

Old Peachtree Rd NE at SR 20

- Existing signalized intersection

- Intersection LOS drops to LOS E during background conditions
- Significant geometric improvements are needed to improve LOS since no modification to signal timing can be made for this analysis
 - Added northbound through lane
 - Added eastbound through lane
- Background conditions required improvements are sufficient for build year traffic volumes

Driveway 1 at SR 20

- Proposed right-in / right-out driveway approximately 325 feet to the north of the intersection with Brandsmart Way
- Vehicles exiting the development during the AM and PM peak hour experience a failing LOS, however if queueing and delay are excessive, it is expected that drivers will utilize the other site driveways / signalized access
- A northbound right-turn deceleration lane is warranted and should be constructed to include 175 feet of full width storage and a 100-foot taper

Driveway 3 at SR 20

- Proposed right-in / right-out driveway approximately 250 feet to the south of the intersection with Brandsmart Way
- Vehicles exiting the development during the AM and PM peak hour experience a failing LOS, however if queueing and delay are excessive, it is expected that drivers will utilize the other site driveways / signalized access
- A northbound right-turn deceleration lane is warranted and should be constructed to include 175 feet of full width storage and a 100-foot taper

Driveway 4 at Laurel Crossing Pkwy

- Proposed full-access driveway
- Intersection operates at LOS A or better for all peak hours
- No turn-lanes are warranted for the intersection

1 Project Description

The proposed development is a mixed-use site located in northern Gwinnett County, GA, near the Mall of Georgia and I-85. The development will be located to the east of SR 20 between I-85 and Laurel Crossing Pkwy. A vicinity map is shown in Figure 1 an aerial map is shown in Figure 2. The proposed site plan is also included in Appendix A.

The proposed development is anticipated to have a full build-out in 2021. While the nature of the proposed development will be in phases the full-build condition was considered for the purposes of this report.

Figure 1: Vicinity Map

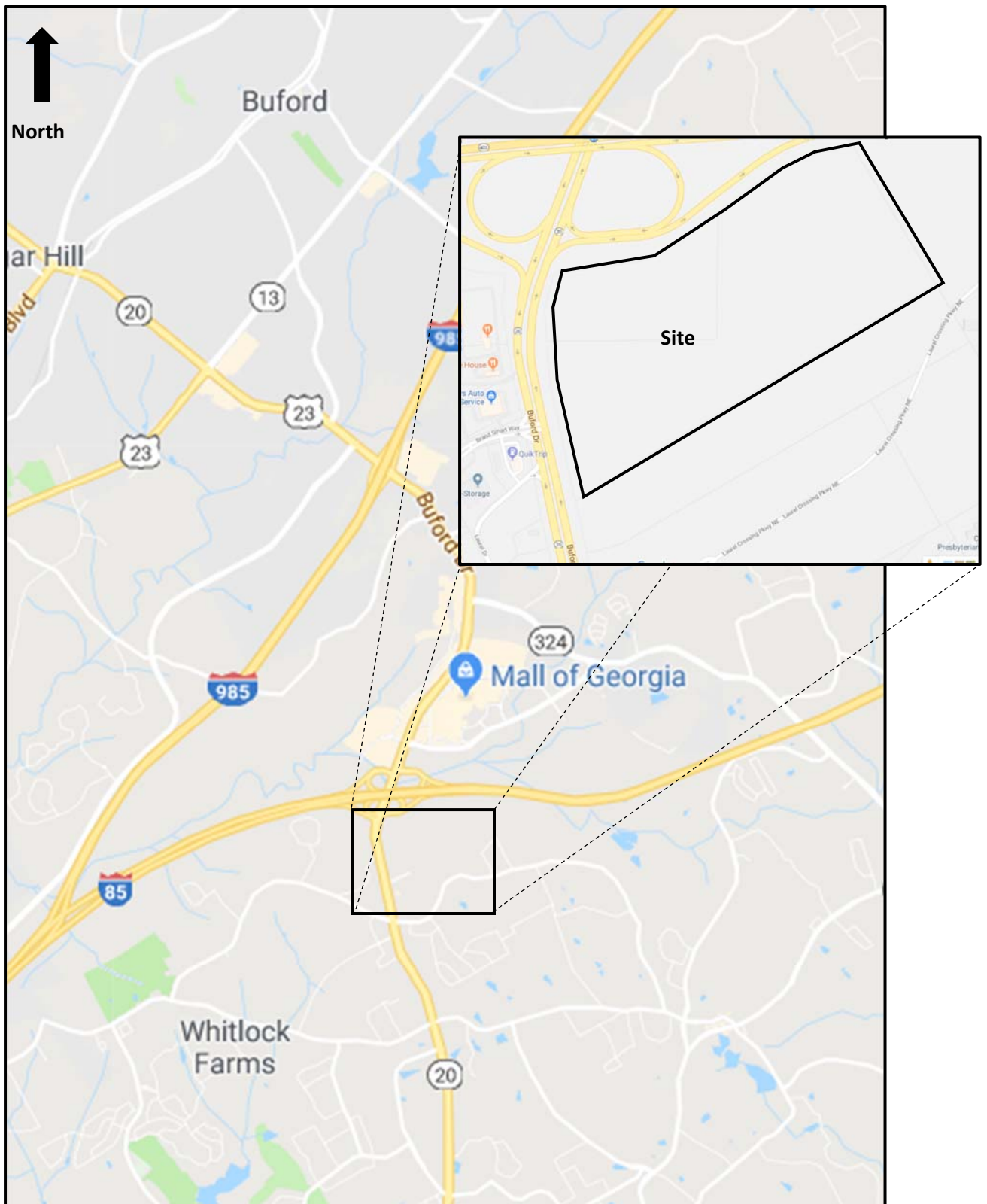


Figure 2: Aerial Map



1.1 Site Plan Summary

The proposed site land-uses are summarized in Table 1. A full site plan is included in Appendix A.

Table 1: Land-use Summary

ITE Code	Project Land Use	Density / Variable
960	Super Convenience Market / Gas Station	20 /Pumps
937	Coffee/Doughnut Shop with Drive-Through Window	2500 /1000 S.F.
492	Health / Fitness Club	34000 /1000 S.F.
820	Shopping Center	87200 /1000 S.F.
890	Furniture Store	56000 /1000 S.F.
310	Hotel	123 /Rooms
435	Multipurpose Recreational Facility	90000 /1000 S.F.
N/A	Golf Driving Range (Non ITE Trip Generation)	1 /Unit
252	Senior Adult Housing - Attached	120 /Dwelling Units
221	Multifamily Housing (Mid-Rise)	380 /Dwelling Units

1.2 Site Access

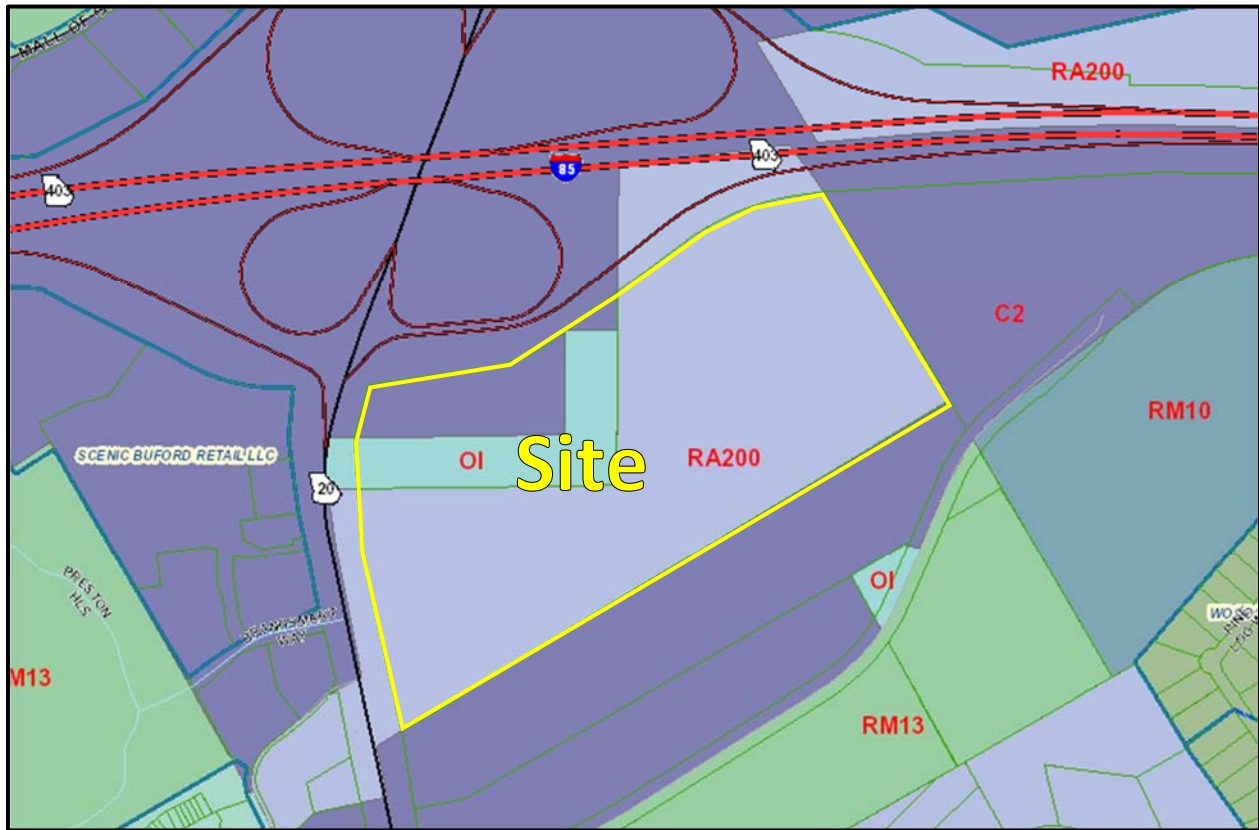
The proposed development will access the external roadway network via four proposed driveway locations.

- Driveway 1
 - Located approximately 325 feet to the north of Brandsmart Way
 - Right-in / Right-out
- Driveway 2
 - New approach to existing signalized intersection with Brandsmart Way
- Driveway 3
 - Located approximately 250 feet to the south of Brandsmart Way
 - Right-in / Right-out
- Driveway 4
 - Located approximately 1800 feet to the east of the intersection of Laurel Crossing Pkwy and SR 20
 - Full-access

1.3 Zoning and Land Use

The site is currently on land zoned for RA (Agriculture-Residence), OI (Office-Institutional), and C2 (General Business) zoning districts. The Agriculture-Residence district is intended to administer to forestry, agriculture, and minor density residential uses. It also intends on repressing the urban development of land which depend on services such as public water supply and sanitary sewers. The Office-Institutional district is intended to be occupied by offices, institutions, and a few associated “retail business and service activities in buildings of high character in attractive surroundings.” The General Business district provides land for businesses near major streets and intersections. This space is used for major goods and services retail, general office space, and public functions that can accommodate for a community of multiple neighborhoods.

Figure 3: Zoning Map



1.4 Nearby Project and Local Plan

The proposed projects located in and around the study per to ARC's Transportation Improvement Program, Gwinnett County Comprehensive Transportation Plan, Gwinnett County SPLOST, and GDOT's Construction Work Program, are shown in Table 2. The only project directly impacting the study area is the traffic signal installation for the I-85 SB Ramps at SR 20. A preliminary signal design is included in Appendix B and is incorporated into the background and build conditions analysis.

Table 2: Projects in Study Network

Roadway	Project #	Estimated	Project Description
Rock Springs Rd	M-1076	2017-2023	Intersection Improvement at Spriggs Rd
Old Peachtree Rd	SPLOST T2	unknown	Widening from 2 to 3/4 lanes - Collins Hill Rd to Rock Springs Rd
SR 20 @ Financial Center Way	SPLOST T2	unknown	Intersection Improvement
I-85 SB Ramp	Gwinnett	2018-2020	Install traffic signal at I-85 SB Ramps @ SR 20
Gravel Springs Rd		unknown	New interchange with I-85

2 Existing Conditions

2.1 Bicycle and Pedestrian Facilities Description

Currently, there are no transit systems that service the area where the project site is located. Bicycle lanes are not present in any of the surrounding roadways, and sidewalks in the area are limited and not connected to each other. The proposed development will provide sidewalks along site frontage as well as pathways internal to the site.

2.2 Transportation Facilities Description

Buford Dr/SR-20 to the North of I-85 is six-lane divided roadway with a posted speed limit of 45 mph. To the South of I-85, Buford Dr/SR-20 is a four-lane divided roadway with a posted speed limit of 50 mph. The roadway runs primarily north to south when west of Atlanta and east to west when north of Atlanta. For the purposes of this analysis the roadway will be analyzed as north to south. The roadway connects I-85, I-985, I-75, I-575, and I-20. SR 20 is functionally classified as a principal arterial.

Old Peachtree Rd NE is a two-lane roadway undivided with a two-way left-turn lane dividing directions of travel around Buford Dr but is undivided elsewhere. The roadway has a posted speed limit of 45 mph and runs primarily east to west. The roadway is functionally classified as a major collector.

Tech Center NE is analyzed as two-lane roadway with a two-way left-turn lane dividing directions of travel. The roadway has a four-lane median divided cross-section at the intersection with SR-20 which quickly becomes a two-lane cross-section. The roadway has a posted speed limit of 35 mph and runs in a quarter-circle in the northwest quadrant of SR-20 and Old Peachtree Rd NE serving as connection for residential and commercial developments. The roadway is functionally classified as a local road.

Rock Springs Rd is a two-lane undivided local roadway with a posted speed limit of 35 mph. For the purposes of this analysis the roadway runs east to west. The roadway serves as a connection to residential developments to SR 20 and Old Peachtree Rd NE.

Azalea Dr is a two-lane undivided local roadway with a posted speed limit of 40 mph east of SR-20 and 35 west of SR-20. The roadway has two intersections with SR 20 however only the signalized intersection is proposed to be analyzed as part of this development.

Mall of Georgia Blvd is a four-lane divided roadway with a posted speed limit of 45 mph. The roadway serves as a main connection to the Mall of Georgia developments and connects SR 20 to Gravel Springs Rd. The roadway is classified as a local road and is analyzed as running east to west.

Woodward Crossing Blvd is four-lane divided local road with a posted speed limit of 45 mph. It primarily runs northwest to southeast connecting SR-20 with SR-124.

I-85 is an interstate freeway which primarily runs southwest to northeast.

2.3 Study Network

The study network was identified primarily by GRTA's 7% rule and was approved during the methodology meeting for the proposed DRI. The intersections analyzed in this report are listed in Table 3 and study segments are listed in Table 4. The existing lane geometry is shown in Figure 4.

Table 3: Study Intersections

#	Intersections
1	Buford Dr NE at Woodward Crossing Blvd
2	Buford Dr NE at Mall of Georgia Blvd
3	Buford Dr NE at I-85 SB Ramps
4	Buford Dr NE at I-85 NB Ramps
5	Buford Dr NE at Driveway 1
6	Buford Dr NE at Brand Smart Way/Driveway 2
7	Buford Dr NE at Driveway 3
8	Buford Dr NE at Laurel Crossing Pkwy NE
9	Laurel Crossing Pkwy NE at Driveway 4
10	Buford Dr NE at Rock Springs Rd
11	Buford Dr NE at Tech Center Pkwy NE
12	Buford Dr NE at Braves Ave
13	Buford Dr NE at Old Peachtree Rd NE

Table 4: Study Segments

#	Segment	From	To
1	SR 20	Woodward Crossing Blvd	Mall of Georgia Blvd
2	SR 20	Mall of Georgia Blvd	Ramp N. of 85
3	SR 20	Ramp N. of 85	Ramp S. of 85
4	SR 20	Ramp S. of 85	Brand Smart Way
5	SR 20	Brand Smart Way	Rock Springs Rd
6	SR 20	Rock Springs Rd	Tech Center Pkwy NE
7	SR 20	Tech Center Pkwy NE	Braves Ave
8	SR 20	Braves Ave	Old Peachtree Rd NE

2.4 Traffic Data

Traffic counts were performed at the study intersection on Tuesday August 14th, 2018. The AM peak hour was determined to be 7:15 AM-8:15 AM and 4:45 PM-5:45 PM. The peak hour turning movement volumes are shown graphically in Figure 5. Additional 24-hour bi-directional vehicle volume counts were collected along site frontage on SR 20 and Laurel Crossing Pkwy. The raw traffic counts are included in Appendix C.

Figure 4: Existing Lane Geometry

Signal Control

Stop Control

LEGEND

Existing Lane Geometry

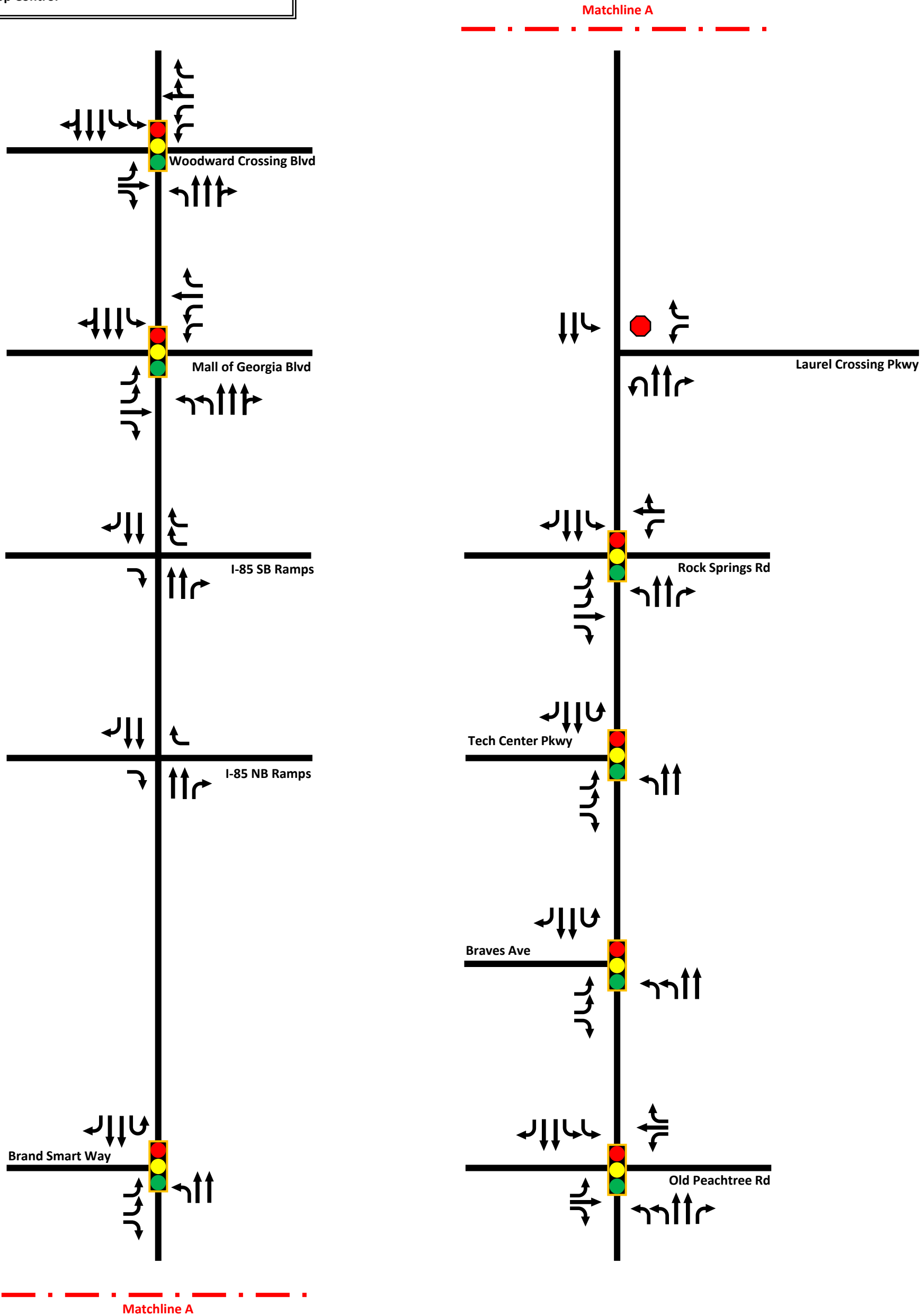
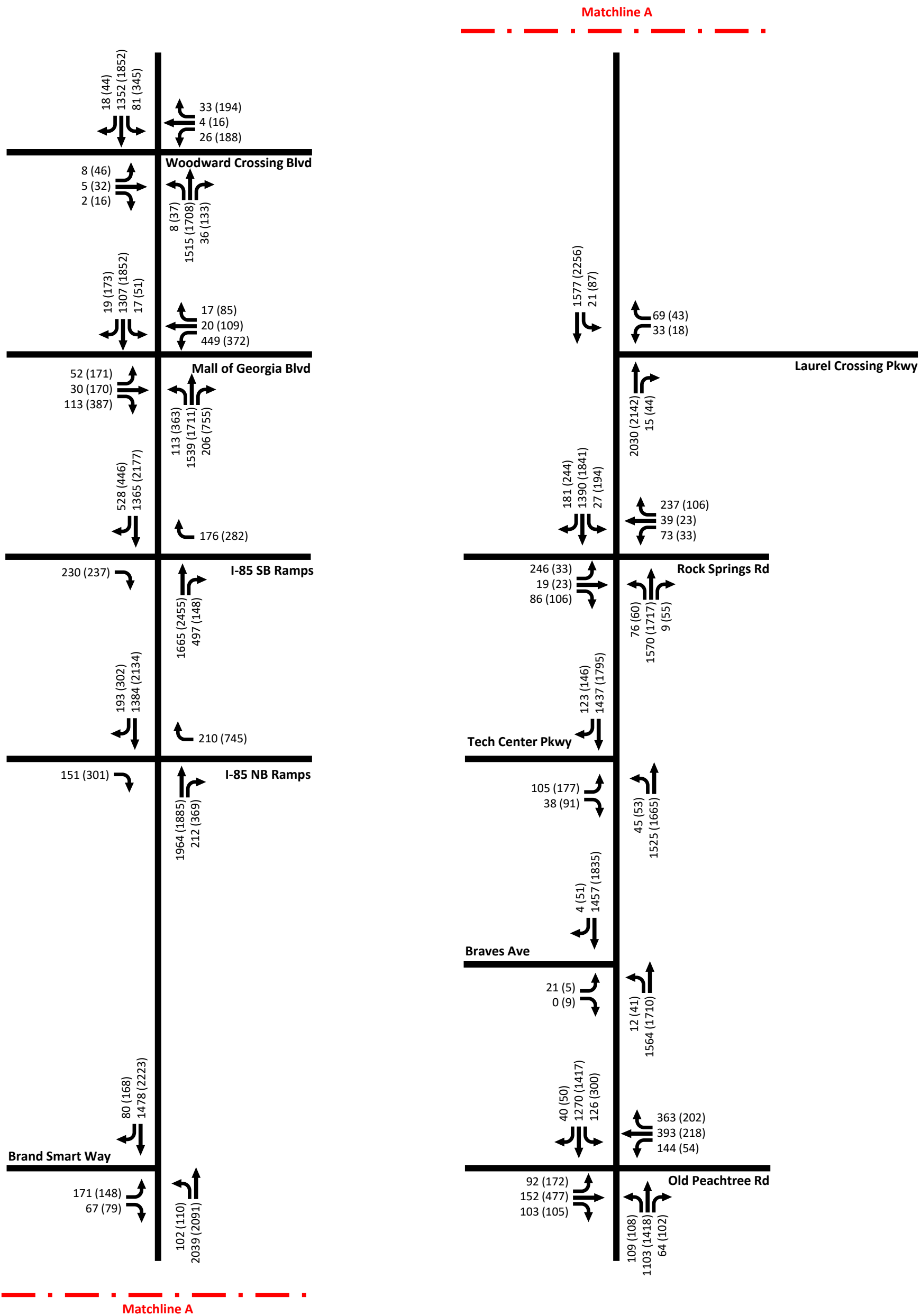


Figure 5: Existing Traffic Volumes

LEGEND

(###) → AM (PM) Peak Hour Traffic Volume



2.5 Existing Capacity Analysis

The existing traffic volumes were analyzed using a Synchro 10.0 model to determine the capacity of the AM and PM peak hours. The results are shown by lane group movement and total intersection capacity. Average vehicular delays are shown in seconds, level of service (LOS) is a grading system as defined by the Highway Capacity Manual (HCM) where A is best, and F is worst. Where possible the HCM 6th Edition was used for analysis, however due to some intersection configurations or signal phasing HCM 2000 for several intersections. Vehicle 95th percentile queueing is shown in feet and is from a SimTraffic 10.0 model analysis. Synchro and SimTraffic output files are included in Appendix D.

Table 5: Existing Conditions Capacity Analysis

Intersection	Control	Lane Group Movement	AM Peak Hour			PM Peak Hour		
			Delay (s)	LOS	95 th Queue (ft)	Delay (s)	LOS	95 th Queue (ft)
SR 20 @ Woodward Crossing Blvd	Signal Control	EBL	66.4	E	34	86.6	F	135
		EBT	71.9	E	29	100.9	F	98
		EBR	67.1	E	8	91.5	F	35
		WBL	63.3	E	59	91.4	F	229
		WBT/R	66.8	E	55	94.8	F	178
		WBR	65.9	E	24	91.4	F	125
		NBL	48.6	D	24	67.4	E	71
		NBT/R	6.4	A	204	9.2	A	182
		SBL	64.2	E	93	94.1	F	289
		SBT/R	9.0	A	265	18.7	B	406
	Intersection	11.1	B	-	29.6	C	-	
SR 20 @ Mall of Georgia Blvd	Signal Control	EBL	50.8	D	54	74.5	E	186
		EBT	69.4	E	68	126.8	F	297
		EBR	0.0	A	-	0.0	A	464
		WBL	72.4	E	302	108.3	F	393
		WBT	66.7	E	33	102.5	F	286
		WBR	48.6	D	24	67.0	E	48
		NBL	70.9	E	102	67.0	E	284
		NBT/R	31.5	C	271	109.5	F	407
		NBR	0.0	A	-	33.7	C	425
		SBL	42.7	D	156	85.0	F	169
		SBT/R	1.0	A	327	6.6	A	1305
	SBR	0.0	A	-	12.5	B	-	
	Intersection	27.2	C	-	41.1	D	-	
SR 20 @ Brand Smart Way	Signal Control	EBL	64.0	E	125	95.4	F	155
		EBR	58.0	E	27	86.2	F	125
		NBL	36.5	D	84	91.5	F	168
		NBT	4.4	A	213	4.4	A	308
		SBT	7.6	A	211	17.2	B	787
		SBR	3.0	A	-	8.1	A	-
	Intersection	9.8	A	-	16.8	B	-	
SR 20 @ Laurel Crossing Pkwy	Minor Road Stop Control	WBL	3068.6	F	319	8746.6	F	65
		WBR	32.6	D	34	30.6	D	-
		NBT	0.0	A	-	0.0	A	-
		NBR	0.0	A	-	0.0	A	-
		SBL	21.7	C	29	31.4	D	137
		SBT	0.0	A	-	0.0	A	-
	Intersection	29.3	-	-	47.5	-	-	
SR 20 @ Rock Springs Rd	Signal Control	EBL	52.1	D	160	85.6	F	43
		EBT	40.4	D	30	79.9	E	65
		EBR	0.0	A	34	0.0	A	104
		WBL	61.4	E	385	92.4	F	71
		WBT/R	537.2	F	954	378.9	F	180
		NBL	11.9	B	150	7.2	A	251
		NBT	3.2	A	319	1.5	A	564
		NBR	0.0	A	-	0.0	A	137
		SBL	12.3	B	46	8.9	A	345
		SBT	2.5	A	546	1.8	A	818
	SBR	0.0	A	230	0.0	A	217	
	Intersection	54.9	D	-	17.1	B	-	

SR 20 @ Tech Center Pkwy	Signal Control	EBL	70.0	E	85	99.6	F	353
		EBR	0.0	A	28	0.0	A	49
		NBL	2.3	A	88	2.9	A	69
		NBT	0.5	A	95	0.6	A	252
		SBT	0.5	A	130	0.8	A	337
		SBR	0.0	A	-	0.0	A	68
		Intersection	3.3	A	-	5.9	A	-
SR 20 @ Braves Ave	Signal Control	EBL	66.8	E	55	98.5	F	30
		EBR	63.7	E	-	96.0	F	-
		NBL	93.3	F	40	89.8	F	85
		NBT	1.6	A	57	4.3	A	47
		SBT	7.7	A	220	3.0	A	233
		SBR	6.4	A	-	2.3	A	-
		Intersection	5.9	A	-	5.0	A	-
SR 20 @ Old Peachtree Rd NE	Signal Control	EBL	45.6	D	116	55.6	E	219
		EBT	46.3	D	204	101.2	F	767
		EBR	45.4	D	84	55.6	E	485
		WBL	40.9	D	323	65.6	E	88
		WBT	83.7	F	742	68.8	E	286
		WBR	109.9	F	478	70.5	E	240
		NBL	81.9	F	158	125.9	F	624
		NBT	32.5	C	401	66.7	E	962
		NBR	21.3	C	38	33.7	C	570
		SBL	73.3	E	84	98.6	F	780
		SBT	64.1	E	567	12.5	B	897
		SBR	35.1	D	84	2.8	A	89
		Intersection	58.9	E	-	54.8	D	-

The SR 20 corridor is a managed corridor, due the large volume of vehicles traveling north to south on SR 20 the mainline traffic volume is prioritized at the expense of minor road movement delay. The AM peak hour has a cycle length of 140 seconds for all signalized intersections and the PM peak hour has a 200 second cycle length for all intersections. Signal timings used in analysis are included in the Synchro output files in Appendix D.

Woodward Crossing Blvd at SR 20

- Intersection LOS is B during the AM peak hour and C during the PM peak hour

Mall of Georgia Blvd at SR 20

- Intersection LOS is C during the AM peak hour and D during the PM peak hour

Brand Smart Way at SR 20

- Intersection LOS is A during the AM peak hour and B during the PM peak hour

Laurel Crossing Pkwy at SR 20

- Intersection Delay is 29.3 seconds during the AM peak hour and 47.5 seconds during the PM peak hour
- Vehicles making the WBL movement experience delay due to a lack of available gaps
- Synchro experiences difficulty in modeling side-street stop movements with a median crossover, Synchro will not stage vehicles in the median which causes a return in delay that is worse than field conditions. Vehicles that experience long delays may choose to re-route to the intersection to the north to make a U-turn movement

Rock Springs Rd at SR 20

- Intersection LOS is D during the AM peak hour and B during the PM peak hour
- The intersection is 0.1 seconds from LOS E during the AM peak hour

Tech Center Pkwy at SR 20

- Intersection LOS is A during the AM peak hour and A during the PM peak hour

Braves Ave at SR 20

- Intersection LOS is A during the AM peak hour and A during the PM peak hour

Old Peachtree Rd NE at SR 20

- Intersection LOS is E during the AM peak hour and D during the PM peak hour
 - o The intersection LOS standard is LOS E for the AM peak hour for background and future conditions analysis based on the existing conditions analysis
- The intersection is 0.2 seconds from incurring LOS E during the PM peak hour

2.6 Existing Conditions Required Improvements

Due to all intersections operating at LOS E or better, no improvements are required for existing conditions. The intersection of Old Peachtree Rd NE at SR 20 will be analyzed as a LOS standard of E for the AM peak hour for background and build conditions.

2.7 Existing Segment Capacity Analysis

A segment capacity analysis was performed for all study roadway segments using HCS 7. The results of the segment analysis are summarized in Table 6.

Table 6: Existing Segment Capacity Analysis

#	Segment	From	To	AM		PM	
				NB	SB	NB	SB
1	SR 20	Woodward Crossing Blvd	Mall of Georgia Blvd	B	B	B	C
2	SR 20	Mall of Georgia Blvd	Ramp N. of 85	B	B	C	C
3	SR 20	Ramp N. of 85	Ramp S. of 85	B	B	C	C
4	SR 20	Ramp S. of 85	Brand Smart Way	D	B	D	C
5	SR 20	Brand Smart Way	Rock Springs Rd	D	C	D	D
6	SR 20	Rock Springs Rd	Tech Center Pkwy NE	C	C	C	D
7	SR 20	Tech Center Pkwy NE	Braves Ave	C	C	C	C
8	SR 20	Braves Ave	Old Peachtree Rd NE	C	C	C	C

All existing roadway segments operate at LOS D or better for all peak hours and directions.

3 Background Conditions

3.1 Background Traffic Growth

Background traffic growth is the analysis method of analyzing historic trends in traffic volumes / population growth, and future growth projections to determine an annual growth rate which is applied to the existing traffic counts on the study network. A growth rate of 2% was determined and approved for analysis during the methodology meeting. The following intersection approaches were not grown due to the areas the driveways service being built-out.

- Woodward Crossing – Eastbound
- Mall of Georgia Blvd – Eastbound
- Brandsmart Way – Eastbound
- Laurel Crossing Pkwy – Westbound

There are no planned projects in the area which are expected to change the traffic volumes or patterns from existing conditions. The background turning movement volumes are shown in Figure 6.

3.2 Background Lane Geometry

Background lane geometry is the same as existing conditions with the exception of a traffic signal added at the intersection of I-85 SB Ramps and SR 20. The background lane geometry is shown in Figure 7.

3.3 Background Capacity Analysis

The background traffic volumes were analyzed using a Synchro 10.0 model to determine the capacity of the AM and PM peak hours. The results are shown by lane group movement and total intersection capacity. Average vehicular delays are shown in seconds, level of service (LOS) is a grading system as defined by the Highway Capacity Manual (HCM) where A is best, and F is worst. Where possible the HCM 6th Edition was used for analysis, however due to some intersection configurations or signal phasing HCM 2000 for several intersections. Vehicle 95th percentile queueing is shown in feet and is from a SimTraffic 10.0 model analysis. Synchro and SimTraffic output files are included in Appendix D.

All traffic signal timings remain the same as in existing conditions. The new traffic signal located at the intersection of I-85 SB ramps with SR 20 was analyzed using the same cycle length as other signals in the study network. The signal configuration signalized the east side of the intersection stopping the westbound traveling vehicles and northbound traveling vehicles, southbound and eastbound vehicles are unsignalized free flow movements. Traffic signal timings used in analysis are shown in Appendix D.

Figure 6: Background (2021) Traffic Volumes

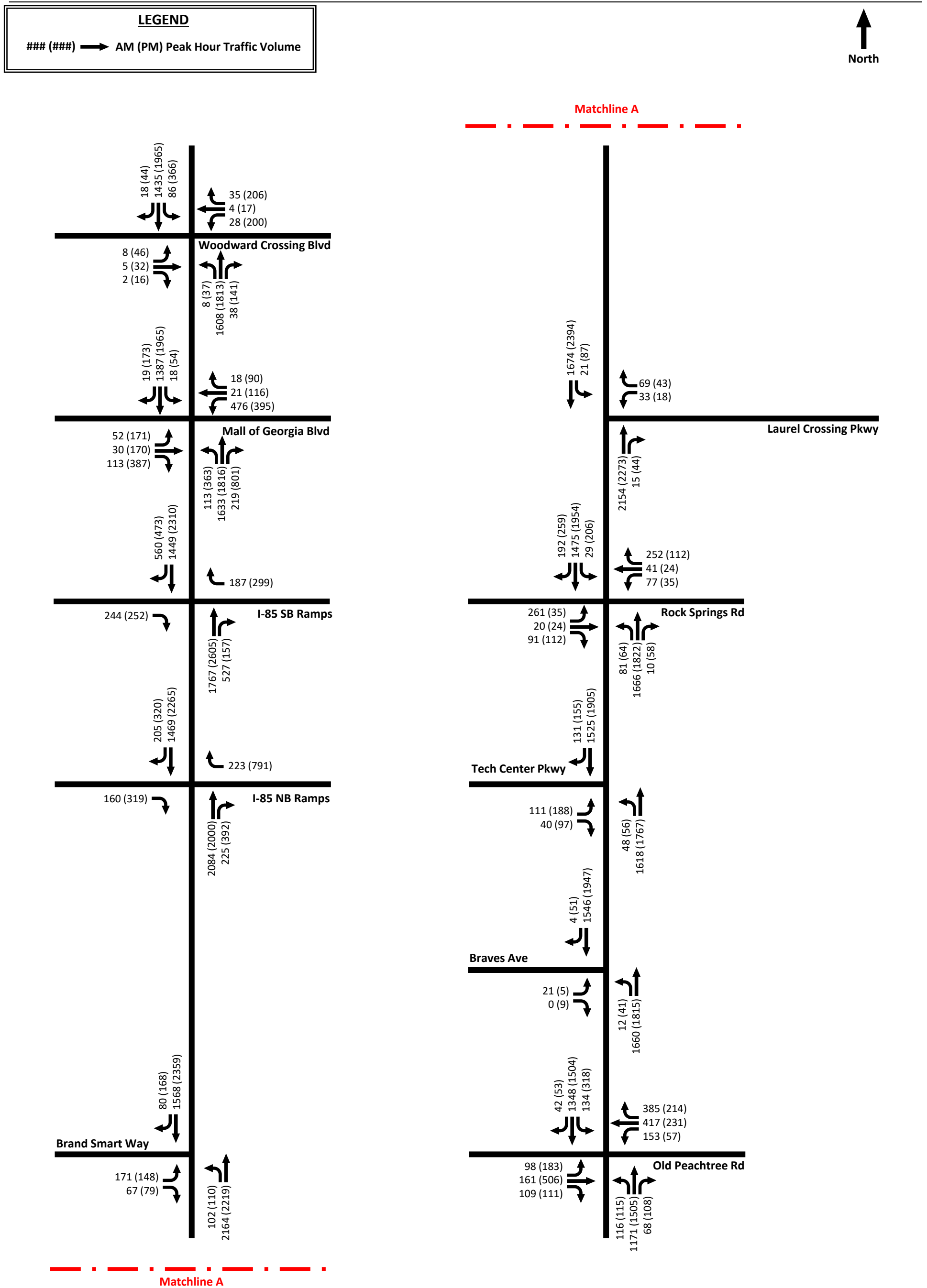


Figure 7: Background (2021) Lane Geometry

Signal Control

Stop Control

LEGEND

→

Existing Lane Geometry

→

Required Improvements

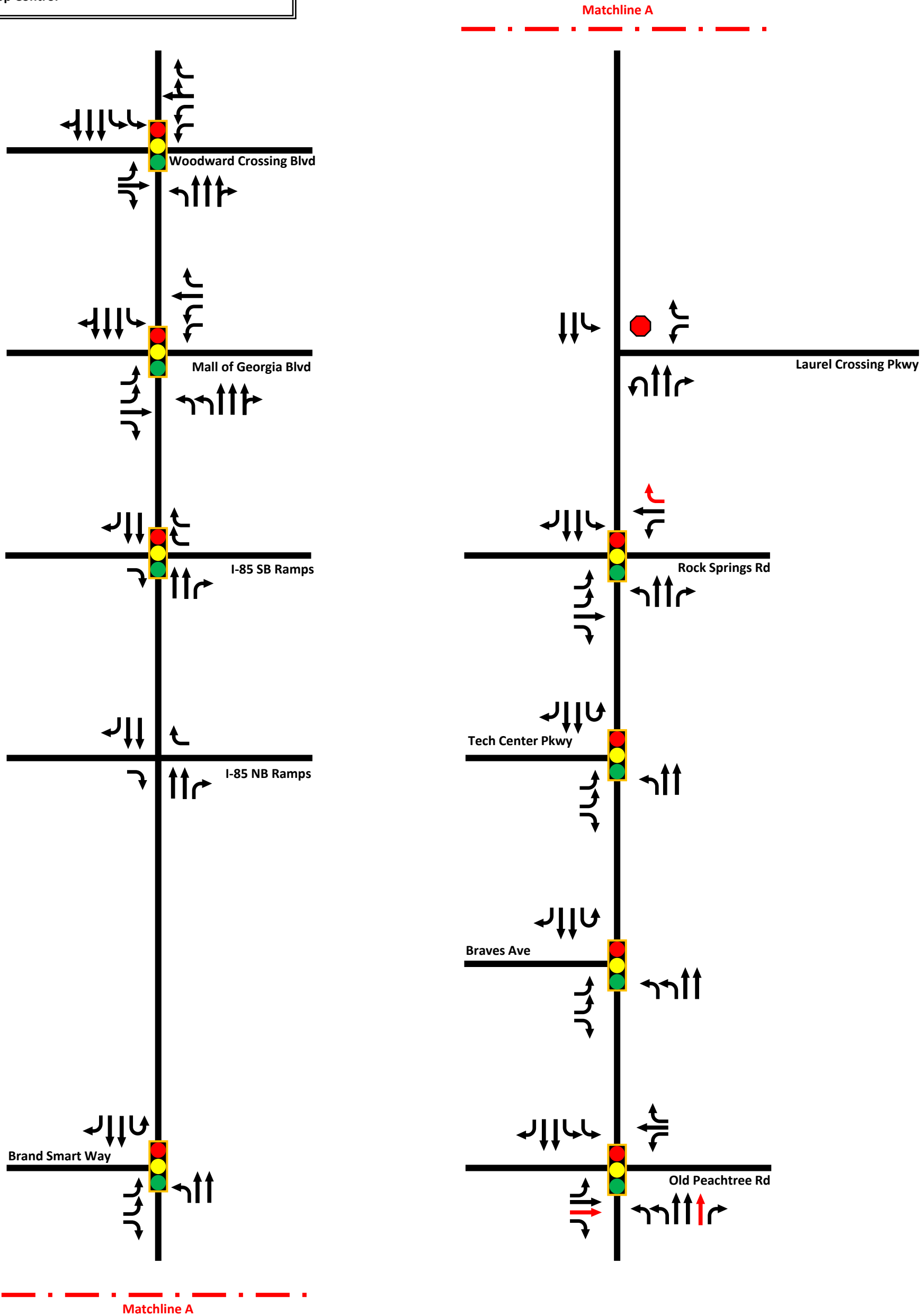


Table 7: Background Conditions Capacity Analysis

Intersection	Control	Lane Group Movement	AM Peak Hour			PM Peak Hour		
			Delay (s)	LOS	95 th % Queue (ft)	Delay (s)	LOS	95 th % Queue (ft)
SR 20 @ Woodward Crossing Blvd	Signal Control	EBL	66.4	E	22	86.3	F	97
		EBT	71.9	E	31	100.9	F	85
		EBR	67.1	E	13	91.5	F	37
		WBL	63.4	E	14	91.8	F	249
		WBT/R	66.9	E	56	95.2	F	152
		WBR	65.9	E	22	91.0	F	101
		NBL	52.5	D	29	64.9	E	68
		NBT/R	7.5	A	216	9.8	B	185
		SBL	64.0	E	106	93.7	F	317
		SBT/R	9.3	A	303	20.0	B	434
		Intersection	11.7	B	-	30.2	C	-
SR 20 @ Mall of Georgia Blvd	Signal Control	EBL	49.8	D	63	74.1	E	194
		EBT	69.4	E	60	126.8	F	392
		EBR	0.0	A	48	0.0	A	565
		WBL	73.9	E	335	110.4	F	365
		WBT	66.9	E	162	102.0	F	279
		WBR	48.8	D	21	66.1	E	43
		NBL	72.3	E	98	94.1	F	221
		NBT	51.8	D	302	1.0	A	445
		NBR	0.0	A	144	0.0	A	370
		SBL	44.1	D	53	93.1	F	342
		SBT/R	1.2	A	293	43.3	D	1433
		SBR	2.2	A	-	53.5	D	-
		Intersection	35.8	D	-	43.8	D	-
SR 20 @ I-85 SB	Signal Control	EBR	3.1	A	-	0.0	A	-
		WBR	65.3	E	42	94.4	F	944
		NBT	3.0	A	-	11.1	B	-
		NBR	4.0	A	-	5.7	A	-
		SBT	0.9	A	-	0.6	A	-
		SBR	0.6	A	-	0.0	A	-
		Intersection	4.9	A	-	9.7	A	-
SR 20 @ Brand Smart Way	Signal Control	EBL	64.0	E	149	95.4	F	139
		EBR	58.0	E	51	86.2	F	8
		NBL	40.9	D	131	94.4	F	191
		NBT	5.5	A	240	6.9	A	360
		SBT	9.1	A	273	25.9	C	882
		SBR	3.2	A	-	9.4	A	-
		Intersection	10.9	B	-	21.7	C	-
SR 20 @ Laurel Crossing Pkwy	Minor Road Stop Control	WBL	4445.3	F	441	8746.6	F	69
		WBR	37.7	E	42	34.7	D	-
		NBT	0.0	A	-	0.0	A	-
		NBR	0.0	A	-	0.0	A	-
		SBL	24.2	C	56	37.3	E	159
		SBT	0.0	A	-	0.0	A	-
		Intersection	39.8	-	-	45.0	-	-

SR 20 @ Rock Springs Rd	Signal Control	EBL	52.5	D	140	85.5	F	45
		EBT	40.0	D	26	79.8	E	61
		EBR	0.0	A	58	0.0	A	123
		WBL	61.8	E	411	92.8	F	75
		WBT/R	593.3	F	2093	413.3	F	214
		NBL	19.7	B	163	7.5	A	229
		NBT	4.6	A	374	1.8	A	530
		NBR	0.0	A	-	0.0	A	181
		SBL	12.8	B	177	11.2	B	368
		SBT	16.2	B	707	2.3	A	960
		SBR	0.0	A	207	0.0	A	208
Intersection	65.8	E	-	18.7	B	-		
SR 20 @ Tech Center Pkwy	Signal Control	EBL	69.8	E	88	100.8	F	558
		EBR	0.0	A	-	0.0	A	83
		NBL	2.4	A	61	3.1	A	105
		NBT	0.6	A	107	0.7	A	291
		SBT	0.5	A	174	0.9	A	349
		SBR	0.0	A	68	0.0	A	123
		Intersection	3.3	A	-	6.0	A	-
SR 20 @ Braves Ave	Signal Control	EBL	69.7	E	66	98.5	F	36
		EBR	0.0	A	-	96.0	F	-
		NBL	92.5	F	33	89.1	F	62
		NBT	1.7	A	53	6.3	A	48
		SBT	8.1	A	234	4.7	A	207
		SBR	5.8	A	-	4.2	A	-
		Intersection	5.7	A	-	6.8	A	-
SR 20 @ Old Peachtree Rd NE	Signal Control	EBL	48.8	D	132	56.9	E	243
		EBT	46.3	D	175	112.5	F	680
		EBR	45.3	D	99	55.1	E	453
		WBL	41.7	D	365	67.0	E	189
		WBT	98.8	F	1955	68.5	E	369
		WBR	129.3	F	609	70.5	E	217
		NBL	83.8	F	166	128.2	F	709
		NBT	34.8	C	387	88.1	F	956
		NBR	21.8	C	30	35.3	D	534
		SBL	74.2	E	98	99.0	F	894
		SBT	73.8	E	636	28.7	F	1110
		SBR	35.7	D	70	3.9	A	69
Intersection	66.1	E	-	67.6	E	-		

Woodward Crossing Blvd at SR 20

- There is no change in intersection LOS from existing conditions

Mall of Georgia Blvd at SR 20

- LOS during the AM peak hour drops from LOS C to LOS D, the PM peak hour remains at LOS D

I-85 SB at SR 20

- The intersection is assumed to be signalized under background conditions
- The intersection operates at LOS A for both AM and PM peak hours

Brand Smart Way at SR 20

- The intersection drops from LOS A for the AM peak hour to LOS B and LOS B during the PM peak hour to LOS C

Laurel Crossing Pkwy at SR 20

- Dues to the issues of Synchro modeling outlined in existing conditions the minor road stop-controlled movements experience additional delay and queueing.

Rock Springs Rd at SR 20

- The intersection drops from LOS D to LOS E during the AM peak hour and remains at LOS B during the PM peak hour

Tech Center Pkwy at SR 20

- There is no change in intersection LOS from existing conditions

Braves Ave at SR 20

- There is no change in intersection LOS from existing conditions

Old Peachtree Rd NE at SR 20

- The intersection remains at LOS E during the AM peak hour
- During the PM peak hour, the LOS drops from LOS D to LOS E

3.4 Background Conditions Required Improvements

The following improvements were made to improve intersection LOS to the accepted LOS standard

Rock Springs Rd at SR 20

- LOS standard is LOS D based on existing conditions
- Added westbound right-turn deceleration lane
- LOS is improved to LOS B during the AM peak hour and LOS A during the PM peak hour

Old Peachtree Rd at SR 20

- LOS standard is LOS E during the AM peak hour and LOS D during the PM peak hour
- Significant geometric improvements are needed to improve LOS since no modification to signal timing can be made for this analysis
 - o Added northbound through lane
 - o Added eastbound through lane
- LOS remains at LOS E during the AM peak hour and is improved to LOS D during the PM peak hour

Table 8: Background Conditions Capacity Analysis with Required Improvement

Intersection	Control	Lane Group Movement	AM Peak Hour			PM Peak Hour		
			Delay (s)	LOS	95 th % Queue (ft)	Delay (s)	LOS	95 th % Queue (ft)
SR 20 @ Rock Springs Rd	Signal Control	EBL	50.9	D	141	88.1	F	42
		EBT	42.3	D	24	83.7	F	64
		EBR	0.0	A	78	0.0	A	102
		WBL	66.3	E	1480	98.6	F	71
		WBT	61.6	E	228	96.8	F	59
		WBR	0.0	A	248	0.0	A	100
		NBL	16.8	B	156	6.4	A	211
		NBT	3.5	A	391	1.6	A	542
		NBR	0.0	A	77	0.0	A	161
		SBL	11.5	B	45	10.1	B	342
		SBT	13.2	B	661	2.0	A	775
		SBR	0.0	A	240	0.0	A	191
		Intersection	14.0	B	-	5.1	A	-
SR 20 @ Old Peachtree Rd NE	Signal Control	EBL	48.8	D	108	97.6	F	281
		EBT	43.7	D	103	75.5	E	340
		EBR	45.3	D	64	68.2	E	121
		WBL	40.3	D	337	69.5	E	235
		WBT	98.8	F	1026	87.4	F	353
		WBR	129.3	F	560	96.9	F	235
		NBL	83.8	F	173	128.2	F	795
		NBT	27.9	C	353	36.1	D	1074
		NBR	21.8	C	20	26.4	C	648
		SBL	74.2	E	283	99.0	F	560
		SBT	73.8	E	790	4.2	A	837
		SBR	35.7	D	119	0.1	A	86
		Intersection	64.1	E	-	44.1	D	-

3.5 Background Segment Capacity Analysis

A segment capacity analysis was performed for all study roadway segments using HCS 7. The results of the segment analysis are summarized in Table 9.

Table 9: Background Segment Capacity Analysis

#	Segment	From	To	AM		PM	
				NB	SB	NB	SB
1	SR 20	Woodward Crossing Blvd	Mall of Georgia Blvd	B	B	B	C
2	SR 20	Mall of Georgia Blvd	Ramp N. of 85	B	B	C	C
3	SR 20	Ramp N. of 85	Ramp S. of 85	B	B	C	C
4	SR 20	Ramp S. of 85	Brand Smart Way	D	B	D	C
5	SR 20	Brand Smart Way	Rock Springs Rd	D	C	D	D
6	SR 20	Rock Springs Rd	Tech Center Pkwy NE	C	C	C	D
7	SR 20	Tech Center Pkwy NE	Braves Ave	C	C	C	C
8	SR 20	Braves Ave	Old Peachtree Rd NE	C	C	C	D

Background segment capacity analysis shows that there are no changes in LOS from existing conditions.

4 Future Conditions

4.1 Trip Generation

A trip generation for the proposed development was created using the Institute of Traffic Engineers (ITE) Trip Generation Manual 10th Edition, 2017. The summarized trip generation is shown in Table 10. The Golf Range land-use is expected to generate more traffic volume than a normal Golf Range, as such a survey of an existing development was completed to estimate the trip generation for the proposed land-use. The data use for analysis is included in Appendix E.

Table 10: Trip Generation Summary

ITE Code	Project Land Use	Density / Variable	Daily			AM Peak Hour			PM Peak Hour		
			Total	In	Out	Total	In	Out	Total	In	Out
960	Super Convenience Market / Gas Station	20 /Pumps	4,610	2,305	2,305	562	281	281	459	230	229
937	Coffee/Doughnut Shop with Drive-Through Window	2500 /1000 S.F.	2,051	1,026	1,025	222	113	109	108	54	54
492	Health / Fitness Club	34000 /1000 S.F.	1,120	560	560	45	23	22	122	70	52
820	Shopping Center	87200 /1000 S.F.	5,477	2,739	2,738	195	121	74	491	236	255
890	Furniture Store	56000 /1000 S.F.	336	168	168	14	10	4	26	12	14
310	Hotel	123 /Rooms	962	481	481	56	33	23	66	34	32
435	Multipurpose Recreational Facility	90000 /1000 S.F.	1,073	537	536	11	9	2	322	177	145
N/A	Golf Driving Range (Non ITE Trip Generation)	1 /Unit	2,495	1,248	1,247	32	28	4	183	91	92
252	Senior Adult Housing - Attached	120 /Dwelling Units	457	229	228	24	8	16	31	17	14
221	Multifamily Housing (Mid-Rise)	380 /Dwelling Units	2,069	1,035	1,034	127	33	94	160	98	62
Total Trips			20,650	10,328	10,322	1,288	659	629	1,968	1,019	949
Reductions for Internal Capture			3,817	1,909	1,908	10	5	5	300	150	150
Reductions for Modal Split			338	168	170	25	13	12	32	17	15
Reductions for Pass-By Trips			4,467	2,246	2,221	478	243	235	435	215	220
Total Net New Project Trips			12,028	6,005	6,023	775	398	377	1,201	637	564

The proposed development is anticipated to generate 20,650 daily vehicle trips (10,328 inbound, 10,322 outbound) with 1,288 AM peak hour vehicle trips (659 inbound, 629 outbound), and 1,968 PM peak hour trips (1,019 inbound, 949 outbound). After vehicle trip reductions the net anticipated daily vehicle volume impacting the external roadway network is 12,028 vehicle trips (6,005 inbound, 6,023 outbound) with an AM peak hour vehicle volume of 775 vehicles (398 inbound, 377 outbound), and a PM peak hour vehicle volume of 1,201 vehicles (637 inbound, 564 outbound).

4.1.1 Internal Capture Reduction

Mixed-use developments that contain residential, retail, and entertainment land-uses will generate trips that satisfy the total development's trip generation but will not access the site via the external roadway network. Internal trip capture is calculated using the guidance set forth in the ITE Trip Generation Handbook 3rd Edition, 2017 which utilizes the NCHRP 8-51 Internal Trip Capture Estimation tool. AM and PM peak hour trips utilize their respective tools, however to estimate the daily internal capture the PM worksheets were used with the daily traffic volumes. The total internal capture reduction is approximately 1% of the AM volumes, and 15%-18% of the PM and daily volumes.

The internal capture reduction is 3,817 daily vehicle trips (1,909 inbound, 1,908 outbound) with an AM peak hour vehicle volume of 10 vehicles (5 inbound, 5 outbound), and a PM peak hour vehicle volume of 300 vehicles (150 inbound, 150 outbound). NCHRP worksheets are included in Appendix E.

4.1.2 Reductions for Modal Split

Due to the addition of bicycle and pedestrian facilities by the development and anticipated future connections to the external network a number of trips are anticipated to utilize these facilities and will not have an impact on the external roadway network. A 2% reduction for modal split was discussed and agreed upon at the methodology meeting.

The modal split reduction is 338 daily vehicle trips (168 inbound, 170 outbound) with an AM peak hour vehicle volume of 25 vehicles (13 inbound, 12 outbound), and a PM peak hour vehicle volume of 32 vehicles (17 inbound, 15 outbound).

4.1.3 Pass-by Trip Reduction

Several of the proposed land-uses are expected to attract trips as intermediate stops on the way from an origin to a primary trip destination without a route diversion. The pass-by trip generation rate is based on the ITE Trip Generation Handbook 3rd Edition, 2017. The handbook does not always provide rates for AM and daily pass-by trip generation. Where applicable the rates not provided were estimated based on the PM peak hour rate.

The pass-by trip reduction is 4,467 daily vehicle trips (2,246 inbound, 2,221 outbound) with an AM peak hour vehicle volume of 478 vehicles (243 inbound, 235 outbound), and a PM peak hour vehicle volume of 435 vehicles (215 inbound, 220 outbound).

4.2 Trip Distribution

The trip distribution for the proposed development was based on field observations, existing traffic counts and patterns, a review of land-use densities in the area, and potential origination / destination points. Additionally, discussions with the local jurisdictions during the methodology meeting helped to determine the distribution of project trips on the study network. The development was distributed as a whole, and individual driveway volumes were determined based on-site layout and access. The proposed project trip distribution was approved during the methodology meeting.

The trip distribution is shown graphically in Figure 8. Pass-by trip distribution is shown in Figure 9. Total project trips are shown in Figure 11.

4.3 Build Traffic Volumes

Build traffic volumes include background volumes and project trips that will be generated by the proposed development. Total build year traffic volumes are shown graphically in Figure 12.

4.4 Turn Lane Warrant Analysis

A turn lane warrant analysis for the proposed driveways accessing the external roadway network was performed per GDOT's Regulations for Driveway and Encroachment Control Chapter 4, Tables 4-6 and 4-7 for driveways located along SR 20. For Driveway 4 the NCHRP 457: Evaluating Intersection Improvement Recommendations was used.

GDOT turn lane warrants state that for a roadway with greater than 10,000 AADT and a speed limit of 45 mph the daily right-turn volume needed is 75 vehicles and the daily left-turn volume is 250 vehicles. All turn-lanes are warranted along SR 20 based on peak hour traffic volumes.

- Driveway 1
 - Right-turn deceleration lane **Warranted**
- Driveway 2
 - Right-turn deceleration lane **Warranted**
 - Left-turn deceleration lane **Warranted**
- Driveway 3
 - Right-turn deceleration lane **Warranted**

The NCHRP turn-lane warrants analyze the need for a turn lane by comparing the amount of turning vehicles with opposing and advancing traffic volumes. Full NCHRP worksheets are included in Appendix F.

- Driveway 4
 - Right-turn deceleration lane **Not Warranted**
 - Left-turn deceleration lane **Not Warranted**
 - Minor Road approach **Single Lane**

4.4.1 Turn Lane Required Lengths

Per GDOT's Regulations for Driveway and Encroachment Control Chapter 4, Table 4-8.

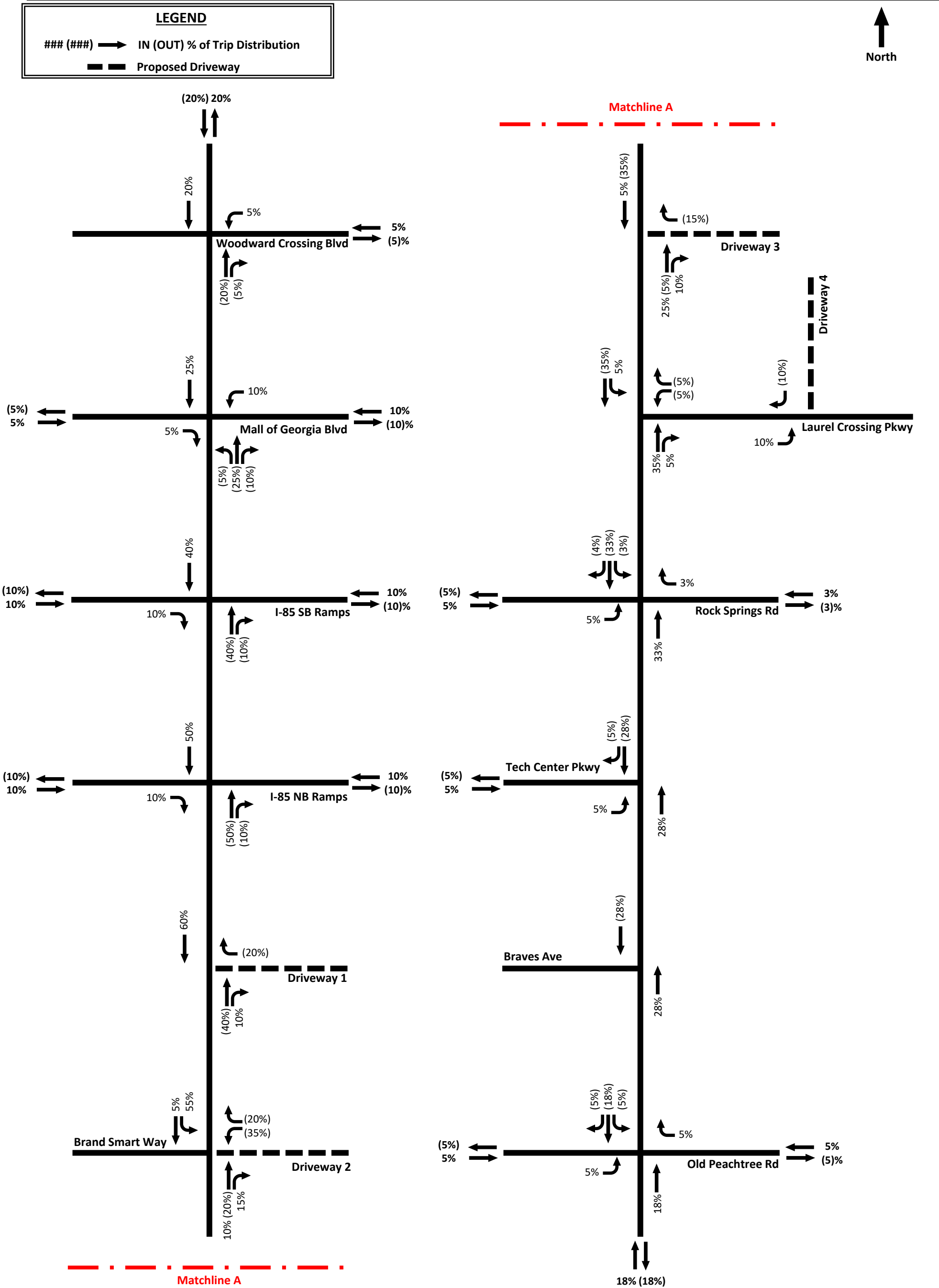
- All right-turn deceleration lanes on SR 20 should be designed to include a 175-foot full length storage and a 100-foot taper
- The left-turn deceleration lane into Driveway 2 should at a minimum include a 235-foot full length storage and 100-foot taper
 - The existing turn-lane is approximately 275 feet with a 90-foot taper
 - Based on the 95th percentile queue in Table 11 the required queue length is 327 feet

4.5 Signal Warrant Analysis

A signal warrant analysis was performed at the intersection of SR 20 at Laurel Crossing Pkwy per the Manual on Uniform Traffic Control Devices (MUTCD) traffic signal warrant guidelines. A twelve-hour turning movement count was performed for the intersection and traffic volumes were grown to the build year based on the methodology previously stated. The project trip generated traffic volumes were distributed to the intersection based on the ITE Trip Generation Manual 10th Edition daily distribution for ITE Code 221. The residential daily distribution was used since the primary users of the driveway are anticipated to be generated by the residential land-uses.

Traffic signal warrants were analyzed using 100% traffic volume, as well as a right-turn reduction for vehicles turning from Laurel Crossing Pkwy. Based on the analysis a traffic signal is **Not Warranted** for Warrants 1,2, or 3. Full traffic signal warrant analysis including the daily distribution of project trips at the study intersection is provided in Appendix G.

Figure 8: Trip Distribution



The Gwinnett Exchange – DRI 2834

Buford, GA

LOWE

ENGINEERS

24

Figure 9: Pass-By Trip Distribution AM

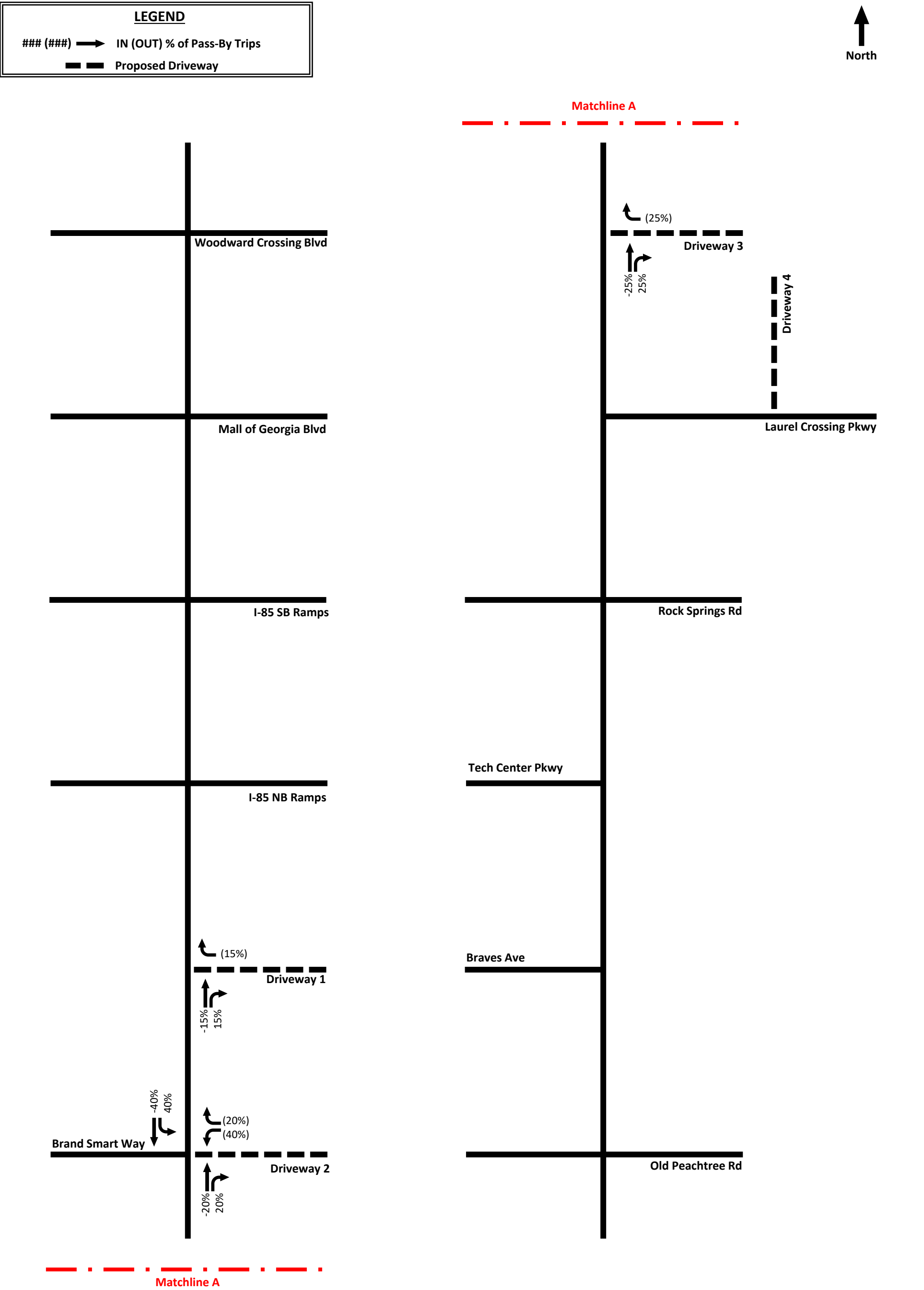


Figure 10: Pass-By Trip Distribution PM

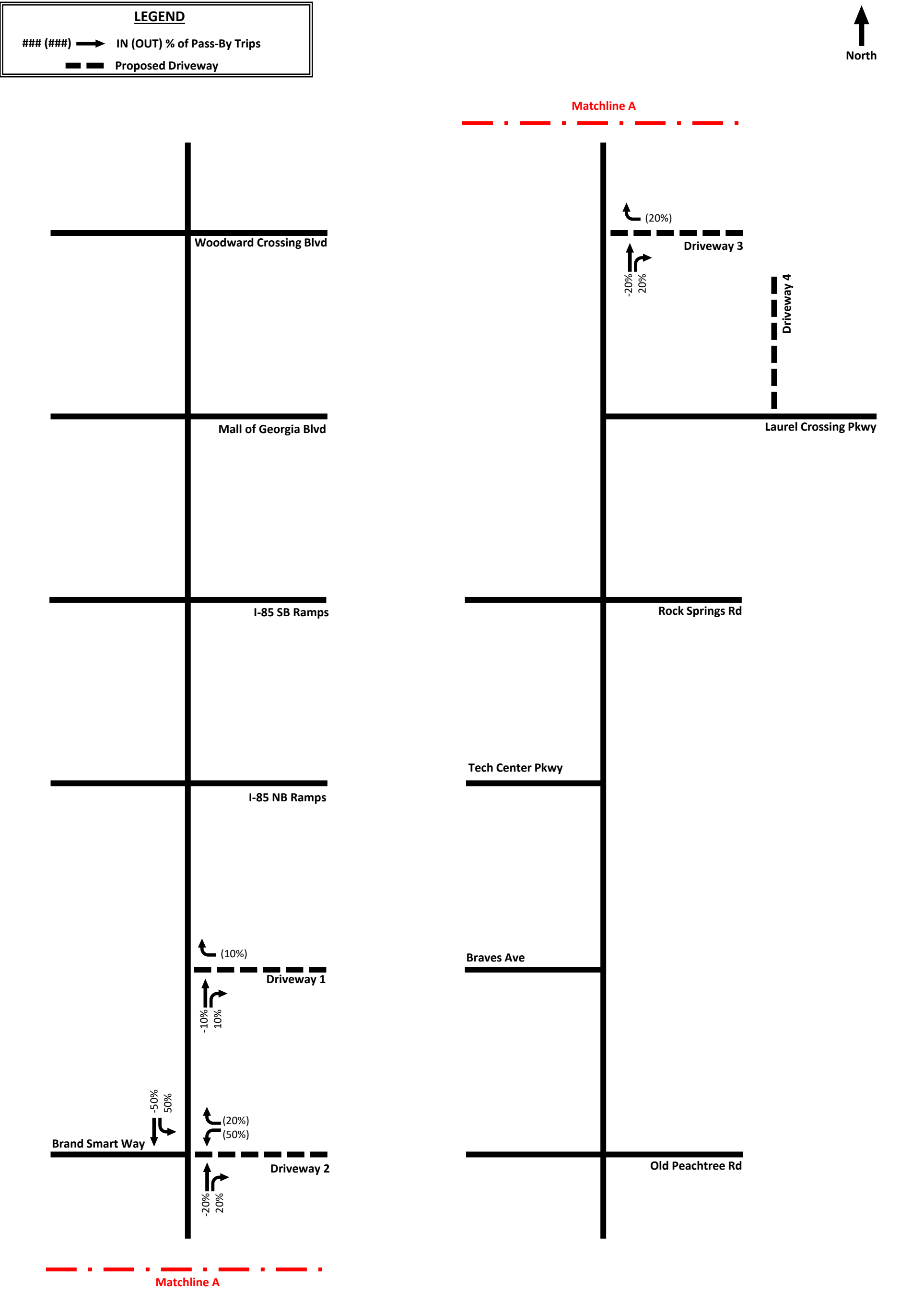


Figure 11: Project Trips

LEGEND

(###) → IN (OUT) % of Trip Distribution

Proposed Driveway

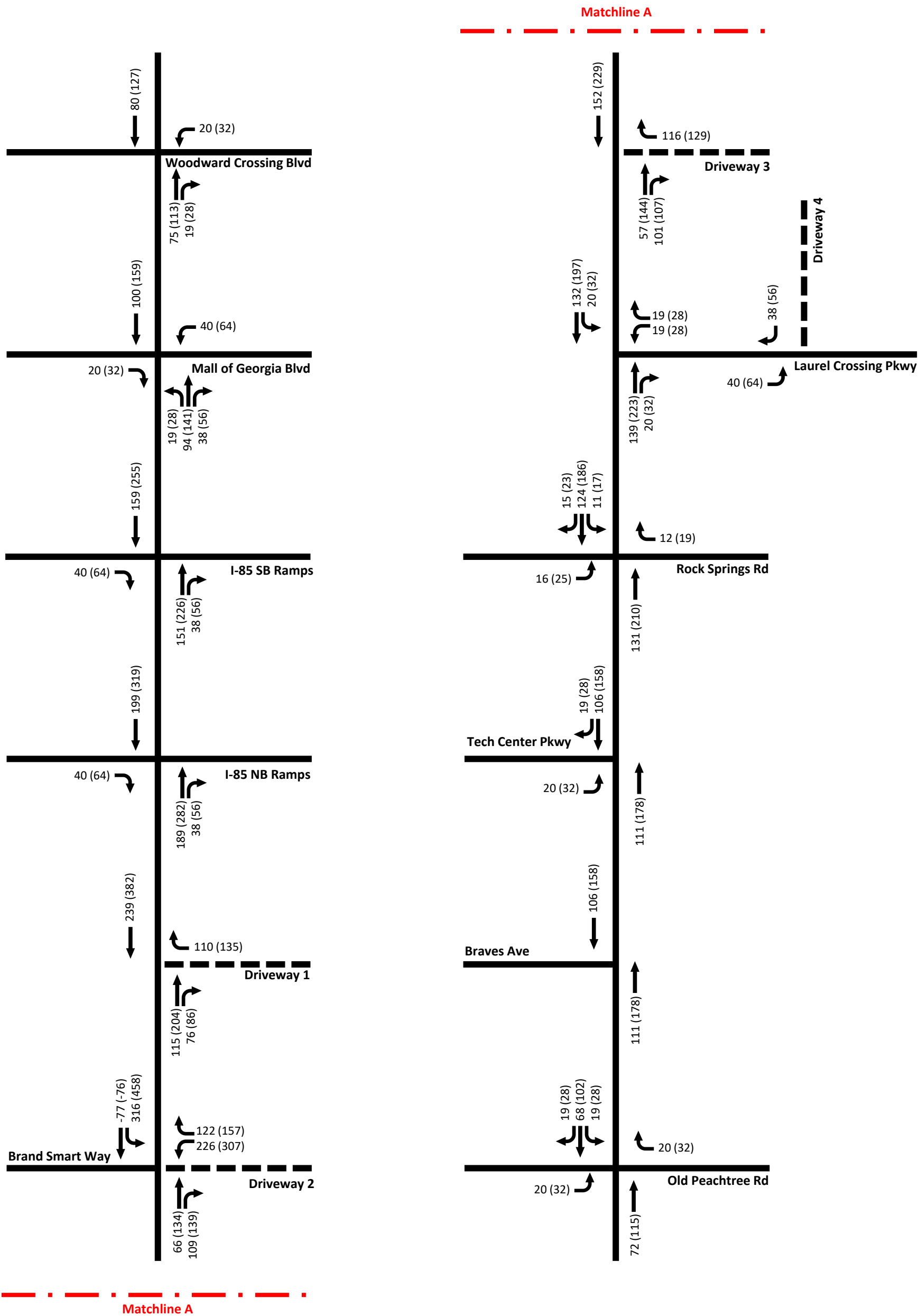


Figure 12: Build (2021) Traffic Volumes

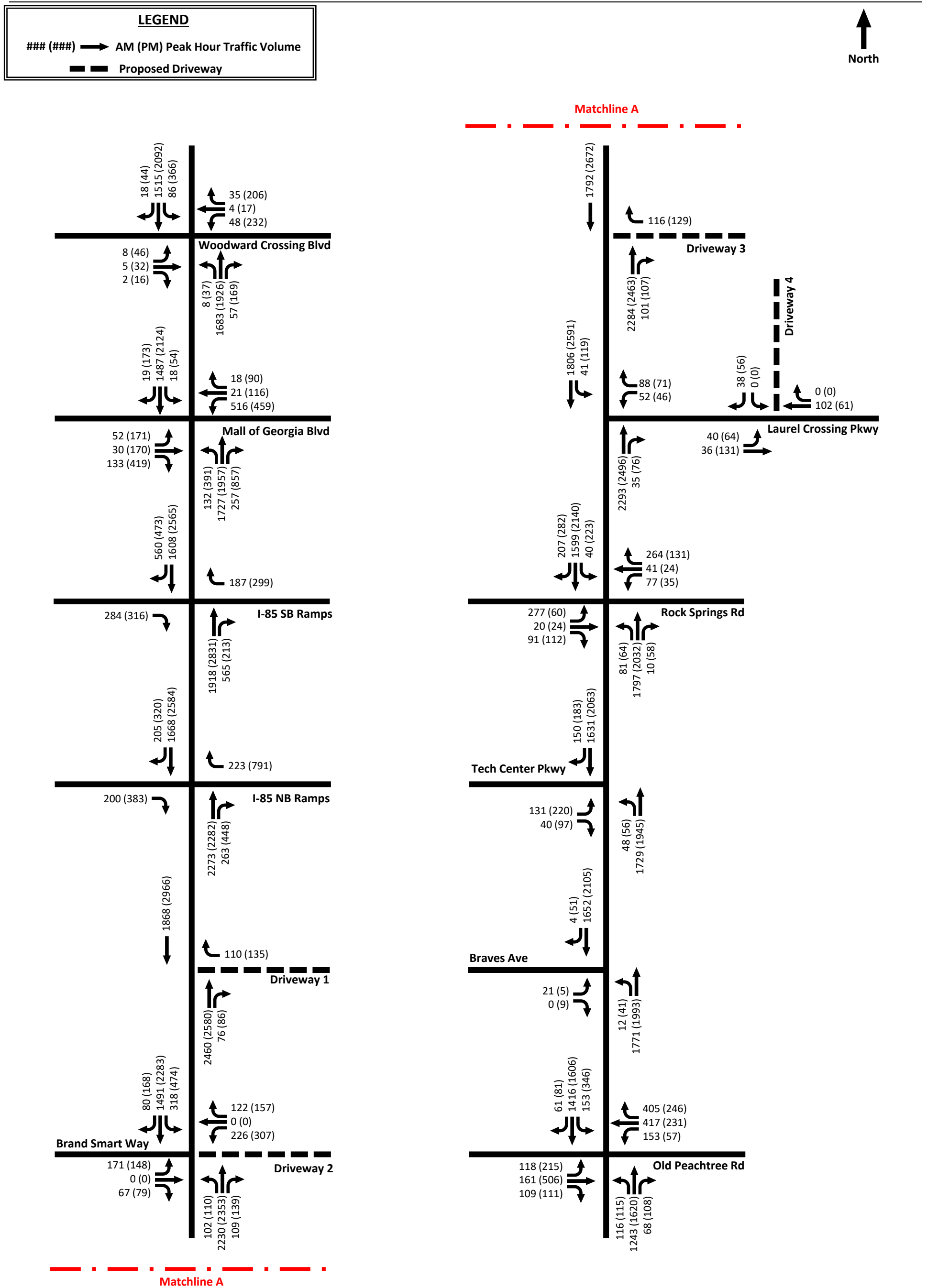
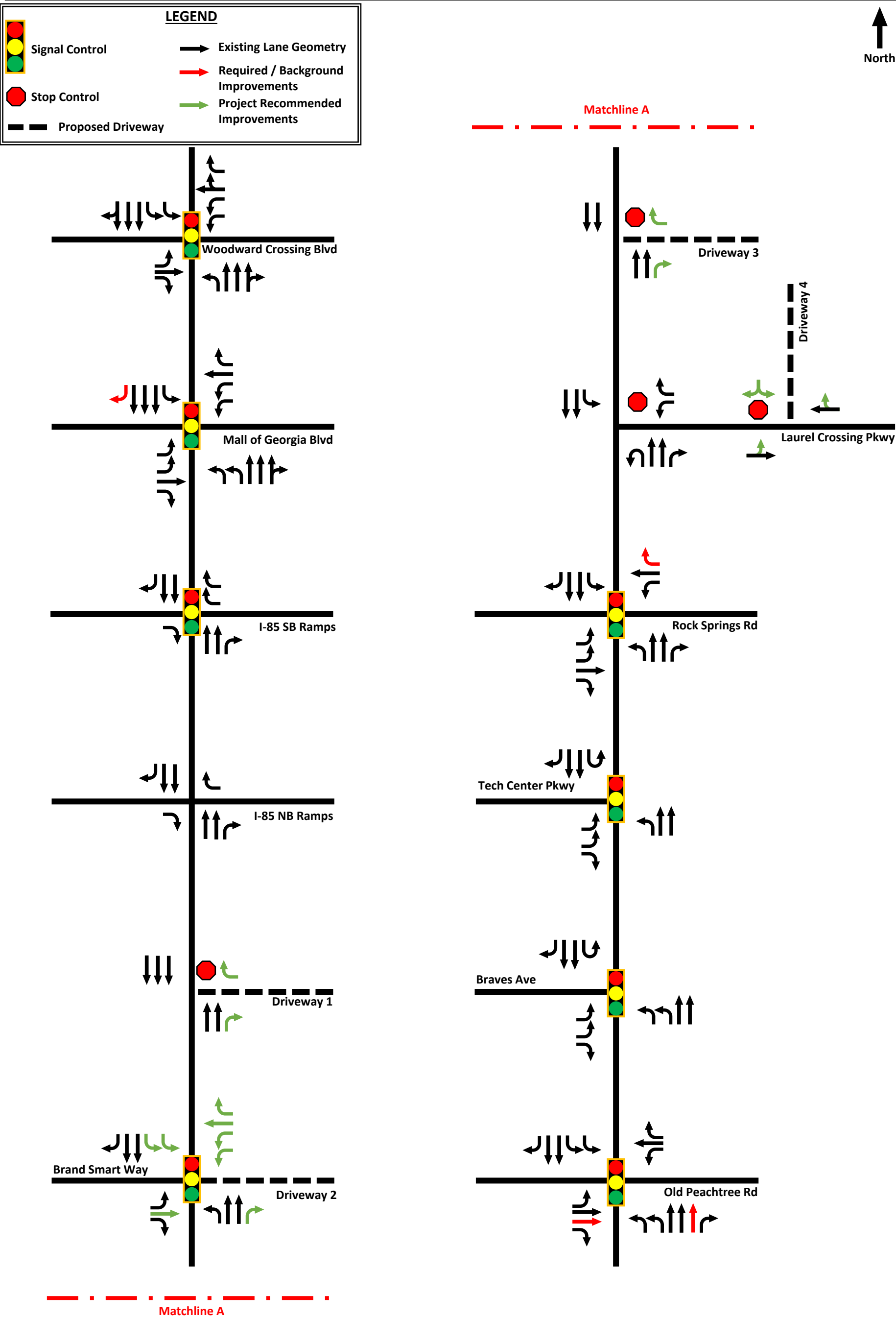


Figure 13: Build (2021) Lane Geometry



4.6 Build Capacity Analysis

The build traffic volumes were analyzed using a Synchro 10.0 model to determine the capacity of the AM and PM peak hours. The results are shown by lane group movement and total intersection capacity. Average vehicular delays are shown in seconds, level of service (LOS) is a grading system as defined by the Highway Capacity Manual (HCM) where A is best, and F is worst. Where possible the HCM 6th Edition was used for analysis, however due to some intersection configurations or signal phasing HCM 2000 for several intersections. Vehicle 95th percentile queueing is shown in feet and is from a SimTraffic 10.0 model analysis. Synchro and SimTraffic output files are included in Appendix D.

All traffic signal timings remain the same as in background conditions. Traffic signal timings used in analysis are shown in Appendix D.

Table 11: Build Conditions Capacity Analysis

Intersection	Control	Lane Group Movement	AM Peak Hour			PM Peak Hour		
			Delay (s)	LOS	95 th % Queue (ft)	Delay (s)	LOS	95 th % Queue (ft)
SR 20 @ Woodward Crossing Blvd	Signal Control	EBL	66.1	E	32	87.6	F	135
		EBT	71.9	E	25	99.8	F	106
		EBR	67.1	E	9	87.4	F	40
		WBL	62.6	E	80	98.9	F	214
		WBT/R	65.3	E	51	94.6	F	130
		WBR	64.7	E	26	91.5	F	95
		NBL	56.4	E	17	67.5	E	96
		NBT/R	9.8	A	208	13.7	B	216
		SBL	64.0	E	103	93.5	F	902
		SBT/R	10.2	B	88	23.9	C	1863
	Intersection	13.4	B	-	34.1	C	-	
SR 20 @ Mall of Georgia Blvd	Signal Control	EBL	48.6	D	81	73.2	E	177
		EBT	69.4	E	68	133.6	F	449
		EBR	0.0	A	34	0.0	A	959
		WBL	76.7	E	360	137.0	F	409
		WBT	66.9	E	320	102.2	F	1715
		WBR	48.1	D	158	65.1	E	488
		NBL	72.1	E	119	91.7	F	290
		NBT	53.2	D	251	1.0	A	668
		NBR	0.0	A	206	0.0	A	292
		SBL	51.3	D	57	95.2	F	413
		SBT/R	15.2	B	288	68.6	F	3829
		SBR	16.5	B	-	83.6	F	-
	Intersection	42.3	D	-	56.6	E	-	
SR 20 @ I-85 SB	Signal Control	EBR	3.5	A	-	0.1	A	202
		WBR	65.6	E	-	90.5	F	1047
		NBT	4.6	A	-	14.5	B	-
		NBR	12.1	B	-	8.6	A	-
		SBT	1.0	A	-	1.3	A	1422
		SBR	0.6	A	-	0.1	A	1416
		Intersection	6.2	A	-	11.2	B	-
SR 20 @ Brand Smart Way	Signal Control	EBL	265.7	F	305	118.4	F	253
		EBT	0.0	A	-	0.0	A	-
		EBR	0.0	A	27	0.0	A	57
		WBL	75.8	E	205	136.7	F	187
		WBT	0.0	A	436	0.0	A	890
		WBR	0.0	A	168	0.0	A	223
		NBL	9.7	A	88	155.0	F	246
		NBT	14.2	B	415	89.2	F	560
		NBR	0.0	A	315	0.0	A	183
		SBL	155.1	F	177	84.3	F	327
		SBT	8.9	A	215	36.1	D	718
		SBR	0.0	A	-	0.0	A	-
	Intersection	34.8	C	-	71.0	E	-	
SR 20 @ Laurel Crossing Pkwy	Minor Road Stop Control	WBL	11050.0	F	946	61.4	F	835
		WBR	55.2	F	824	0.0	A	374
		NBT	0.0	A	7	0.0	A	214
		NBR	0.0	A	-	0.0	A	-
		SBL	31.1	D	108	110.9	F	206
		SBT	0.0	A	-	0.0	A	-
	Intersection	141.9	-	-	2.6	-	-	

SR 20 @ Rock Springs Rd	Signal Control	EBL	53.1	D	145	85.0	F	67
		EBT	39.5	D	33	78.2	E	45
		EBR	0.0	A	79	0.0	A	98
		WBL	61.8	E	422	93.2	F	88
		WBT/R	632.5	F	2442	583.9	F	248
		NBL	34.2	C	221	8.3	A	160
		NBT	10.1	B	480	2.6	A	504
		NBR	0.0	A	77	0.0	A	161
		SBL	13.4	B	179	30.6	C	284
		SBT	57.5	E	611	3.9	A	585
		SBR	0.0	A	253	0.0	A	155
		Intersection	85.4	F	-	29.5	C	-
SR 20 @ Tech Center Pkwy	Signal Control	EBL	69.3	E	97	105.4	F	986
		EBR	0.0	A	19	0.0	A	58
		NBL	2.7	A	79	3.8	A	94
		NBT	0.7	A	228	0.9	A	357
		SBT	0.5	A	224	0.8	A	149
		SBR	0.0	A	97	0.0	A	68
		Intersection	3.6	A	-	7.1	A	-
SR 20 @ Braves Ave	Signal Control	EBL	69.7	E	43	98.5	F	29
		EBR	0.0	A	-	96.1	F	-
		NBL	91.3	F	32	86.0	F	57
		NBT	1.9	A	59	7.2	A	81
		SBT	8.5	A	215	8.1	A	182
		SBR	5.7	A	-	5.7	A	-
		Intersection	6.0	A	-	8.7	A	-
SR 20 @ Old Peachtree Rd NE	Signal Control	EBL	54.1	D	128	67.7	E	541
		EBT	45.1	D	167	112.5	F	1461
		EBR	44.1	D	89	55.1	E	470
		WBL	41	D	348	67.0	E	162
		WBT	98.8	F	866	68.5	E	342
		WBR	149.5	F	495	74.7	E	238
		NBL	83.8	F	197	128.2	F	670
		NBT	39.6	D	415	118.5	F	1477
		NBR	23.1	C	32	35.5	D	573
		SBL	76.2	E	870	107.1	F	206
		SBT	92.6	F	1118	49.6	F	626
		SBR	37.1	D	110	4.0	A	101
		Intersection	75.4	E	-	84.0	F	-
SR 20 @ Driveway 1	Minor Road Stop Control	NBT	0.0	A	-	0.0	A	6
		NBR	0.0	A	-	0.0	A	-
		WBR	108.2	F	145	210.4	F	317
		SBT	0.0	A	-	0.0	A	619
		Intersection	2.5	-	-	4.6	-	-
SR 20 @ Driveway 3	Minor Road Stop Control	NBT	0.0	A	93	0.0	A	312
		NBR	0.0	A	-	0.0	A	7
		WBR	82.3	F	1108	149.5	F	1109
		SBT	0.0	A	-	0.0	A	-
		Intersection	2.1	-	-	3.4	-	-
Laurel Crossing Pkwy @ Driveway 4	Minor Road Stop Control	EB	7.5	A	18	7.5	A	24
		WB	0.0	A	-	0.0	A	-
		SB	9.0	A	51	8.9	A	53
		Intersection	2.9	-	-	3.0	-	-

Woodward Crossing Blvd at SR 20

- There is no change in intersection LOS from existing conditions

Mall of Georgia Blvd at SR 20

- The PM peak hour degrades from LOS D to LOS E

I-85 SB at SR 20

- The intersection degrades from LOS A to LOS B

Brand Smart Way at SR 20

- A fourth leg is added to the intersection under build conditions
- AM peak hour LOS degrades from LOS B to LOS C
- PM peak hour LOS degrades from LOS C to LOS E
 - Due to the additional volume at the intersection LOS degrades at the study intersection
 - Dual southbound left-turn lanes are proposed as well as dual westbound left-turn lanes
 - There is insufficient geometric space for improvements to the intersection beyond the previously recommended improvements

Laurel Crossing Pkwy at SR 20

- Due to the issues of Synchro modeling outlined in existing conditions the minor road stop-controlled movements experience additional delay and queueing.
- Left-turning vehicles will have the option to use the proposed development to access a signalized intersection to help with left-turns

Rock Springs Rd at SR 20

- The intersection drops from LOS E to LOS F during the AM peak hour and LOS B to LOS C during the PM peak hour

Tech Center Pkwy at SR 20

- There is no change in intersection LOS from existing conditions

Braves Ave at SR 20

- There is no change in intersection LOS from existing conditions

Old Peachtree Rd NE at SR 20

- The intersection remains at LOS E during the AM peak hour
- During the PM peak hour the LOS drops from LOS E to LOS F

Driveway 1 at SR 20

- The WBR movement operates at LOS F during the AM peak hour
- If queueing becomes excessive at the proposed driveway location drivers will utilize the other site driveways

Driveway 3 at SR 20

- The WBR movement operates at LOS F during the AM peak hour and PM peak hour
- If queueing becomes excessive at the proposed driveway location drivers will utilize the other site driveways

Driveway 4 at Laurel Crossing Pkwy

- The intersection movements operate at LOS A or better for all peak hours

4.7 Build Conditions Required Improvements

- **Mall of Georgia Blvd at SR 20**
 - To improve intersection LOS the southbound through/right movement was converted to a through movement and a southbound right-turn lane was added
 - Intersection LOS is improved from LOS E to LOS D during the PM peak hour
- **Rock Springs Rd at SR 20**

- o Improvements made for Background Improved conditions are sufficient for build conditions
- **Old Peachtree Rd at SR 20**
 - o Improvements made for Background Improved conditions are sufficient for build conditions

Table 12: Build Conditions Capacity Analysis with Required Improvements

Intersection	Control	Lane Group Movement	AM Peak Hour			PM Peak Hour		
			Delay (s)	LOS	95 th % Queue (ft)	Delay (s)	LOS	95 th % Queue (ft)
SR 20 @ Mall of Georgia Blvd	Signal Control	EBL	48.6	D	77	73.2	E	395
		EBT	69.4	E	65	133.6	F	1282
		EBR	0.0	A	-	0.0	A	1339
		WBL	76.7	E	377	137.0	F	379
		WBT	66.9	E	47	102.2	F	1505
		WBR	48.1	D	24	65.1	E	464
		NBL	72.1	E	129	91.7	F	418
		NBT	53.2	D	249	1.0	A	1043
		NBR	0.0	A	215	0.0	A	290
		SBL	51.3	D	70	95.2	F	415
		SBT	14.9	B	314	50.0	D	4130
		SBR	10.1	B	31	21.4	C	354
		Intersection	42.0	D	-	46.2	D	-
SR 20 @ Rock Springs Rd	Signal Control	EBL	50.7	D	132	87.0	F	60
		EBT	41.8	D	37	81.5	F	63
		EBR	0.0	A	76	0.0	A	94
		WBL	66.3	E	208	98.5	F	52
		WBT	61.6	E	428	96.4	F	65
		WBR	0.0	A	253	0.0	A	120
		NBL	33.0	C	265	7.2	A	180
		NBT	6.6	A	486	2.1	A	501
		NBR	0.0	A	-	0.0	A	-
		SBL	12.1	B	295	30.2	C	250
		SBT	54.2	D	656	3.3	A	444
		SBR	0.0	A	231	0.0	A	168
		Intersection	32.0	C	-	7.2	A	-
SR 20 @ Old Peachtree Rd NE	Signal Control	EBL	54.1	D	147	111.0	F	286
		EBT	42.6	D	77	70.9	E	324
		EBR	44.1	D	120	64.4	E	78
		WBL	39.8	D	352	65.7	E	195
		WBT	98.8	F	1780	80.5	F	355
		WBR	149.5	F	604	99.5	F	320
		NBL	83.8	F	154	128.2	F	778
		NBT	30.3	C	382	41.4	D	1483
		NBR	23.1	C	27	29.0	C	650
		SBL	76.2	E	375	107.1	F	323
		SBT	92.6	F	784	9.0	A	688
		SBR	37.1	D	121	0.1	A	70
		Intersection	72.7	E	-	47.4	D	-

4.8 Build Segment Capacity Analysis

A segment capacity analysis was performed for all study roadway segments using HCS 7. The results of the segment analysis are summarized in Table 13.

Table 13: Build Segment Capacity Analysis

#	Segment	From	To	AM		PM	
				NB	SB	NB	SB
1	SR 20	Woodward Crossing Blvd	Mall of Georgia Blvd	B	B	B	C
2	SR 20	Mall of Georgia Blvd	Ramp N. of 85	B	B	C	C
3	SR 20	Ramp N. of 85	Ramp S. of 85	C	B	C	C
4	SR 20	Ramp S. of 85	Brand Smart Way	D	C	E	C
5	SR 20	Brand Smart Way	Rock Springs Rd	D	C	D	D
6	SR 20	Rock Springs Rd	Tech Center Pkwy NE	C	C	D	D
7	SR 20	Tech Center Pkwy NE	Braves Ave	C	C	C	D
8	SR 20	Braves Ave	Old Peachtree Rd NE	C	C	D	D

Due to the additional volumes on the roadway segments contributed by the proposed development several segments experienced a drop in LOS. However, all segments with the exception of Segment 4 remained at LOS D or better.

Segment 4 – SR 20 from Brandsmart Way to Ramp S. of 85

- Level of Service for the NB PM peak hour movement dropped from LOS D to LOS E (below LOS Standard)
- The additional volume and additional driveway contributed to this approach dropping LOS
- HCS does not take into account that the additional access is a right-in / right-out and the roadway segment is very short at 0.2 miles which inflates the access density
- It is expected that the roadway segment will operate better than analyzed due to the right-in / right-out nature of the additional access

5 Recommendations and Conclusions

A mixed-use development is planned for the eastern side of SR 20 south of I-85 in Gwinnett County, GA. The proposed development is projected to be complete in 2021 and a full build analysis was completed as part of this report. The development will access the external roadway network via four proposed driveway locations. The results of the analysis and recommendations for mitigation are summarized as follows:

Woodward Crossing Blvd at SR 20

- Existing signalized intersection
- The intersection operates at a level of service (LOS) of B and C for all analysis conditions

Mall of Georgia Blvd at SR 20

- Existing signalized intersection
- Due to additional background and build traffic volumes the intersection delay drops to LOS E during the build conditions
 - Improvements in the form of signal timing may fix intersection LOS, however to improve LOS with geometric improvements a southbound right-turn lane should be added

I-85 SB at SR 20

- The existing intersection becomes signalized in background conditions
- The intersection operates at acceptable LOS for both AM and PM peak hours

Brand Smart Way / Driveway 2 at SR 20

- A fourth leg is added to the existing signalized intersection under build conditions
- AM peak hour LOS degrades from LOS B to LOS C
- PM peak hour LOS degrades from LOS C to LOS E
- Dual southbound left-turn lanes are recommended and should be able to contain the 327 foot 95th percentile queue
 - Minimum GDOT required length is 235 feet of storage and a 100-foot taper
- Dual westbound left-turn lanes are recommended for vehicles exiting the proposed development
- A northbound right-turn deceleration lane should be added consisting of 175 feet of full width storage and a 100-foot taper.

Laurel Crossing Way at SR 20

- Existing side-street stop-controlled intersection
- Synchro experiences difficulty in modeling side-street stop movements with a median crossover, Synchro will not stage vehicles in the median which causes a return in delay that is worse than field conditions. Vehicles that experience long delays may choose to re-route to the intersection to the north to make a U-turn movement
- A traffic signal at the intersection is not warranted
- Left-turning vehicles will have the option to use the proposed development to access a signalized intersection to help with left-turns

Rock Springs Rd at SR 20

- Existing signalized intersection
- Under background conditions the LOS for the AM peak hour drops to LOS E
- To improve background intersection LOS a westbound right-turn lane was added, this improvement was sufficient to handle addition build conditions traffic volumes

Tech Center Pkwy at SR 20

- Existing signalized intersection
- There is no change in intersection LOS from existing conditions

Braves Ave at SR 20

- Existing signalized intersection
- There is no change in intersection LOS from existing conditions

Old Peachtree Rd NE at SR 20

- Existing signalized intersection
- Intersection LOS drops to LOS E during background conditions
- Significant geometric improvements are needed to improve LOS since no modification to signal timing can be made for this analysis
 - Added northbound through lane
 - Added eastbound through lane
- Background conditions required improvements are sufficient for build year traffic volumes

Driveway 1 at SR 20

- Proposed right-in / right-out driveway approximately 325 feet to the north of the intersection with Brandsmart Way
- Vehicles exiting the development during the AM and PM peak hour experience a failing LOS, however if queueing and delay are excessive, it is expected that drivers will utilize the other site driveways / signalized access
- A northbound right-turn deceleration lane is warranted and should be constructed to include 175 feet of full width storage and a 100-foot taper

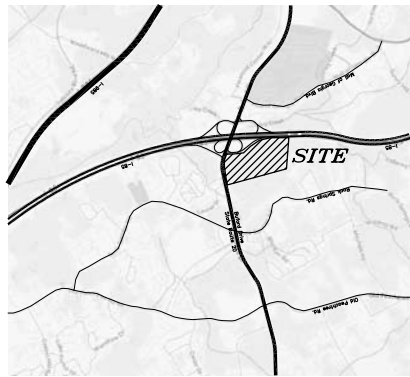
Driveway 3 at SR 20

- Proposed right-in / right-out driveway approximately 250 feet to the south of the intersection with Brandsmart Way
- Vehicles exiting the development during the AM and PM peak hour experience a failing LOS, however if queueing and delay are excessive, it is expected that drivers will utilize the other site driveways / signalized access
- A northbound right-turn deceleration lane is warranted and should be constructed to include 175 feet of full width storage and a 100-foot taper

Driveway 4 at Laurel Crossing Pkwy

- Proposed full-access driveway
- Intersection operates at LOS A or better for all peak hours
- No turn-lanes are warranted for the intersection

Appendix A: Site Plan



LOCATION MAP

DRI # 2834

MU-R (Regional Mixed-Use District)

GROSS ACREAGE = 64.156 acres-2,794,650 s.f.

TOTAL BUILDING AREA = 880,585 s.f.

F.A.R.=0.315

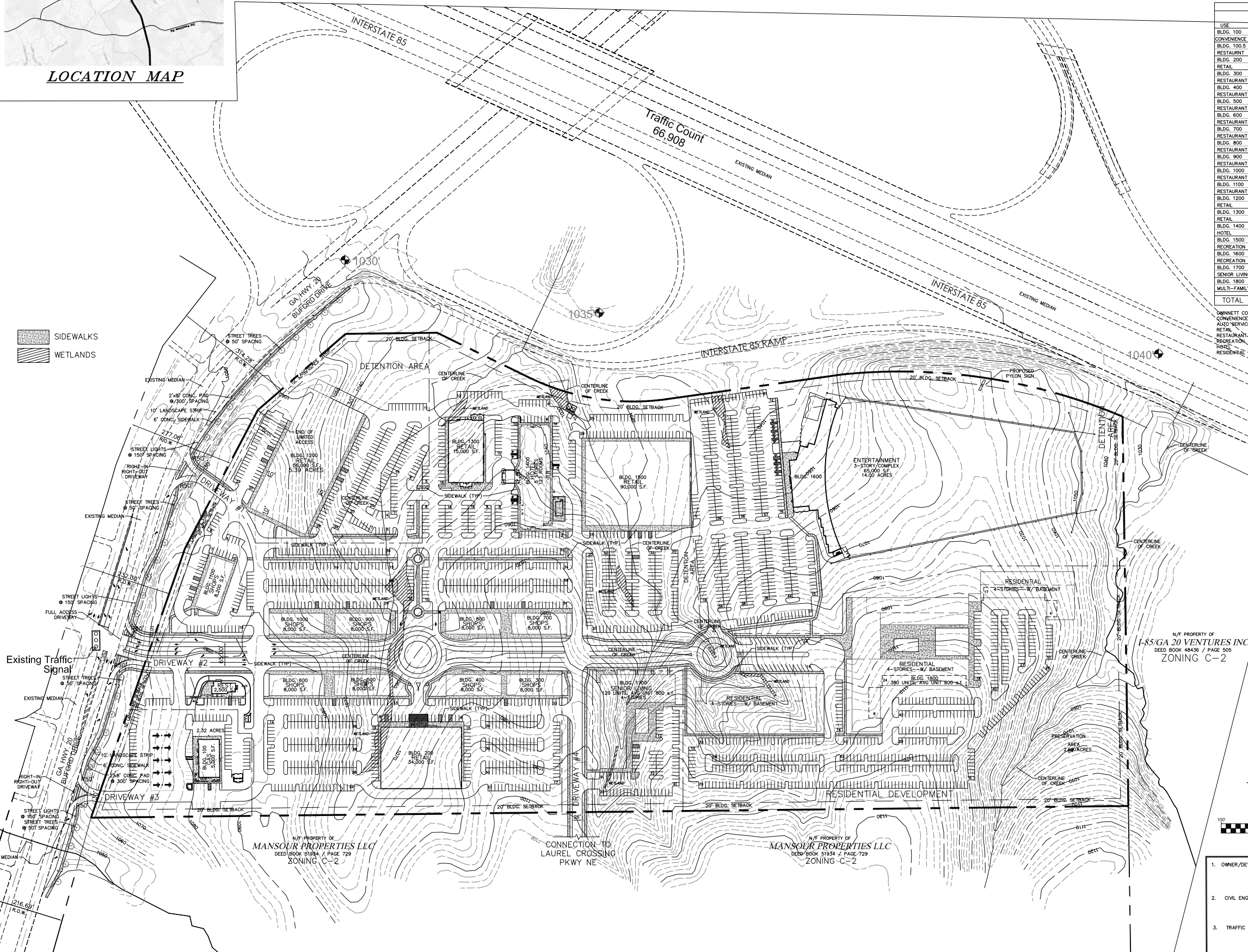
COMMON AREA=16.82 ac.-26.2%

RESIDENTIAL DENSITY=37 units/acre

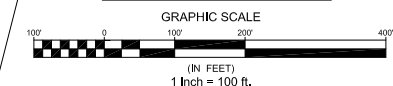
PARKING STATISTICS				
USE	BLDG. AREA	MINIMUM PARKING SPACES	MAXIMUM PARKING SPACES	PARKING PROVIDED
BLDG. 100				
CONVENIENCE STORE	5,000 s.f.	10	20	20
BLDG. 100.5				
RESTAURANT	2,500 s.f.	17	33	18
BLDG. 200				
RETAIL	34,000 s.f.	68	170	146
BLDG. 300				
RESTAURANT	8,000 s.f.	54	107	60
BLDG. 400				
RESTAURANT	8,000 s.f.	54	107	60
BLDG. 500				
RESTAURANT	8,000 s.f.	54	107	60
BLDG. 600				
RESTAURANT	8,000 s.f.	54	107	60
BLDG. 700				
RESTAURANT	8,000 s.f.	54	107	61
BLDG. 800				
RESTAURANT	8,000 s.f.	54	107	60
BLDG. 900				
RESTAURANT	8,000 s.f.	54	107	60
BLDG. 1000				
RESTAURANT	8,000 s.f.	54	107	60
BLDG. 1100				
RESTAURANT	8,200 s.f.	55	110	66
BLDG. 1200				
RETAIL	56,000 s.f.	112	280	224
BLDG. 1300				
RETAIL	15,000 s.f.	30	75	69
BLDG. 1400				
HOTEL	123 ROOMS	123	246	123
BLDG. 1500				
RECREATION	90,000 s.f.	300	900	257
BLDG. 1600				
RECREATION	65,000 s.f.	217	650	475
BLDG. 1700				
SENIOR LIVING	120 UNITS	180	360	81
BLDG. 1800				
MULTI-FAMILY	380 UNITS	570	1,140	541
TOTAL	N/A	2,014	4,540	2,501

OWNERS COUNTY PARKING:
CONVENIENCE STORE =MIN. 1sp/500 s.f. - MAX. 1sp/250 s.f.
AUTO SERVICE =MIN. 1sp/BAY - MAX. 3sp/BAY
RETAIL =MIN. 1sp/500 s.f. - MAX. 1sp/200 s.f.
RESTAURANT =MIN. 1sp/150 s.f. - MAX. 1sp/75 s.f.
RECREATION =MIN. 1sp/300 s.f. - MAX. 1sp/100 s.f.
THREE =MIN. 1sp/unit - MAX. 2sp/unit
RESIDENTIAL =MIN. 1.5sp/unit - MAX. 3sp/unit

SIDEWALKS
WETLANDS

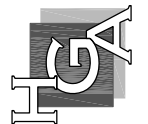


CONCEPTUAL
SITE PLAN



- OWNER/DEVELOPER - FUQUA DEVELOPMENT, LP
Greer Scoggins
3575 Piedmont Rd., NE, Suite 800
Atlanta, Georgia 30305
(404) 907-1708
- CIVIL ENGINEER - HAINES, GIPSON & ASSOCIATES, INC.
Stoney C. Abernethy
1550 NORTH BROWN ROAD, SUITE 100
LAWRENCEVILLE, GA 30043
(770) 491-7550
- TRAFFIC ENGINEER - LOWE ENGINEERS
Sommer Pathover
900 HAMMOND DRIVE, SUITE 900
ATLANTA, GA 30328
(770) 857-8100

HAINES GIPSON & ASSOCIATES
CONSULTING ENGINEERS
CIVIL & STRUCTURAL SERVICES
1550 NORTH BROWN ROAD, SUITE 100
LAWRENCEVILLE, GEORGIA 30043
PHONE: (770) 491-7550
FAX: (770) 491-7750



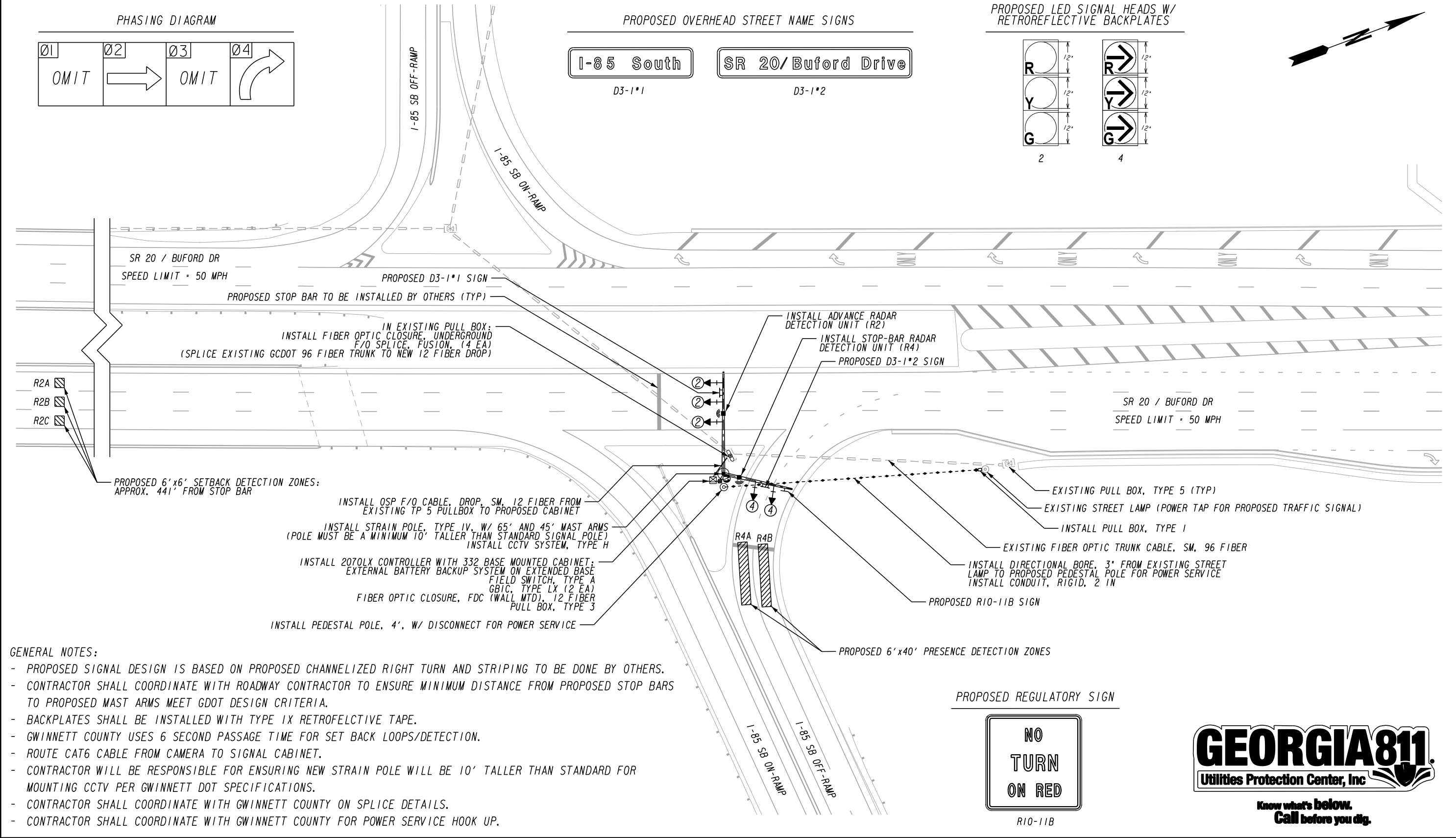
SCALE

FUTURE DEVELOPMENT

DRI# 2834
THE EXCHANGE
@ Gwinnett
GWINNETT COUNTY, GEORGIA

DESCRIPTION	
NO.	DATE
BY	
DRAWN BY	CHECKED BY
SCA	---
DATE	09/05/18
SHEET TITLE	PLAN
SHEET NUMBER	SP-37a

Appendix B: Traffic Counts



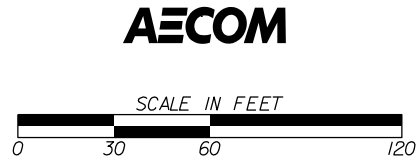
- GENERAL NOTES:
- PROPOSED SIGNAL DESIGN IS BASED ON PROPOSED CHANNELIZED RIGHT TURN AND STRIPING TO BE DONE BY OTHERS.
 - CONTRACTOR SHALL COORDINATE WITH ROADWAY CONTRACTOR TO ENSURE MINIMUM DISTANCE FROM PROPOSED STOP BARS TO PROPOSED MAST ARMS MEET GDOT DESIGN CRITERIA.
 - BACKPLATES SHALL BE INSTALLED WITH TYPE IX RETROFELCTIVE TAPE.
 - GWINNETT COUNTY USES 6 SECOND PASSAGE TIME FOR SET BACK LOOPS/DETECTION.
 - ROUTE CAT6 CABLE FROM CAMERA TO SIGNAL CABINET.
 - CONTRACTOR WILL BE RESPONSIBLE FOR ENSURING NEW STRAIN POLE WILL BE 10' TALLER THAN STANDARD FOR MOUNTING CCTV PER GWINNETT DOT SPECIFICATIONS.
 - CONTRACTOR SHALL COORDINATE WITH GWINNETT COUNTY ON SPLICE DETAILS.
 - CONTRACTOR SHALL COORDINATE WITH GWINNETT COUNTY FOR POWER SERVICE HOOK UP.

EXISTING LEGEND

- ⊙ STREET LAMP
- TP 5 PULL-BOX
- FIBER OPTIC TRUNK CABLE, SM, 96 FIBER

PROPOSED SIGNAL LEGEND

- 3-SECTION SIGNAL HEAD
- TP 1 PULL-BOX
- TP 3 PULL-BOX
- STRAIN POLE
- REGULATORY SIGN
- CCTV SYSTEM, TYPE H
- RADAR DETECTION UNIT
- PEDESTAL POLE
- OVERHEAD STREET NAME SIGN
- DETECTION ZONE



REVISION DATES

SIGNAL PLANS			
SR 20 / BUFORD DR			
I-85 SB RAMP			
CHECKED:	DATE:	DRAWING No.	
BACKCHECKED:	DATE:	27-001	
CORRECTED:	DATE:		
VERIFIED:	DATE:		

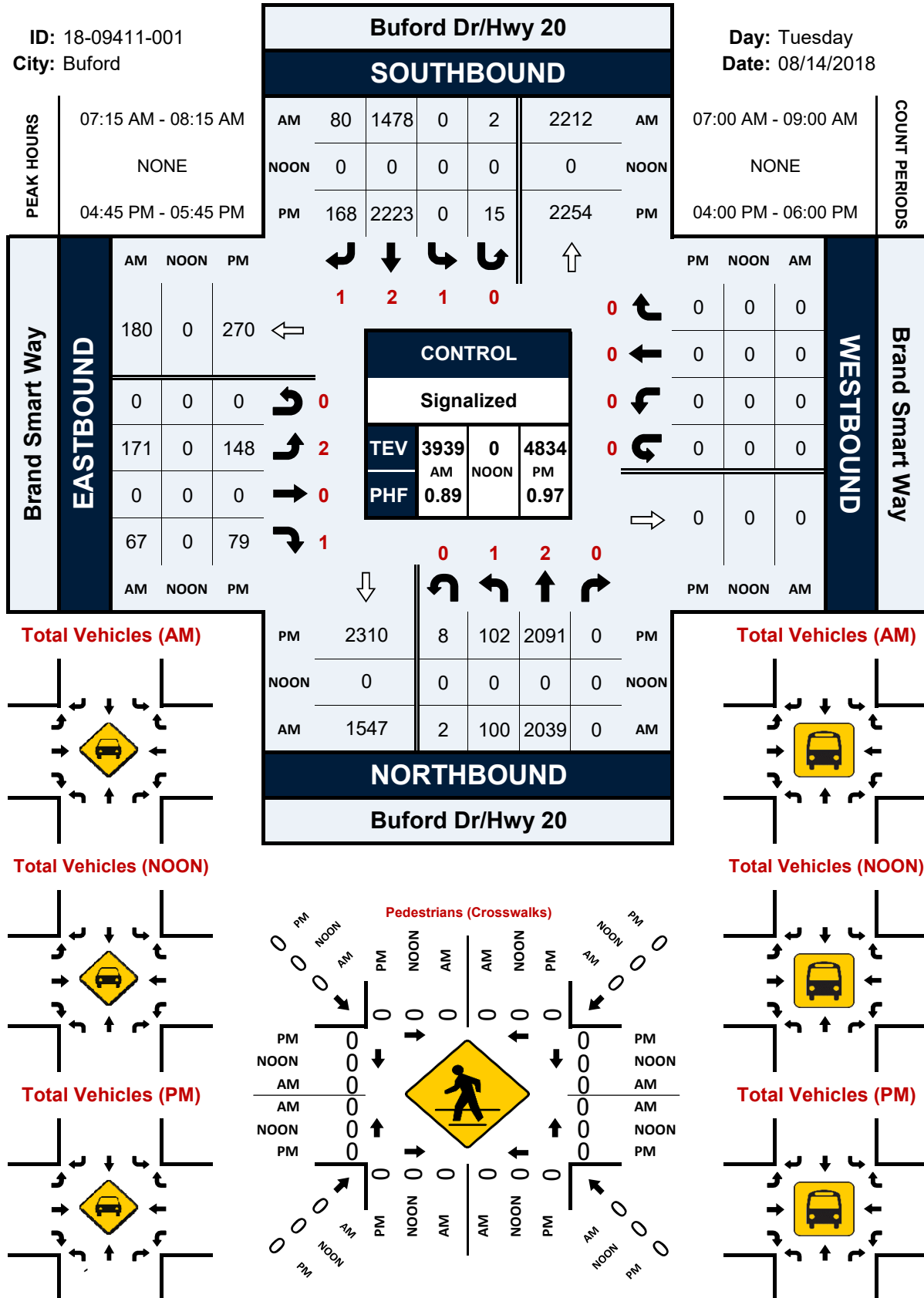
Appendix C: Traffic Counts

Buford Dr/Hwy 20 & Brand Smart Way

Peak Hour Turning Movement Count

ID: 18-09411-001
City: Buford

Day: Tuesday
Date: 08/14/2018



Project ID: 18-09411-001
Location: Buford Dr/Hwy 20 & Brand Smart Way
City: Buford

Day: Tuesday
Date: 08/14/2018

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	Buford Dr/Hwy 20 Northbound						Buford Dr/Hwy 20 Southbound						Brand Smart Way Eastbound						Brand Smart Way Westbound						Int. Total
	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	
7:00 AM	27	434	0	0	0	461	0	323	20	0	0	343	36	0	16	0	0	52	0	0	0	0	0	0	856
7:15 AM	22	469	0	0	0	491	0	359	16	1	0	376	39	0	22	0	0	61	0	0	0	0	0	0	928
7:30 AM	23	572	0	0	0	595	0	440	23	0	0	463	42	0	9	0	0	51	0	0	0	0	0	0	1109
7:45 AM	15	514	0	1	0	530	0	334	19	0	0	353	49	0	17	0	0	66	0	0	0	0	0	0	949
Total	87	1989	0	1	0	2077	0	1456	78	1	0	1535	166	0	64	0	0	230	0	0	0	0	0	0	3842
8:00 AM	40	484	0	1	0	525	0	345	22	1	0	368	41	0	19	0	0	60	0	0	0	0	0	0	953
8:15 AM	21	468	0	2	0	491	0	304	19	2	0	325	44	0	12	0	0	56	0	0	0	0	0	0	872
8:30 AM	25	449	0	0	0	474	0	399	12	1	0	412	22	0	10	0	0	32	0	0	0	0	0	0	918
8:45 AM	16	411	0	1	0	428	0	298	15	1	0	314	30	0	14	0	0	44	0	0	0	0	0	0	786
Total	102	1812	0	4	0	1918	0	1346	68	5	0	1419	137	0	55	0	0	192	0	0	0	0	0	0	3529
BREAK																									
4:00 PM	23	427	0	2	0	452	0	483	45	5	0	533	47	0	19	0	0	66	0	0	0	0	0	0	1051
4:15 PM	22	449	0	1	0	472	0	526	46	7	0	579	31	0	23	0	0	54	0	0	0	0	0	0	1105
4:30 PM	16	468	0	0	0	484	0	494	28	3	0	525	29	0	18	0	0	47	0	0	0	0	0	0	1056
4:45 PM	27	539	0	2	0	568	0	552	45	2	0	599	29	0	14	0	0	43	0	0	0	0	0	0	1210
Total	88	1883	0	5	0	1976	0	2055	164	17	0	2236	136	0	74	0	0	210	0	0	0	0	0	0	4422
5:00 PM	25	493	0	2	0	520	0	527	35	5	0	567	50	0	12	0	0	62	0	0	0	0	0	0	1149
5:15 PM	20	517	0	2	0	539	0	598	45	5	0	648	32	0	31	0	0	63	0	0	0	0	0	0	1250
5:30 PM	30	542	0	2	0	574	0	546	43	3	0	592	37	0	22	0	0	59	0	0	0	0	0	0	1225
5:45 PM	27	511	0	0	0	538	0	526	36	5	0	567	28	0	26	0	0	54	0	0	0	0	0	0	1159
Total	102	2063	0	6	0	2171	0	2197	159	18	0	2374	147	0	91	0	0	238	0	0	0	0	0	0	4783
Grand Total	379	7747	0	16	0	8142	0	7054	469	41	0	7564	586	0	284	0	0	870	0	0	0	0	0	0	16576
Apprch %	4.7	95.1	0.0	0.2	0.0		0.0	93.3	6.2	0.5	0.0		67.4	0.0	32.6	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total %	2.3	46.7	0.0	0.1	0.0	49.1	0.0	42.6	2.8	0.2	0.0	45.6	3.5	0.0	1.7	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	0.0	
Cars, PU, Vans	379	7747	0	16	0	8142	0	7054	469		0	7564	586	0	284	0		870	0	0	0	0	0	0	16576
% Cars, PU, Vans	100.0	100.0	0.0	100.0	0.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	100.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0

Project ID: 18-09411-001
Location: Buford Dr/Hwy 20 & Brand Smart Way
City: Buford

PEAK HOURS

Day: Tuesday
Date: 08/14/2018

AM

	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					Brand Smart Way Eastbound					Brand Smart Way Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM to 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
7:15 AM	22	469	0	0	491	0	359	16	1	376	39	0	22	0	61	0	0	0	0	0	928
7:30 AM	23	572	0	0	595	0	440	23	0	463	42	0	9	0	51	0	0	0	0	0	1109
7:45 AM	15	514	0	1	530	0	334	19	0	353	49	0	17	0	66	0	0	0	0	0	949
8:00 AM	40	484	0	1	525	0	345	22	1	368	41	0	19	0	60	0	0	0	0	0	953
Total Volume	100	2039	0	2	2141	0	1478	80	2	1560	171	0	67	0	238	0	0	0	0	0	3939
% App. Total	4.7	95.2	0.0	0.1	100	0.0	94.7	5.1	0.1	100	71.8	0.0	28.2	0.0	100	0.0	0.0	0.0	0.0	0.0	0
PHF	0.900					0.842					0.902										0.888
Cars, PU, Vans	100	2039	0	2	2141	0	1478	80	2	1560	171	0	67	0	238	0	0	0	0	0	3939
% Cars, PU, Vans	100.0	100.0	0.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0

PM

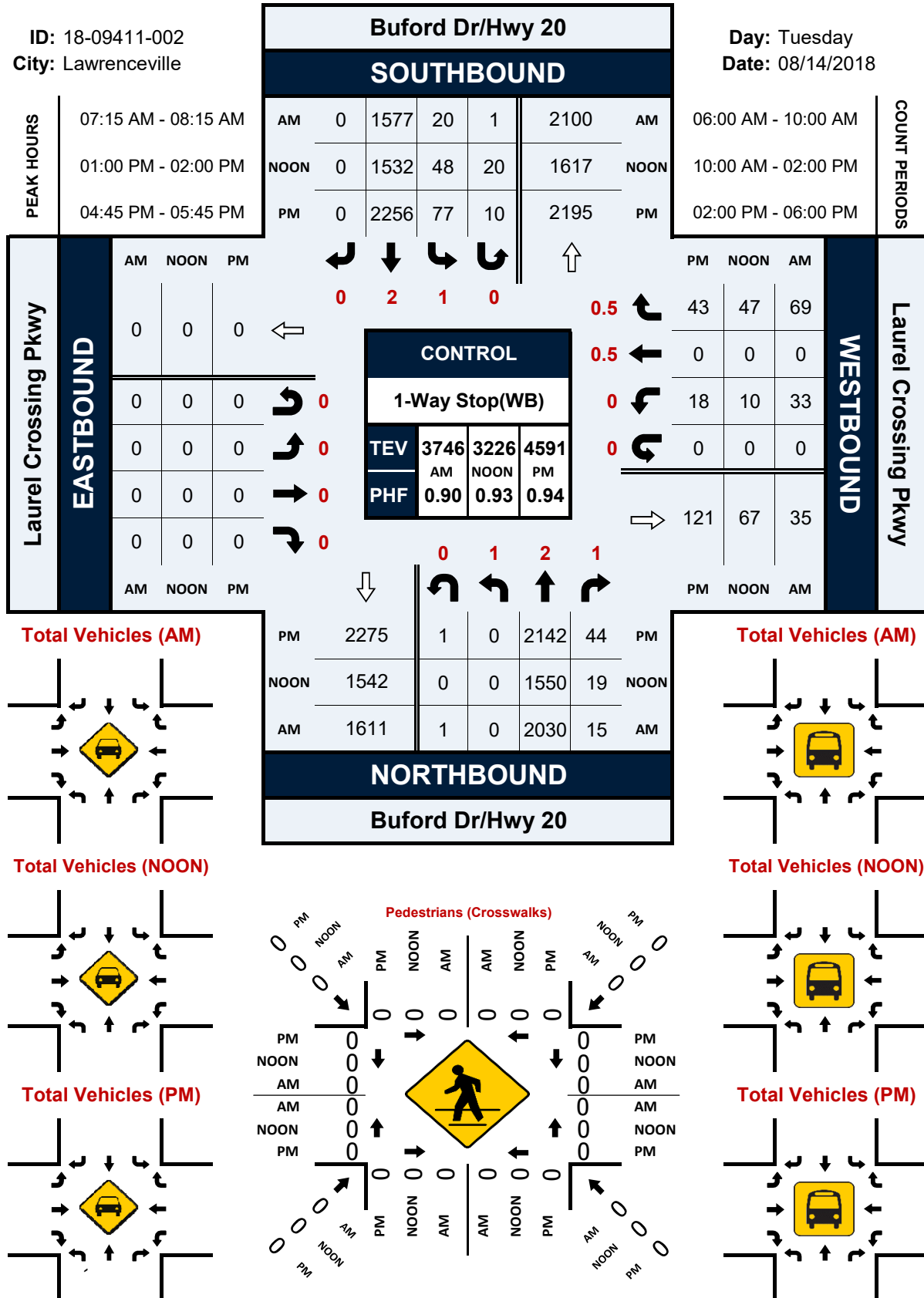
	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					Brand Smart Way Eastbound					Brand Smart Way Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM to 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
4:45 PM	27	539	0	2	568	0	552	45	2	599	29	0	14	0	43	0	0	0	0	0	1210
5:00 PM	25	493	0	2	520	0	527	35	5	567	50	0	12	0	62	0	0	0	0	0	1149
5:15 PM	20	517	0	2	539	0	598	45	5	648	32	0	31	0	63	0	0	0	0	0	1250
5:30 PM	30	542	0	2	574	0	546	43	3	592	37	0	22	0	59	0	0	0	0	0	1225
Total Volume	102	2091	0	8	2201	0	2223	168	15	2406	148	0	79	0	227	0	0	0	0	0	4834
% App. Total	4.6	95.0	0.0	0.4	100	0.0	92.4	7.0	0.6	100	65.2	0.0	34.8	0.0	100	0.0	0.0	0.0	0.0	0.0	0
PHF	0.959					0.928					0.901										0.967
Cars, PU, Vans	102	2091	0	8	2201	0	2223	168	15	2406	148	0	79	0	227	0	0	0	0	0	4834
% Cars, PU, Vans	100.0	100.0	0.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0

Buford Dr/Hwy 20 & Laurel Crossing Pkwy

Peak Hour Turning Movement Count

ID: 18-09411-002
City: Lawrenceville

Day: Tuesday
Date: 08/14/2018



Project ID: 18-09411-002
Location: Buford Dr/Hwy 20 & Laurel Crossing Pkwy
City: Lawrenceville

Day: Tuesday
Date: 08/14/2018

Groups Printed - Cars, PU, Vans - Heavy Trucks

	Buford Dr/Hwy 20 Northbound						Buford Dr/Hwy 20 Southbound						Laurel Crossing Pkwy Eastbound						Laurel Crossing Pkwy Westbound							
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Int. Total	
6:00 AM	0	335	1	0	0	336	1	179	0	0	0	180	0	0	0	0	0	0	2	0	12	0	0	14	530	
6:15 AM	0	369	0	0	0	369	1	242	0	1	0	244	0	0	0	0	0	0	5	0	12	0	0	17	630	
6:30 AM	0	465	2	1	0	468	0	241	0	1	0	242	0	0	0	0	0	0	9	0	21	0	0	30	740	
6:45 AM	0	453	3	0	0	456	3	354	0	2	0	359	0	0	0	0	0	0	12	0	14	0	0	26	841	
Total	0	1622	6	1	0	1629	5	1016	0	4	0	1025	0	0	0	0	0	0	28	0	59	0	0	87	2741	
7:00 AM	0	451	3	0	0	454	2	342	0	1	0	345	0	0	0	0	0	0	10	0	25	0	0	35	834	
7:15 AM	0	474	1	0	0	475	5	397	0	0	0	402	0	0	0	0	0	0	10	0	17	0	0	27	904	
7:30 AM	0	548	3	0	0	551	4	461	0	0	0	465	0	0	0	0	0	0	7	0	23	0	0	30	1046	
7:45 AM	0	524	3	0	0	527	3	354	0	1	0	358	0	0	0	0	0	0	8	0	13	0	0	21	906	
Total	0	1997	10	0	0	2007	14	1554	0	2	0	1570	0	0	0	0	0	0	35	0	78	0	0	113	3690	
8:00 AM	0	484	8	1	0	493	8	365	0	0	0	373	0	0	0	0	0	0	8	0	16	0	0	24	890	
8:15 AM	0	488	2	0	0	490	7	323	0	0	0	330	0	0	0	0	0	0	4	0	15	0	0	19	839	
8:30 AM	0	432	3	1	0	436	3	414	0	1	0	418	0	0	0	0	0	0	10	0	15	0	0	25	879	
8:45 AM	0	429	6	0	0	435	11	303	0	0	0	314	0	0	0	0	0	0	5	0	7	0	0	12	761	
Total	0	1833	19	2	0	1854	29	1405	0	1	0	1435	0	0	0	0	0	0	27	0	53	0	0	80	3369	
9:00 AM	0	425	3	2	0	430	3	286	0	0	0	289	0	0	0	0	0	0	4	0	14	0	0	18	737	
9:15 AM	0	399	3	0	0	402	6	293	0	0	0	299	0	0	0	0	0	0	5	0	15	0	0	20	721	
9:30 AM	0	416	1	0	0	417	7	231	0	0	0	238	0	0	0	0	0	0	5	0	14	0	0	19	674	
9:45 AM	0	435	3	0	0	438	8	274	0	3	0	285	0	0	0	0	0	0	4	0	12	0	0	16	739	
Total	0	1675	10	2	0	1687	24	1084	0	3	0	1111	0	0	0	0	0	0	18	0	55	0	0	73	2871	
BREAK																										
10:00 AM	0	370	5	0	0	375	18	257	0	3	0	278	0	0	0	0	0	0	7	0	11	0	0	18	671	
10:15 AM	0	369	2	1	0	372	5	267	0	6	0	278	0	0	0	0	0	0	3	0	16	0	0	19	669	
10:30 AM	0	431	3	0	0	434	16	263	0	1	0	280	0	0	0	0	0	0	4	0	8	0	0	12	726	
10:45 AM	0	385	3	0	0	388	13	269	0	4	0	286	0	0	0	0	0	0	5	0	11	0	0	16	690	
Total	0	1555	13	1	0	1569	52	1056	0	14	0	1122	0	0	0	0	0	0	19	0	46	0	0	65	2756	
11:00 AM	0	384	6	0	0	390	13	310	0	4	0	327	0	0	0	0	0	0	3	0	5	0	0	8	725	
11:15 AM	0	348	3	0	0	351	9	302	0	4	0	315	0	0	0	0	0	0	6	0	13	0	0	19	685	
11:30 AM	0	420	2	0	0	422	5	338	0	3	0	346	0	0	0	0	0	0	5	0	16	0	0	21	789	
11:45 AM	0	386	2	0	0	388	13	326	0	2	0	341	0	0	0	0	0	0	2	0	11	0	0	13	742	
Total	0	1538	13	0	0	1551	40	1276	0	13	0	1329	0	0	0	0	0	0	16	0	45	0	0	61	2941	
12:00 PM	0	386	5	0	0	391	9	320	0	6	0	335	0	0	0	0	0	0	4	0	9	0	0	13	739	
12:15 PM	0	362	6	0	0	368	13	343	0	2	0	358	0	0	0	0	0	0	3	0	10	0	0	13	739	
12:30 PM	0	384	6	0	0	390	25	364	0	5	0	394	0	0	0	0	0	0	5	0	10	0	0	15	799	
12:45 PM	0	370	5	1	0	376	11	364	0	2	0	377	0	0	0	0	0	0	4	0	16	0	0	20	773	
Total	0	1502	22	1	0	1525	58	1391	0	15	0	1464	0	0	0	0	0	0	16	0	45	0	0	61	3050	
1:00 PM	0	366	5	0	0	371	8	375	0	5	0	388	0	0	0	0	0	0	6	0	11	0	0	17	776	
1:15 PM	0	359	3	0	0	362	12	392	0	6	0	410	0	0	0	0	0	0	2	0	14	0	0	16	788	
1:30 PM	0	430	8	0	0	438	11	397	0	6	0	414	0	0	0	0	0	0	2	0	13	0	0	15	867	
1:45 PM	0	395	3	0	0	398	17	368	0	3	0	388	0	0	0	0	0	0	0	0	9	0	0	9	795	
Total	0	1550	19	0	0	1569	48	1532	0	20	0	1600	0	0	0	0	0	0	10	0	47	0	0	57	3226	
BREAK																										
2:00 PM	0	361	3	0	0	364	11	417	0	1	0	429	0	0	0	0	0	0	1	0	15	0	0	16	809	
2:15 PM	0	390	7	0	0	397	10	449	0	0	0	459	0	0	0	0	0	0	9	0	9	0	0	18	874	
2:30 PM	0	427	5	1	0	433	29	409	0	3	0	441	0	0	0	0	0	0	7	0	9	0	0	16	890	
2:45 PM	0	434	7	0	0	441	18	441	0	7	0	466	0	0	0	0	0	0	7	0	12	0	0	19	926	
Total	0	1612	22	1	0	1635	68	1716	0	11	0	1795	0	0	0	0	0	0	24	0	45	0	0	69	3499	
3:00 PM	0	367	15	0	0	382	12	504	0	2	0	518	0	0	0	0	0	0	5	0	12	0	0	17	917	
3:15 PM	0	423	8	0	0	431	14	468	0	5	0	487	0	0	0	0	0	0	6	0	16	0	0	22	940	
3:30 PM	0	423	10	5	0	438	12	437	0	4	0	453	0	0	0	0	0	0	5	0	12	0	0	17	908	
3:45 PM	0	470	9	2	0	481	13	477	0	3	0	493	0	0	0	0	0	0	4	0	6	0	0	10	984	
Total	0	1683	42	7	0	1732	51	1886	0	14	0	1951	0	0	0	0	0	0	20	0	46	0	0	66	3749	
4:00 PM	0	435	5	0	0	440	16	501	0	0	0	517	0	0	0	0	0	0	4	0	11	0	0	15	972	
4:15 PM	0	470	8	0	0	478	16	550	0	4	0	570	0	0	0	0	0	0	1	0	10	0	0	11	1059	
4:30 PM	0	446	9	3	0	458	16	497	0	1	0	514	0	0	0	0	0	0	4	0	16	0	0	20	992	
4:45 PM	0	564	7	0	0	571	18	550	0	1	0	569	0	0	0	0	0	0	6	0	16	0	0	22	1162	
Total	0	1915	29	3	0	1947	66	2098	0	6	0	2170	0	0	0	0	0	0	15	0	53	0	0	68	4185	
5:00 PM	0	480	7	1	0	488	15	541	0	5	0	561	0	0	0	0	0	0	3	0	7	0	0	10	1059	
5:15 PM	0	556	16	0	0	572	19	612	0	3	0	634	0	0	0	0	0	0	6	0	11	0	0	17	1223	
5:30 PM	0	542	14	0	0	556	25	553	0	1	0	579	0	0	0	0	0	0	3	0	9	0	0	12	1147	
5:45 PM	0	535	8	1	0	544	14	540	0	4	0	558	0	0	0	0	0	0	2	0	12	0	0	14	1116	
Total	0	2113	45	2	0	2160	73	2246	0	13	0	2332	0	0	0	0	0	0	14	0	39	0	0	53	4545	
Grand Total	0	20595	250	20	0	20865	528	18260	0	116	0	18904	0	0	0	0	0	0	242	0	611	0	0	853	40622	
Apprch %	0.0	98.7	1.2	0.1	0.0		2.8	96.6	0.0	0.6	0.0		0.0	0.0	0.0	0.0	0.0	0.0	28.4	0.0	71.6	0.0	0.0			
Total %	0.0																									

% Cars, PU, Vans	0.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	0.0	0.0	100.0	100.0

Project ID: 18-09411-002
Location: Buford Dr/Hwy 20 & Laurel Crossing Pkwy
City: Lawrenceville

PEAK HOURS

Day: Tuesday
Date: 08/14/2018

AM

	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					Laurel Crossing Pkwy Eastbound					Laurel Crossing Pkwy Westbound					
Start Time	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Int. Total
Peak Hour Analysis from 06:00 AM to 10:00 AM																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
7:15 AM	0	474	1	0	475	5	397	0	0	402	0	0	0	0	0	10	0	17	0	27	904
7:30 AM	0	548	3	0	551	4	461	0	0	465	0	0	0	0	0	7	0	23	0	30	1046
7:45 AM	0	524	3	0	527	3	354	0	1	358	0	0	0	0	0	8	0	13	0	21	906
8:00 AM	0	484	8	1	493	8	365	0	0	373	0	0	0	0	0	8	0	16	0	24	890
Total Volume	0	2030	15	1	2046	20	1577	0	1	1598	0	0	0	0	0	33	0	69	0	102	3746
% App. Total	0.0	99.2	0.7	0.0	100	1.3	98.7	0.0	0.1	100	0.0	0.0	0.0	0.0	0.0	32.4	0.0	67.6	0.0	100	
PHF	0.928					0.859										0.850					0.895
Cars, PU, Vans	0	2030	15	1	2046	20	1577	0	1	1598	0	0	0	0	0	33	0	69	0	102	3746
% Cars, PU, Vans	0.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	0.0	100.0	100.0

NOON

	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					Laurel Crossing Pkwy Eastbound					Laurel Crossing Pkwy Westbound					
Start Time	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Int. Total
Peak Hour Analysis from 10:00 AM to 02:00 PM																					
Peak Hour for Entire Intersection Begins at 01:00 PM																					
1:00 PM	0	366	5	0	371	8	375	0	5	388	0	0	0	0	0	6	0	11	0	17	776
1:15 PM	0	359	3	0	362	12	392	0	6	410	0	0	0	0	0	2	0	14	0	16	788
1:30 PM	0	430	8	0	438	11	397	0	6	414	0	0	0	0	0	2	0	13	0	15	867
1:45 PM	0	395	3	0	398	17	368	0	3	388	0	0	0	0	0	0	0	9	0	9	795
Total Volume	0	1550	19	0	1569	48	1532	0	20	1600	0	0	0	0	0	10	0	47	0	57	3226
% App. Total	0.0	98.8	1.2	0.0	100	3.0	95.8	0.0	1.3	100	0.0	0.0	0.0	0.0	0.0	17.5	0.0	82.5	0.0	100	
PHF	0.896					0.966										0.838					0.930
Cars, PU, Vans	0	1550	19	0	1569	48	1532	0	20	1600	0	0	0	0	0	10	0	47	0	57	3226
% Cars, PU, Vans	0.0	100.0	100.0	0.0	100.0	100.0	100.0	0.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	0.0	100.0	100.0

PM

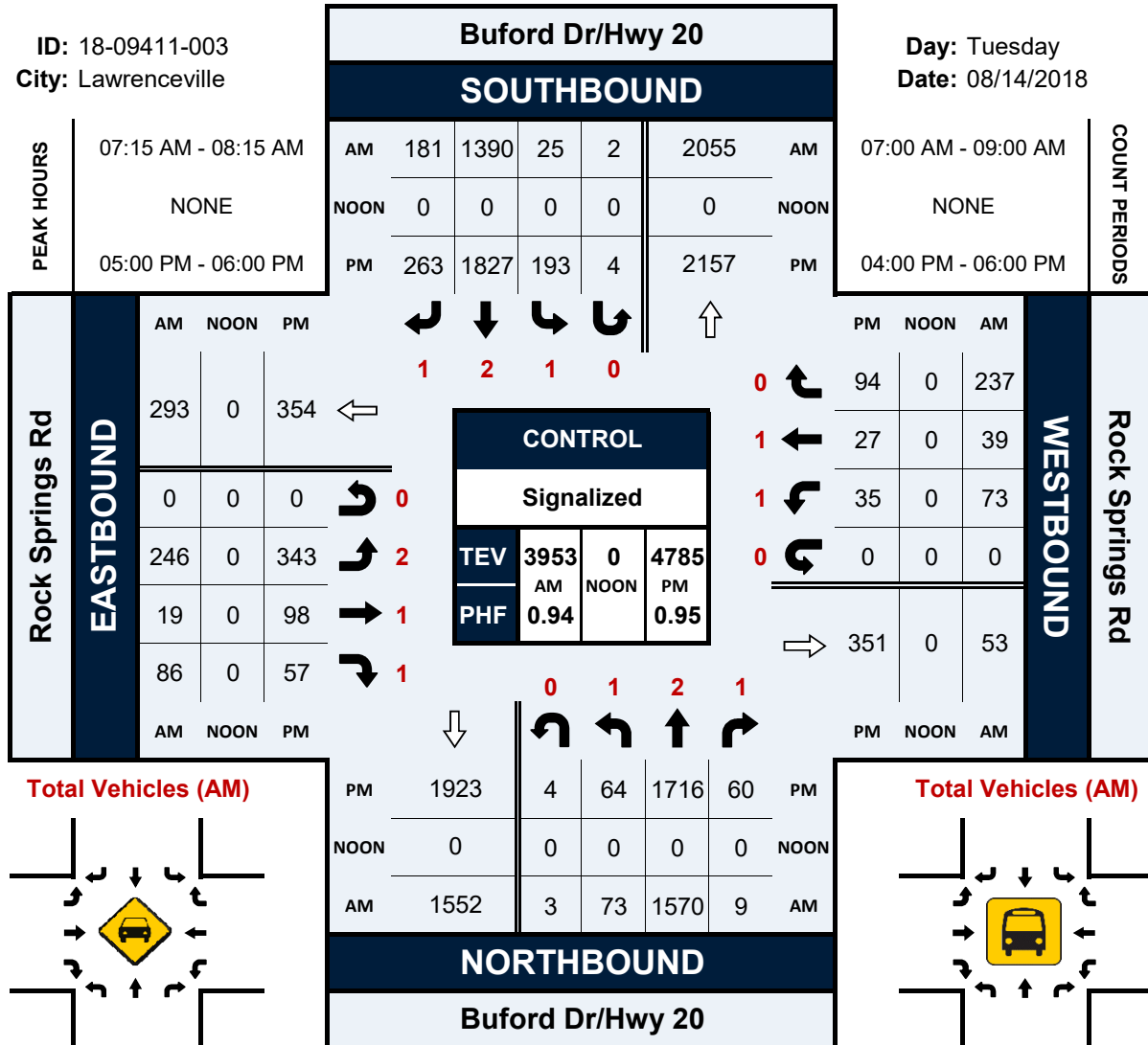
	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					Laurel Crossing Pkwy Eastbound					Laurel Crossing Pkwy Westbound					
Start Time	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Int. Total
Peak Hour Analysis from 02:00 PM to 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
4:45 PM	0	564	7	0	571	18	550	0	1	569	0	0	0	0	0	6	0	16	0	22	1162
5:00 PM	0	480	7	1	488	15	541	0	5	561	0	0	0	0	0	3	0	7	0	10	1059
5:15 PM	0	556	16	0	572	19	612	0	3	634	0	0	0	0	0	6	0	11	0	17	1223
5:30 PM	0	542	14	0	556	25	553	0	1	579	0	0	0	0	0	3	0	9	0	12	1147
Total Volume	0	2142	44	1	2187	77	2256	0	10	2343	0	0	0	0	0	18	0	43	0	61	4591
% App. Total	0.0	97.9	2.0	0.0	100	3.3	96.3	0.0	0.4	100	0.0	0.0	0.0	0.0	0.0	29.5	0.0	70.5	0.0	100	
PHF	0.956					0.924										0.693					0.938
Cars, PU, Vans	0	2142	44	1	2187	77	2256	0	10	2343	0	0	0	0	0	18	0	43	0	61	4591
% Cars, PU, Vans	0.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	0.0	100.0	100.0

Buford Dr/Hwy 20 & Rock Springs Rd

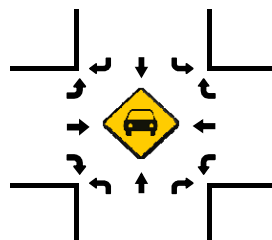
Peak Hour Turning Movement Count

ID: 18-09411-003
City: Lawrenceville

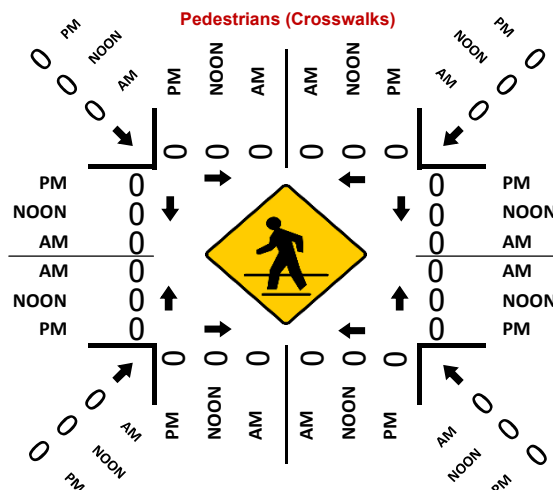
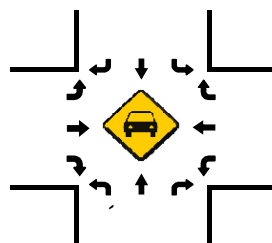
Day: Tuesday
Date: 08/14/2018



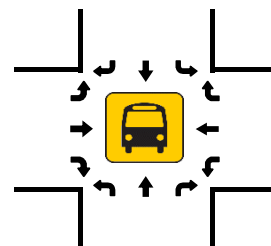
Total Vehicles (NOON)



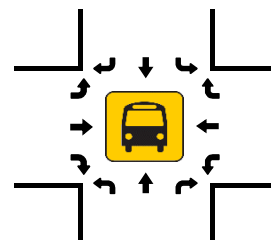
Total Vehicles (PM)



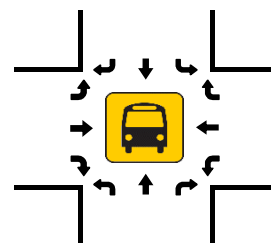
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



Project ID: 18-09411-003
Location: Buford Dr/Hwy 20 & Rock Springs Rd
City: Lawrenceville

Day: Tuesday
Date: 08/14/2018

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	Buford Dr/Hwy 20 Northbound						Buford Dr/Hwy 20 Southbound						Rock Springs Rd Eastbound						Rock Springs Rd Westbound						Int. Total
	Left	Thru	Rgt	Utum	Peds	App. Total	Left	Thru	Rgt	Utum	Peds	App. Total	Left	Thru	Rgt	Utum	Peds	App. Total	Left	Thru	Rgt	Utum	Peds	App. Total	
7:00 AM	11	379	2	0	0	392	7	297	38	0	0	342	40	3	12	0	0	55	12	5	58	0	0	75	864
7:15 AM	22	353	2	0	0	377	6	349	50	0	0	405	51	2	17	0	0	70	13	11	54	0	0	78	930
7:30 AM	24	394	1	0	0	419	6	375	45	1	0	427	72	5	15	0	0	92	20	16	74	0	0	110	1048
7:45 AM	20	411	3	3	0	437	5	367	40	1	0	413	60	8	19	0	0	87	24	10	71	0	0	105	1042
Total	77	1537	8	3	0	1625	24	1388	173	2	0	1587	223	18	63	0	0	304	69	42	257	0	0	368	3884
8:00 AM	7	412	3	0	0	422	8	299	46	0	0	353	63	4	35	0	0	102	16	2	38	0	0	56	933
8:15 AM	14	392	6	1	0	413	17	276	38	0	0	331	41	3	10	0	0	54	6	10	45	0	0	61	859
8:30 AM	12	387	2	0	0	401	14	366	39	0	0	419	36	4	11	0	0	51	10	6	42	0	0	58	929
8:45 AM	12	342	3	0	0	357	10	312	26	0	0	348	43	4	9	0	0	56	7	3	33	0	0	43	804
Total	45	1533	14	1	0	1593	49	1253	149	0	0	1451	183	15	65	0	0	263	39	21	158	0	0	218	3525
BREAK																									
4:00 PM	6	378	11	1	0	396	38	440	54	1	0	533	60	10	14	0	0	84	6	1	26	0	0	33	1046
4:15 PM	14	360	5	1	0	380	49	395	68	3	0	515	62	10	17	0	0	89	8	0	25	0	0	33	1017
4:30 PM	11	400	5	0	0	416	41	420	62	0	0	523	61	12	6	0	0	79	8	4	28	0	0	40	1058
4:45 PM	11	418	11	0	0	440	44	423	53	3	0	523	82	12	13	0	0	107	8	7	32	0	0	47	1117
Total	42	1556	32	2	0	1632	172	1678	237	7	0	2094	265	44	50	0	0	359	30	12	111	0	0	153	4238
5:00 PM	14	433	19	1	0	467	34	461	58	0	0	553	67	16	12	0	0	95	9	4	22	0	0	35	1150
5:15 PM	15	391	14	2	0	422	67	474	63	1	0	605	106	34	14	0	0	154	7	4	25	0	0	36	1217
5:30 PM	16	475	11	1	0	503	44	483	70	1	0	598	81	26	10	0	0	117	9	8	27	0	0	44	1262
5:45 PM	19	417	16	0	0	452	48	409	72	2	0	531	89	22	21	0	0	132	10	11	20	0	0	41	1156
Total	64	1716	60	4	0	1844	193	1827	263	4	0	2287	343	98	57	0	0	498	35	27	94	0	0	156	4785
Grand Total	228	6342	114	10	0	6694	438	6146	822	13	0	7419	1014	175	235	0	0	1424	173	102	620	0	0	895	16432
Apprch %	3.4	94.7	1.7	0.1	0.0		5.9	82.8	11.1	0.2	0.0		71.2	12.3	16.5	0.0	0.0		19.3	11.4	69.3	0.0	0.0		
Total %	1.4	38.6	0.7	0.1	0.0	40.7	2.7	37.4	5.0	0.1	0.0	45.1	6.2	1.1	1.4	0.0	0.0	8.7	1.1	0.6	3.8	0.0	0.0	5.4	
Cars, PU, Vans	228	6342	114	10	0	6694	438	6146	822	0	0	7419	1014	175	235	0	0	1424	173	102	620	0	0	895	16432
% Cars, PU, Vans	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	0.0	0.0	100.0	100.0	100.0	100.0	0.0	0.0	100.0	100.0	100.0	100.0	0.0	0.0	100.0	100.0

Project ID: 18-09411-003
Location: Buford Dr/Hwy 20 & Rock Springs Rd
City: Lawrenceville

PEAK HOURS

Day: Tuesday
Date: 08/14/2018

AM

	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					Rock Springs Rd Eastbound					Rock Springs Rd Westbound					
Start Time	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM to 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
7:15 AM	22	353	2	0	377	6	349	50	0	405	51	2	17	0	70	13	11	54	0	78	930
7:30 AM	24	394	1	0	419	6	375	45	1	427	72	5	15	0	92	20	16	74	0	110	1048
7:45 AM	20	411	3	3	437	5	367	40	1	413	60	8	19	0	87	24	10	71	0	105	1042
8:00 AM	7	412	3	0	422	8	299	46	0	353	63	4	35	0	102	16	2	38	0	56	933
Total Volume	73	1570	9	3	1655	25	1390	181	2	1598	246	19	86	0	351	73	39	237	0	349	3953
% App. Total	4.4	94.9	0.5	0.2	100	1.6	87.0	11.3	0.1	100	70.1	5.4	24.5	0.0	100	20.9	11.2	67.9	0.0	100	
PHF	0.947					0.936					0.860					0.793					0.943
Cars, PU, Vans	73	1570	9	3	1655	25	1390	181	2	1598	246	19	86	0	351	73	39	237	0	349	3953
% Cars, PU, Vans	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0

PM

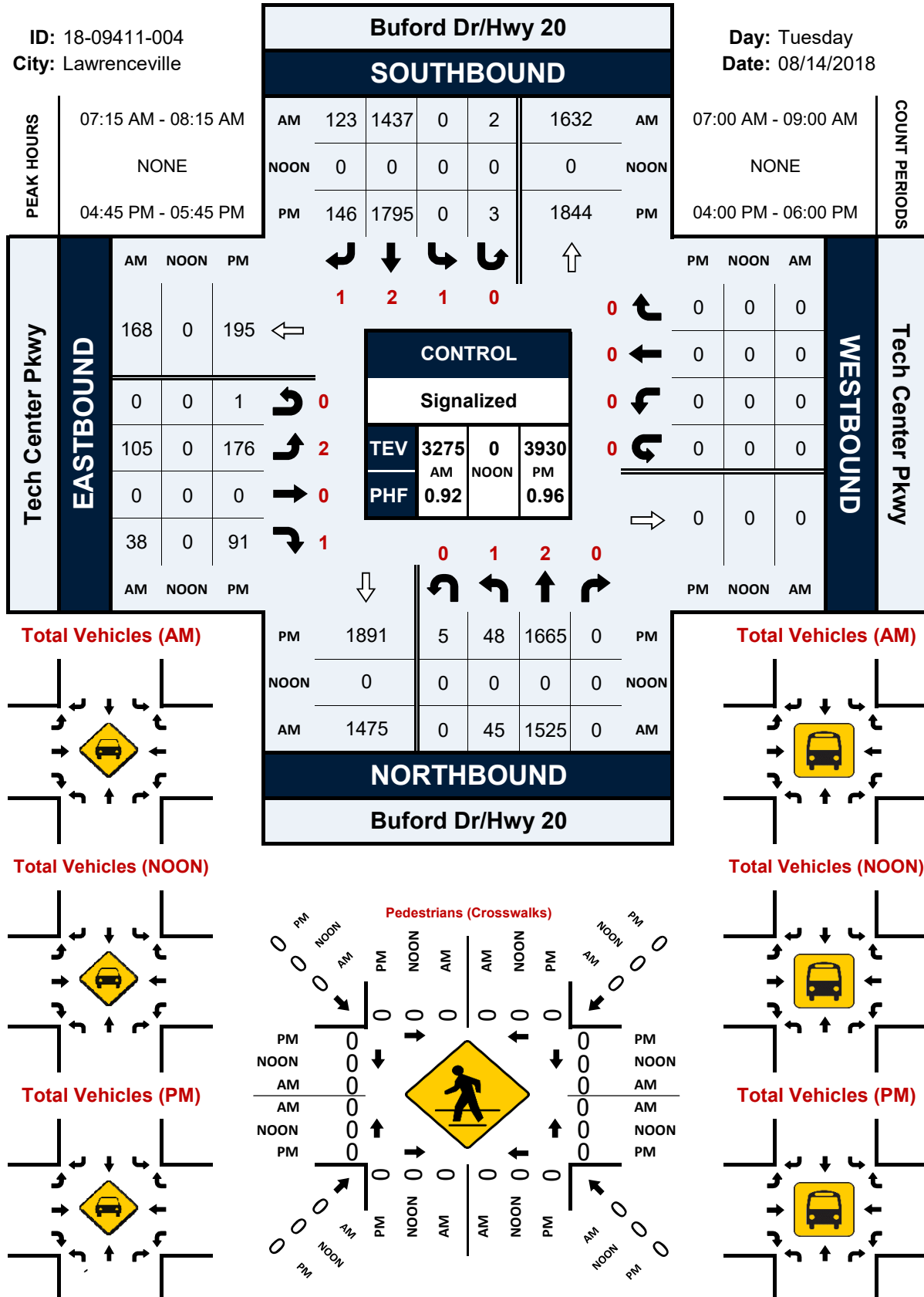
	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					Rock Springs Rd Eastbound					Rock Springs Rd Westbound					
Start Time	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Left	Thru	Rgt	Utum	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM to 06:00 PM																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
5:00 PM	14	433	19	1	467	34	461	58	0	553	67	16	12	0	95	9	4	22	0	35	1150
5:15 PM	15	391	14	2	422	67	474	63	1	605	106	34	14	0	154	7	4	25	0	36	1217
5:30 PM	16	475	11	1	503	44	483	70	1	598	81	26	10	0	117	9	8	27	0	44	1262
5:45 PM	19	417	16	0	452	48	409	72	2	531	89	22	21	0	132	10	11	20	0	41	1156
Total Volume	64	1716	60	4	1844	193	1827	263	4	2287	343	98	57	0	498	35	27	94	0	156	4785
% App. Total	3.5	93.1	3.3	0.2	100	8.4	79.9	11.5	0.2	100	68.9	19.7	11.4	0.0	100	22.4	17.3	60.3	0.0	100	
PHF	0.917					0.945					0.808					0.886					0.948
Cars, PU, Vans	64	1716	60	4	1844	193	1827	263	4	2287	343	98	57	0	498	35	27	94	0	156	4785
% Cars, PU, Vans	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0

Buford Dr/Hwy 20 & Tech Center Pkwy

Peak Hour Turning Movement Count

ID: 18-09411-004
City: Lawrenceville

Day: Tuesday
Date: 08/14/2018



Day: Tuesday
Date: 08/14/2018

	Buford Dr/Hwy 20 Northbound						Buford Dr/Hwy 20 Southbound						Tech Center Pkwy Eastbound						Tech Center Pkwy Westbound								
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Int. Total		
7:00 AM	8	349	0	0	0	357	0	302	15	0	0	317	20	0	17	0	0	37	0	0	0	0	0	0	711		
7:15 AM	7	356	0	0	0	363	0	352	25	1	0	378	23	0	9	0	0	32	0	0	0	0	0	0	773		
7:30 AM	5	400	0	0	0	405	0	422	22	0	0	444	36	0	9	0	0	45	0	0	0	0	0	0	894		
7:45 AM	20	384	0	0	0	404	0	349	35	1	0	385	22	0	14	0	0	36	0	0	0	0	0	0	825		
Total	40	1489	0	0	0	1529	0	1425	97	2	0	1524	101	0	49	0	0	150	0	0	0	0	0	0	3203		
8:00 AM	13	385	0	0	0	398	0	314	41	0	0	355	24	0	6	0	0	30	0	0	0	0	0	0	783		
8:15 AM	10	390	0	0	0	400	0	268	16	0	0	284	26	0	4	0	0	30	0	0	0	0	0	0	714		
8:30 AM	17	371	0	0	0	388	0	387	30	1	0	418	24	0	20	0	0	44	0	0	0	0	0	0	850		
8:45 AM	10	340	0	1	0	351	0	267	19	0	0	286	27	0	10	0	0	37	0	0	0	0	0	0	674		
Total	50	1486	0	1	0	1537	0	1236	106	1	0	1343	101	0	40	0	0	141	0	0	0	0	0	0	3021		
BREAK																											
4:00 PM	8	342	0	1	0	351	0	392	25	0	0	417	31	0	16	0	0	47	0	0	0	0	0	0	815		
4:15 PM	7	371	0	0	0	378	0	429	38	0	0	467	28	0	23	0	0	51	0	0	0	0	0	0	896		
4:30 PM	6	347	0	0	0	353	0	380	29	1	0	410	52	0	26	0	0	78	0	0	0	0	0	0	841		
4:45 PM	8	431	0	1	0	440	0	461	35	1	0	497	32	0	19	0	0	51	0	0	0	0	0	0	988		
Total	29	1491	0	2	0	1522	0	1662	127	2	0	1791	143	0	84	0	0	227	0	0	0	0	0	0	3540		
5:00 PM	15	401	0	0	0	416	0	409	33	1	0	443	44	0	25	1	0	70	0	0	0	0	0	0	929		
5:15 PM	15	398	0	1	0	414	0	500	44	0	0	544	47	0	21	0	0	68	0	0	0	0	0	0	1026		
5:30 PM	10	435	0	3	0	448	0	425	34	1	0	460	53	0	26	0	0	79	0	0	0	0	0	0	987		
5:45 PM	9	428	0	2	0	439	0	439	39	0	0	478	33	0	23	0	0	56	0	0	0	0	0	0	973		
Total	49	1662	0	6	0	1717	0	1773	150	2	0	1925	177	0	95	1	0	273	0	0	0	0	0	0	3915		
Grand Total	168	6128	0	9	0	6305	0	6096	480	7	0	6583	522	0	268	1	0	791	0	0	0	0	0	0	13679		
Apprch %	2.7	97.2	0.0	0.1	0.0																						

Project ID: 18-09411-004
Location: Buford Dr/Hwy 20 & Tech Center Pkwy
City: Lawrenceville

PEAK HOURS

Day: Tuesday
Date: 08/14/2018

AM

	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					Tech Center Pkwy Eastbound					Tech Center Pkwy Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM to 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
7:15 AM	7	356	0	0	363	0	352	25	1	378	23	0	9	0	32	0	0	0	0	0	773
7:30 AM	5	400	0	0	405	0	422	22	0	444	36	0	9	0	45	0	0	0	0	0	894
7:45 AM	20	384	0	0	404	0	349	35	1	385	22	0	14	0	36	0	0	0	0	0	825
8:00 AM	13	385	0	0	398	0	314	41	0	355	24	0	6	0	30	0	0	0	0	0	783
Total Volume	45	1525	0	0	1570	0	1437	123	2	1562	105	0	38	0	143	0	0	0	0	0	3275
% App. Total	2.9	97.1	0.0	0.0	100	0.0	92.0	7.9	0.1	100	73.4	0.0	26.6	0.0	100	0.0	0.0	0.0	0.0	0.0	0
PHF	0.969					0.880					0.794										0.916
Cars, PU, Vans	45	1525	0	0	1570	0	1437	123	2	1562	105	0	38	0	143	0	0	0	0	0	3275
% Cars, PU, Vans	100.0	100.0	0.0	0.0	100.0	0.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0

PM

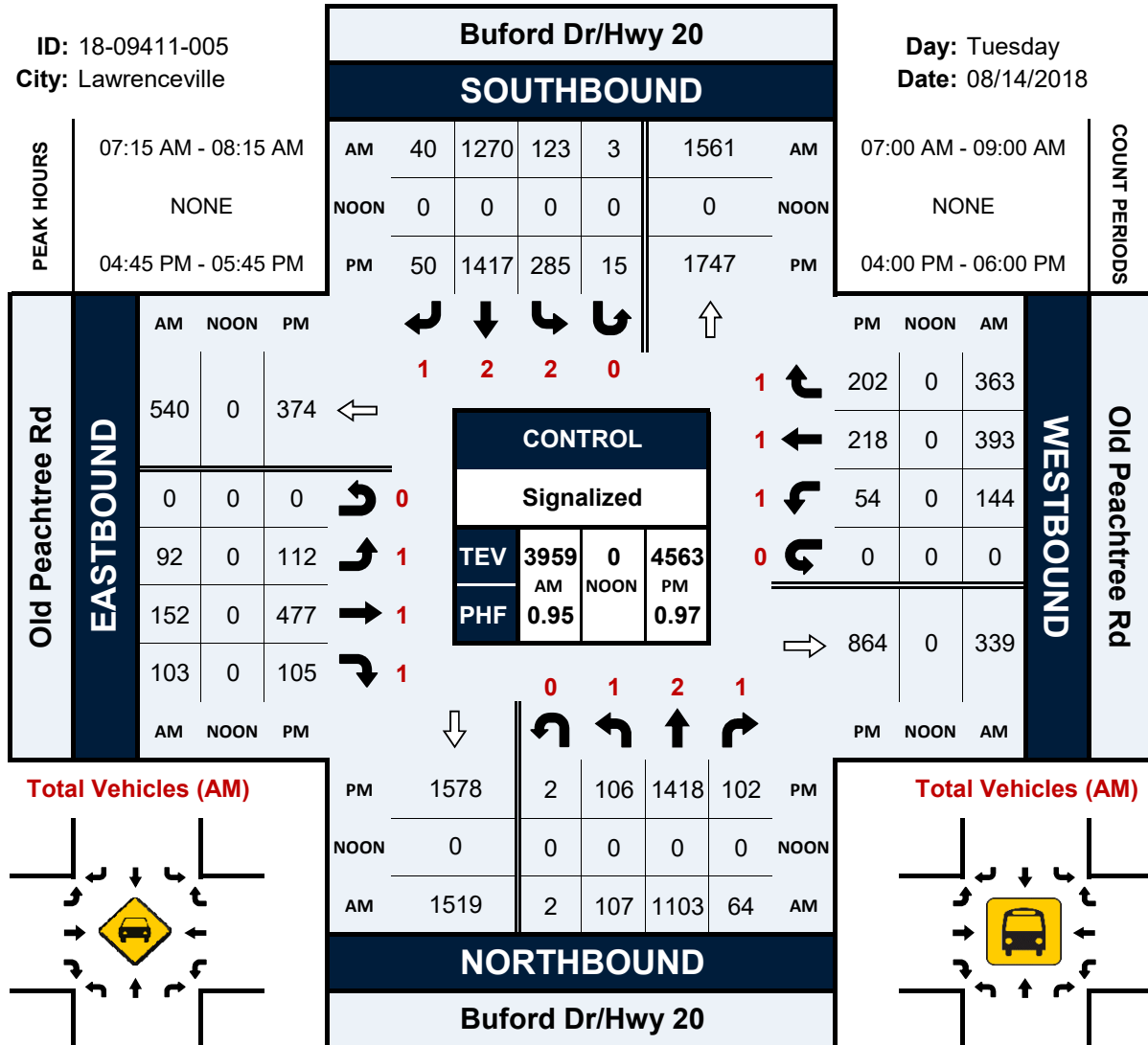
	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					Tech Center Pkwy Eastbound					Tech Center Pkwy Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM to 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
4:45 PM	8	431	0	1	440	0	461	35	1	497	32	0	19	0	51	0	0	0	0	0	988
5:00 PM	15	401	0	0	416	0	409	33	1	443	44	0	25	1	70	0	0	0	0	0	929
5:15 PM	15	398	0	1	414	0	500	44	0	544	47	0	21	0	68	0	0	0	0	0	1026
5:30 PM	10	435	0	3	448	0	425	34	1	460	53	0	26	0	79	0	0	0	0	0	987
Total Volume	48	1665	0	5	1718	0	1795	146	3	1944	176	0	91	1	268	0	0	0	0	0	3930
% App. Total	2.8	96.9	0.0	0.3	100	0.0	92.3	7.5	0.2	100	65.7	0.0	34.0	0.4	100	0.0	0.0	0.0	0.0	0.0	0
PHF	0.959					0.893					0.848										0.958
Cars, PU, Vans	48	1665	0	5	1718	0	1795	146	3	1944	176	0	91	1	268	0	0	0	0	0	3930
% Cars, PU, Vans	100.0	100.0	0.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0

Buford Dr/Hwy 20 & Old Peachtree Rd

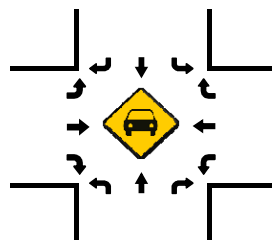
Peak Hour Turning Movement Count

ID: 18-09411-005
City: Lawrenceville

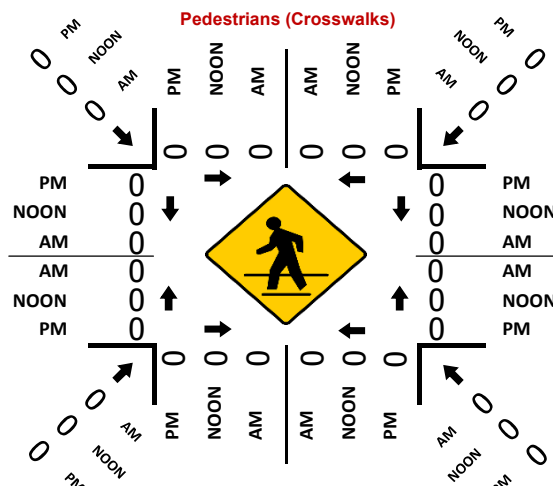
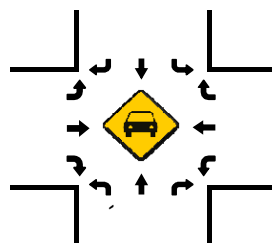
Day: Tuesday
Date: 08/14/2018



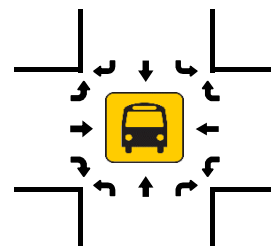
Total Vehicles (NOON)



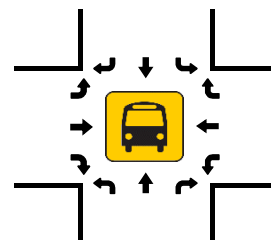
Total Vehicles (PM)



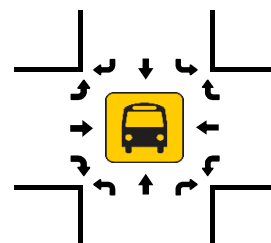
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



Project ID: 18-09411-005
Location: Buford Dr/Hwy 20 & Old Peachtree Rd
City: Lawrenceville

Day: Tuesday
Date: 08/14/2018

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	Buford Dr/Hwy 20 Northbound						Buford Dr/Hwy 20 Southbound						Old Peachtree Rd Eastbound						Old Peachtree Rd Westbound						Int. Total
	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	
7:00 AM	26	278	18	0	0	322	20	298	14	1	0	333	16	33	20	0	0	69	17	101	74	0	0	192	916
7:15 AM	20	259	11	0	0	290	29	293	4	1	0	327	22	40	21	0	0	83	44	100	84	0	0	228	928
7:30 AM	21	304	10	1	0	336	29	356	11	1	0	397	23	28	19	0	0	70	33	97	104	0	0	234	1037
7:45 AM	31	250	17	1	0	299	33	330	11	0	0	374	29	40	38	0	0	107	44	106	106	0	0	256	1036
Total	98	1091	56	2	0	1247	111	1277	40	3	0	1431	90	141	98	0	0	329	138	404	368	0	0	910	3917
8:00 AM	35	290	26	0	0	351	32	291	14	1	0	338	18	44	25	0	0	87	23	90	69	0	0	182	958
8:15 AM	31	313	22	0	0	366	34	233	8	0	0	275	26	34	15	0	0	75	12	100	84	0	0	196	912
8:30 AM	32	249	21	1	0	303	29	321	16	1	0	367	20	21	12	0	0	53	33	113	81	0	0	227	950
8:45 AM	35	278	20	0	0	333	24	279	9	1	0	313	17	28	12	0	0	57	20	100	76	0	0	196	899
Total	133	1130	89	1	0	1353	119	1124	47	3	0	1293	81	127	64	0	0	272	88	403	310	0	0	801	3719
BREAK																									
4:00 PM	30	290	12	0	0	332	51	280	9	2	0	342	22	118	25	0	0	165	14	56	44	0	0	114	953
4:15 PM	27	285	26	1	0	339	85	352	14	6	0	457	32	92	22	0	0	146	18	50	46	0	0	114	1056
4:30 PM	36	305	29	1	0	371	57	299	8	2	0	366	22	120	27	0	0	169	21	45	37	0	0	103	1009
4:45 PM	30	366	16	0	0	412	76	398	14	1	0	489	24	104	27	0	0	155	14	43	52	0	0	109	1165
Total	123	1246	83	2	0	1454	269	1329	45	11	0	1654	100	434	101	0	0	635	67	194	179	0	0	440	4183
5:00 PM	28	331	23	1	0	383	64	317	13	5	0	399	26	124	26	0	0	176	14	55	49	0	0	118	1076
5:15 PM	18	353	34	1	0	406	80	377	11	7	0	475	34	114	28	0	0	176	9	61	55	0	0	125	1182
5:30 PM	30	368	29	0	0	427	65	325	12	2	0	404	28	135	24	0	0	187	17	59	46	0	0	122	1140
5:45 PM	19	371	21	1	0	412	78	363	17	2	0	460	21	89	12	0	0	122	19	55	49	0	0	123	1117
Total	95	1423	107	3	0	1628	287	1382	53	16	0	1738	109	462	90	0	0	661	59	230	199	0	0	488	4515
Grand Total	449	4890	335	8	0	5682	786	5112	185	33	0	6116	380	1164	353	0	0	1897	352	1231	1056	0	0	2639	16334
Apprch %	7.9	86.1	5.9	0.1	0.0		12.9	83.6	3.0	0.5	0.0		20.0	61.4	18.6	0.0	0.0		13.3	46.6	40.0	0.0	0.0		
Total %	2.7	29.9	2.1	0.0	0.0	34.8	4.8	31.3	1.1	0.2	0.0	37.4	2.3	7.1	2.2	0.0	0.0	11.6	2.2	7.5	6.5	0.0	0.0	16.2	
Cars, PU, Vans	449	4890	335	8	0	5682	786	5112	185		0	6116	380	1164	353	0		1897	352	1231	1056		0	2639	16334
% Cars, PU, Vans	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	0.0	0.0	100.0	100.0	100.0	100.0	0.0	0.0	100.0	100.0	100.0	100.0	0.0	0.0	100.0	100.0

Project ID: 18-09411-005
Location: Buford Dr/Hwy 20 & Old Peachtree Rd
City: Lawrenceville

PEAK HOURS

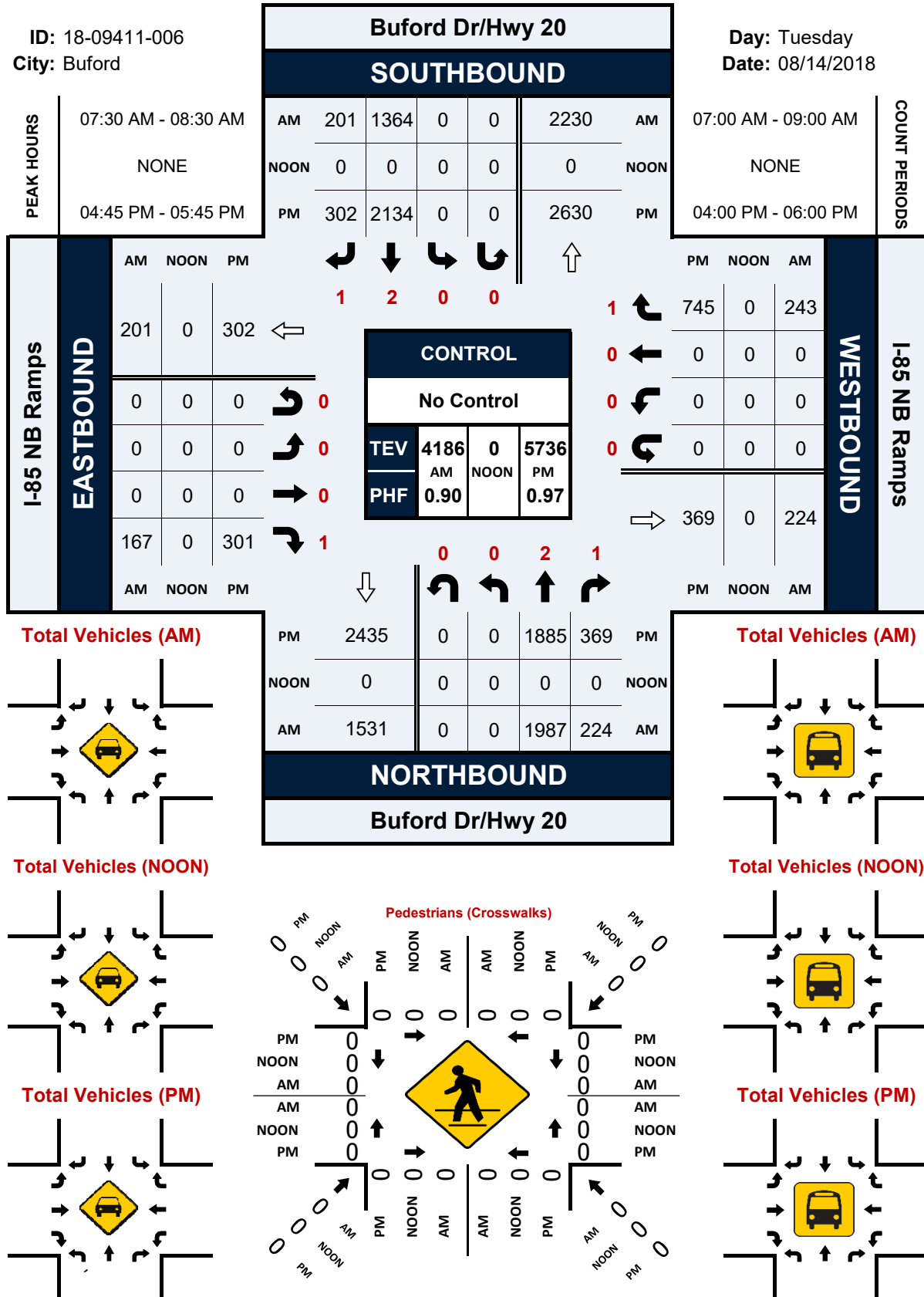
Day: Tuesday
Date: 08/14/2018

AM

	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					Old Peachtree Rd Eastbound					Old Peachtree Rd Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM to 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
7:15 AM	20	259	11	0	290	29	293	4	1	327	22	40	21	0	83	44	100	84	0	228	928
7:30 AM	21	304	10	1	336	29	356	11	1	397	23	28	19	0	70	33	97	104	0	234	1037
7:45 AM	31	250	17	1	299	33	330	11	0	374	29	40	38	0	107	44	106	106	0	256	1036
8:00 AM	35	290	26	0	351	32	291	14	1	338	18	44	25	0	87	23	90	69	0	182	958
Total Volume	107	1103	64	2	1276	123	1270	40	3	1436	92	152	103	0	347	144	393	363	0	900	3959
% App. Total	8.4	86.4	5.0	0.2	100	8.6	88.4	2.8	0.2	100	26.5	43.8	29.7	0.0	100	16.0	43.7	40.3	0.0	100	
PHF	0.909					0.904					0.811					0.879					0.954
Cars, PU, Vans	107	1103	64	2	1276	123	1270	40	3	1436	92	152	103	0	347	144	393	363	0	900	3959
% Cars, PU, Vans	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0

PM

	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					Old Peachtree Rd Eastbound					Old Peachtree Rd Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM to 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
4:45 PM	30	366	16	0	412	76	398	14	1	489	24	104	27	0	155	14	43	52	0	109	1165
5:00 PM	28	331	23	1	383	64	317	13	5	399	26	124	26	0	176	14	55	49	0	118	1076
5:15 PM	18	353	34	1	406	80	377	11	7	475	34	114	28	0	176	9	61	55	0	125	1182
5:30 PM	30	368	29	0	427	65	325	12	2	404	28	135	24	0	187	17	59	46	0	122	1140
Total Volume	106	1418	102	2	1628	285	1417	50	15	1767	112	477	105	0	694	54	218	202	0	474	4563
% App. Total	6.5	87.1	6.3	0.1	100	16.1	80.2	2.8	0.8	100	16.1	68.7	15.1	0.0	100	11.4	46.0	42.6	0.0	100	
PHF	0.953					0.903					0.928					0.948					0.965
Cars, PU, Vans	106	1418	102	2	1628	285	1417	50	15	1767	112	477	105	0	694	54	218	202	0	474	4563
% Cars, PU, Vans	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0



Day: Tuesday
Date: 08/14/2018

	Buford Dr/Hwy 20 Northbound						Buford Dr/Hwy 20 Southbound						I-85 NB Ramps Eastbound						I-85 NB Ramps Westbound						
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Int. Total
7:00 AM	0	450	52	0	0	502	0	352	45	0	0	397	0	0	29	0	0	29	0	0	39	0	0	39	967
7:15 AM	0	455	45	0	0	500	0	340	42	0	0	382	0	0	30	0	0	30	0	0	37	0	0	37	949
7:30 AM	0	534	71	0	0	605	0	425	53	0	0	478	0	0	37	0	0	37	0	0	47	0	0	47	1167
7:45 AM	0	523	45	0	0	568	0	321	52	0	0	373	0	0	34	0	0	34	0	0	63	0	0	63	1038
Total	0	1962	213	0	0	2175	0	1438	192	0	0	1630	0	0	130	0	0	130	0	0	186	0	0	186	4121
8:00 AM	0	452	51	0	0	503	0	298	46	0	0	344	0	0	50	0	0	50	0	0	63	0	0	63	960
8:15 AM	0	478	57	0	0	535	0	320	50	0	0	370	0	0	46	0	0	46	0	0	70	0	0	70	1021
8:30 AM	0	398	38	0	0	436	0	343	66	0	0	409	0	0	31	0	0	31	0	0	77	0	0	77	953
8:45 AM	0	418	50	0	0	468	0	303	44	0	0	347	0	0	35	0	0	35	0	0	83	0	0	83	933
Total	0	1746	196	0	0	1942	0	1264	206	0	0	1470	0	0	162	0	0	162	0	0	293	0	0	293	3867
BREAK																									
4:00 PM	0	420	62	0	0	482	0	451	75	0	0	526	0	0	93	0	0	93	0	0	185	0	0	185	1286
4:15 PM	0	422	69	0	0	491	0	477	80	0	0	557	0	0	104	0	0	104	0	0	202	0	0	202	1354
4:30 PM	0	407	83	0	0	490	0	494	78	0	0	572	0	0	73	0	0	73	0	0	195	0	0	195	1330
4:45 PM	0	487	101	0	0	588	0	489	71	0	0	560	0	0	82	0	0	82	0	0	191	0	0	191	1421
Total	0	1736	315	0	0	2051	0	1911	304	0	0	2215	0	0	352	0	0	352	0	0	773	0	0	773	5391
5:00 PM	0	445	84	0	0	529	0	533	63	0	0	596	0	0	63	0	0	63	0	0	170	0	0	170	1358
5:15 PM	0	477	87	0	0	564	0	556	78	0	0	634	0	0	85	0	0	85	0	0	200	0	0	200	1483
5:30 PM	0	476	97	0	0	573	0	556	90	0	0	646	0	0	71	0	0	71	0	0	184	0	0	184	1474
5:45 PM	0	489	70	0	0	559	0	478	51	0	0	529	0	0	81	0	0	81	0	0	199	0	0	199	1368
Total	0	1887	338	0	0	2225	0	2123	282	0	0	2405	0	0	300	0	0	300	0	0	753	0	0	753	5683
Grand Total																									

Project ID: 18-09411-006
Location: Buford Dr/Hwy 20 & I-85 NB Ramps
City: Buford

PEAK HOURS

Day: Tuesday
Date: 08/14/2018

AM

	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					I-85 NB Ramps Eastbound					I-85 NB Ramps Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM to 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
7:30 AM	0	534	71	0	605	0	425	53	0	478	0	0	37	0	37	0	0	47	0	47	1167
7:45 AM	0	523	45	0	568	0	321	52	0	373	0	0	34	0	34	0	0	63	0	63	1038
8:00 AM	0	452	51	0	503	0	298	46	0	344	0	0	50	0	50	0	0	63	0	63	960
8:15 AM	0	478	57	0	535	0	320	50	0	370	0	0	46	0	46	0	0	70	0	70	1021
Total Volume	0	1987	224	0	2211	0	1364	201	0	1565	0	0	167	0	167	0	0	243	0	243	4186
% App. Total	0.0	89.9	10.1	0.0	100	0.0	87.2	12.8	0.0	100	0.0	0.0	100.0	0.0	100	0.0	0.0	100.0	0.0	100	
PHF	0.914					0.819					0.835					0.868					0.897
Cars, PU, Vans	0	1987	224	0	2211	0	1364	201	0	1565	0	0	167	0	167	0	0	243	0	243	4186
% Cars, PU, Vans	0.0	100.0	100.0	0.0	100.0	0.0	100.0	100.0	0.0	100.0	0.0	0.0	100.0	0.0	100.0	0.0	0.0	100.0	0.0	100.0	100.0

PM

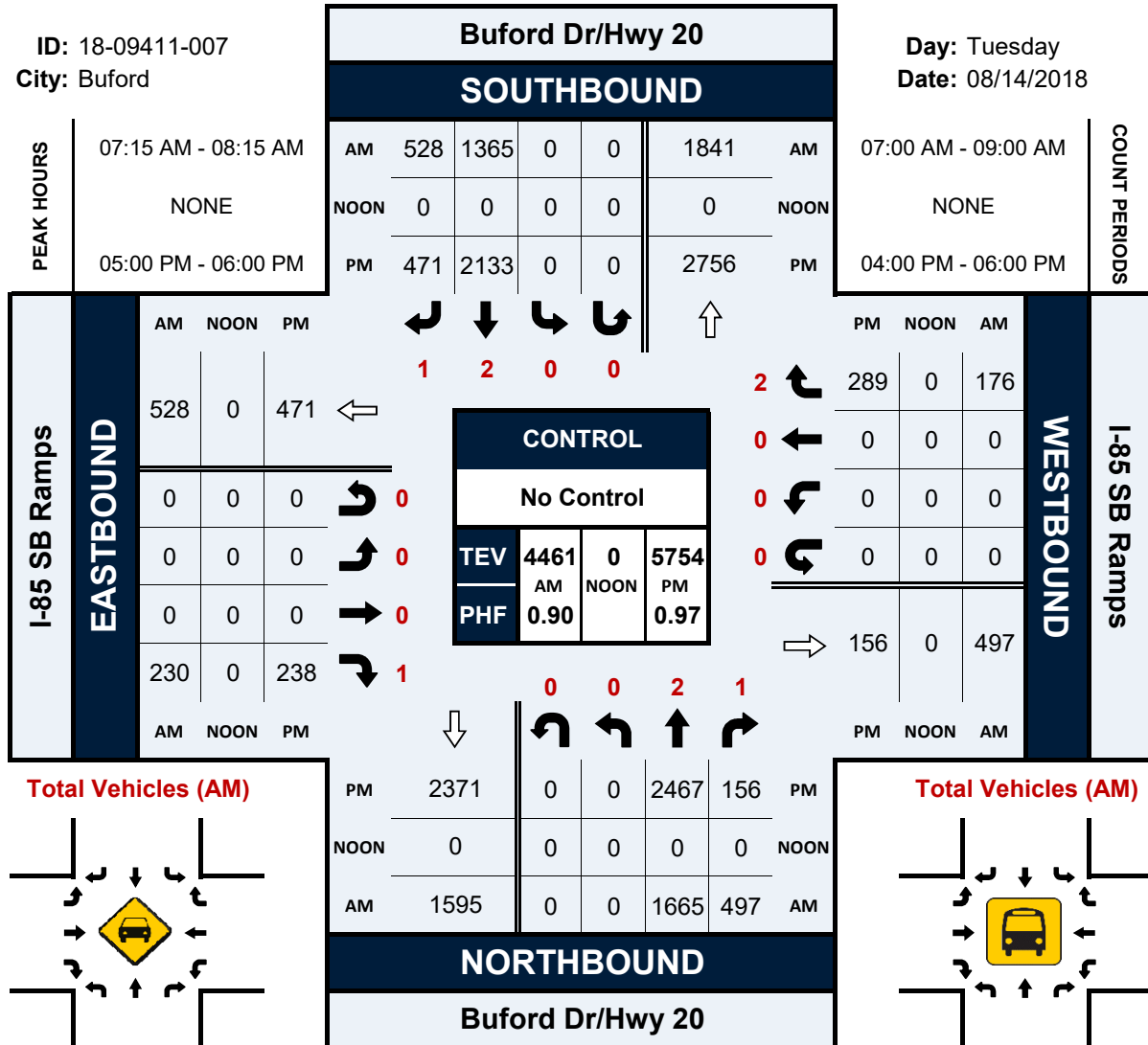
	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					I-85 NB Ramps Eastbound					I-85 NB Ramps Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM to 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
4:45 PM	0	487	101	0	588	0	489	71	0	560	0	0	82	0	82	0	0	191	0	191	1421
5:00 PM	0	445	84	0	529	0	533	63	0	596	0	0	63	0	63	0	0	170	0	170	1358
5:15 PM	0	477	87	0	564	0	556	78	0	634	0	0	85	0	85	0	0	200	0	200	1483
5:30 PM	0	476	97	0	573	0	556	90	0	646	0	0	71	0	71	0	0	184	0	184	1474
Total Volume	0	1885	369	0	2254	0	2134	302	0	2436	0	0	301	0	301	0	0	745	0	745	5736
% App. Total	0.0	83.6	16.4	0.0	100	0.0	87.6	12.4	0.0	100	0.0	0.0	100.0	0.0	100	0.0	0.0	100.0	0.0	100	
PHF	0.958					0.943					0.885					0.931					0.967
Cars, PU, Vans	0	1885	369	0	2254	0	2134	302	0	2436	0	0	301	0	301	0	0	745	0	745	5736
% Cars, PU, Vans	0.0	100.0	100.0	0.0	100.0	0.0	100.0	100.0	0.0	100.0	0.0	0.0	100.0	0.0	100.0	0.0	0.0	100.0	0.0	100.0	100.0

Buford Dr/Hwy 20 & I-85 SB Ramps

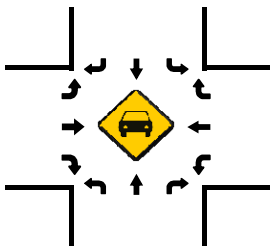
Peak Hour Turning Movement Count

ID: 18-09411-007
City: Buford

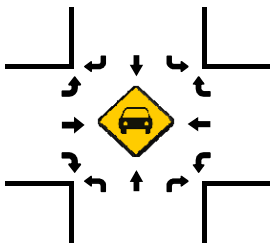
Day: Tuesday
Date: 08/14/2018



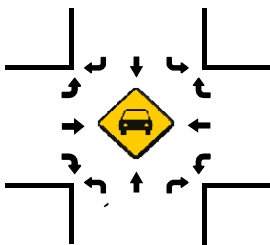
Total Vehicles (AM)



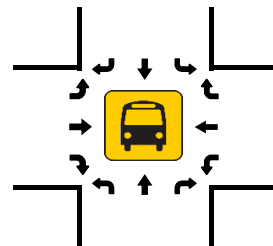
Total Vehicles (NOON)



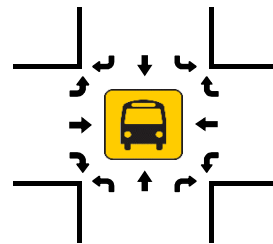
Total Vehicles (PM)



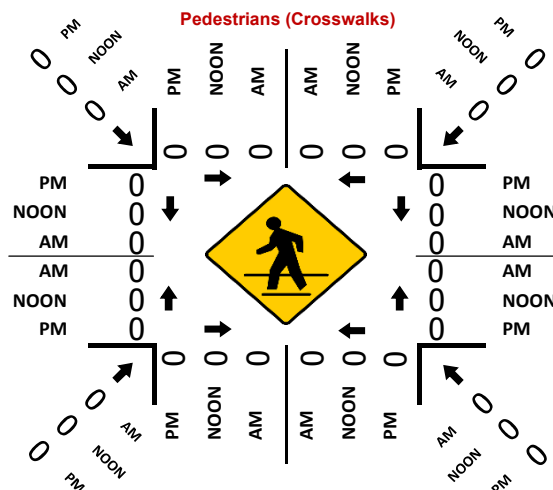
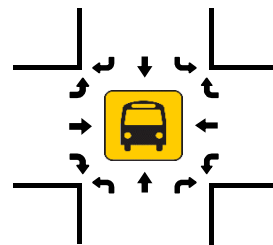
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



Day: Tuesday
Date: 08/14/2018

	Buford Dr/Hwy 20 Northbound						Buford Dr/Hwy 20 Southbound						I-85 SB Ramps Eastbound						I-85 SB Ramps Westbound						
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Int. Total
7:00 AM	0	372	109	0	0	481	0	306	128	0	0	434	0	0	71	0	0	71	0	0	51	0	0	51	1037
7:15 AM	0	349	124	0	0	473	0	328	132	0	0	460	0	0	53	0	0	53	0	0	50	0	0	50	1036
7:30 AM	0	424	136	0	0	560	0	407	149	0	0	556	0	0	70	0	0	70	0	0	57	0	0	57	1243
7:45 AM	0	465	135	0	0	600	0	315	114	0	0	429	0	0	50	0	0	50	0	0	29	0	0	29	1108
Total	0	1610	504	0	0	2114	0	1356	523	0	0	1879	0	0	244	0	0	244	0	0	187	0	0	187	4424
8:00 AM	0	427	102	0	0	529	0	315	133	0	0	448	0	0	57	0	0	57	0	0	40	0	0	40	1074
8:15 AM	0	439	85	0	0	524	0	291	131	0	0	422	0	0	39	0	0	39	0	0	29	0	0	29	1014
8:30 AM	0	397	98	0	0	495	0	386	139	0	0	525	0	0	54	0	0	54	0	0	42	0	0	42	1116
8:45 AM	0	412	67	0	0	479	0	271	118	0	0	389	0	0	54	0	0	54	0	0	46	0	0	46	968
Total	0	1675	352	0	0	2027	0	1283	521	0	0	1784	0	0	204	0	0	204	0	0	157	0	0	157	4172
BREAK																									
4:00 PM	0	554	53	0	0	607	0	479	132	0	0	611	0	0	39	0	0	39	0	0	62	0	0	62	1319
4:15 PM	0	563	43	0	0	606	0	506	138	0	0	644	0	0	56	0	0	56	0	0	81	0	0	81	1387
4:30 PM	0	559	42	0	0	601	0	505	119	0	0	624	0	0	34	0	0	34	0	0	67	0	0	67	1326
4:45 PM	0	639	32	0	0	671	0	534	91	0	0	625	0	0	59	0	0	59	0	0	69	0	0	69	1424
Total	0	2315	170	0	0	2485	0	2024	480	0	0	2504	0	0	188	0	0	188	0	0	279	0	0	279	5456
5:00 PM	0	573	36	0	0	609	0	505	124	0	0	629	0	0	61	0	0	61	0	0	68	0	0	68	1367
5:15 PM	0	610	51	0	0	661	0	582	105	0	0	687	0	0	60	0	0	60	0	0	73	0	0	73	1481
5:30 PM	0	633	29	0	0	662	0	556																	

Project ID: 18-09411-007
Location: Buford Dr/Hwy 20 & I-85 SB Ramps
City: Buford

PEAK HOURS

Day: Tuesday
Date: 08/14/2018

AM

	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					I-85 SB Ramps Eastbound					I-85 SB Ramps Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM to 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
7:15 AM	0	349	124	0	473	0	328	132	0	460	0	0	53	0	53	0	0	50	0	50	1036
7:30 AM	0	424	136	0	560	0	407	149	0	556	0	0	70	0	70	0	0	57	0	57	1243
7:45 AM	0	465	135	0	600	0	315	114	0	429	0	0	50	0	50	0	0	29	0	29	1108
8:00 AM	0	427	102	0	529	0	315	133	0	448	0	0	57	0	57	0	0	40	0	40	1074
Total Volume	0	1665	497	0	2162	0	1365	528	0	1893	0	0	230	0	230	0	0	176	0	176	4461
% App. Total	0.0	77.0	23.0	0.0	100	0.0	72.1	27.9	0.0	100	0.0	0.0	100.0	0.0	100	0.0	0.0	100.0	0.0	100	
PHF	0.901					0.851					0.821					0.772					0.897
Cars, PU, Vans	0	1665	497	0	2162	0	1365	528	0	1893	0	0	230	0	230	0	0	176	0	176	4461
% Cars, PU, Vans	0.0	100.0	100.0	0.0	100.0	0.0	100.0	100.0	0.0	100.0	0.0	0.0	100.0	0.0	100.0	0.0	0.0	100.0	0.0	100.0	100.0

PM

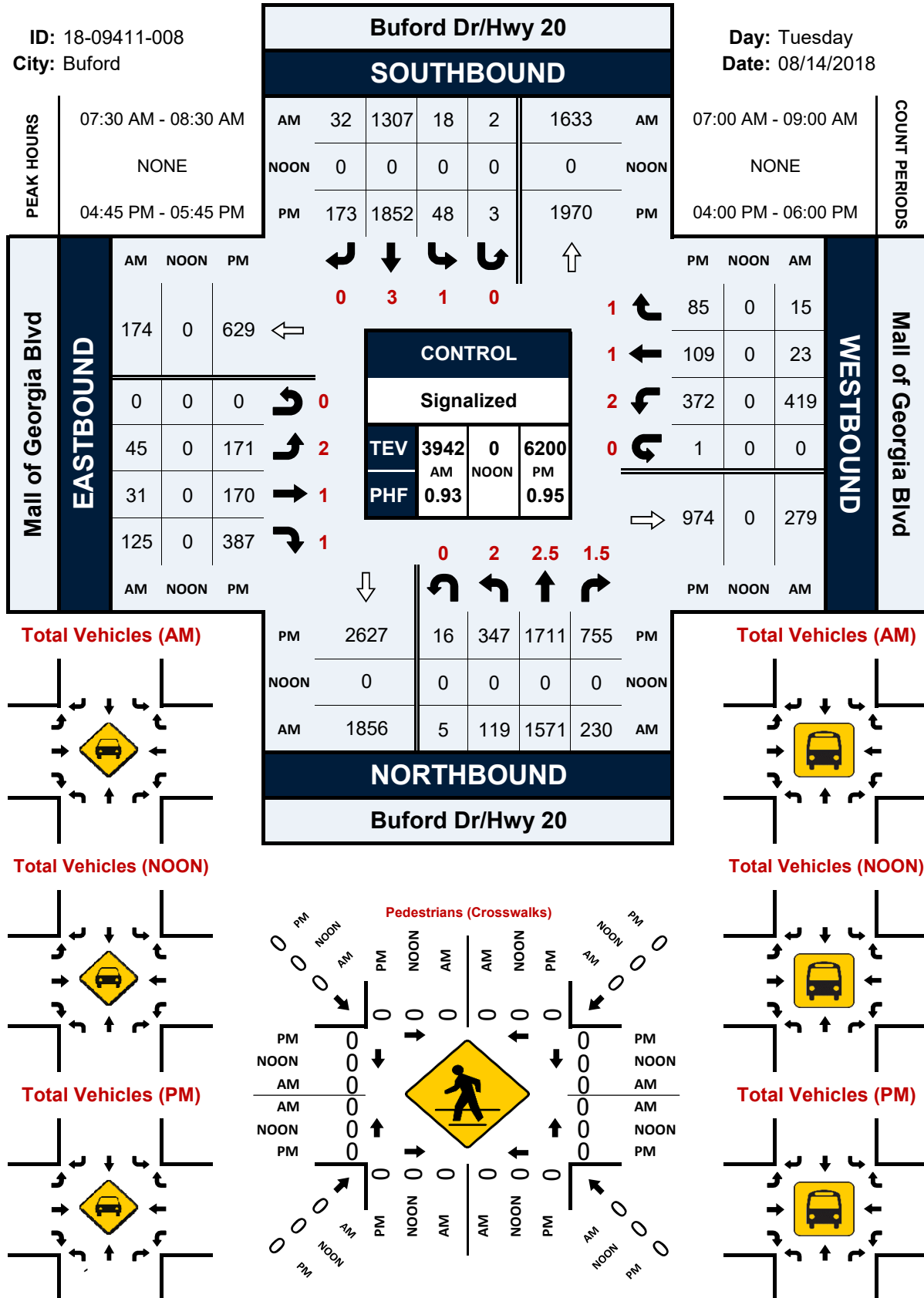
	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					I-85 SB Ramps Eastbound					I-85 SB Ramps Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM to 06:00 PM																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
5:00 PM	0	573	36	0	609	0	505	124	0	629	0	0	61	0	61	0	0	68	0	68	1367
5:15 PM	0	610	51	0	661	0	582	105	0	687	0	0	60	0	60	0	0	73	0	73	1481
5:30 PM	0	633	29	0	662	0	556	126	0	682	0	0	57	0	57	0	0	72	0	72	1473
5:45 PM	0	651	40	0	691	0	490	116	0	606	0	0	60	0	60	0	0	76	0	76	1433
Total Volume	0	2467	156	0	2623	0	2133	471	0	2604	0	0	238	0	238	0	0	289	0	289	5754
% App. Total	0.0	94.1	5.9	0.0	100	0.0	81.9	18.1	0.0	100	0.0	0.0	100.0	0.0	100	0.0	0.0	100.0	0.0	100	
PHF	0.949					0.948					0.975					0.951					0.971
Cars, PU, Vans	0	2467	156	0	2623	0	2133	471	0	2604	0	0	238	0	238	0	0	289	0	289	5754
% Cars, PU, Vans	0.0	100.0	100.0	0.0	100.0	0.0	100.0	100.0	0.0	100.0	0.0	0.0	100.0	0.0	100.0	0.0	0.0	100.0	0.0	100.0	100.0

Buford Dr/Hwy 20 & Mall of Georgia Blvd

Peak Hour Turning Movement Count

ID: 18-09411-008
City: Buford

Day: Tuesday
Date: 08/14/2018



Project ID: 18-09411-008
Location: Buford Dr/Hwy 20 & Mall of Georgia Blvd
City: Buford

Day: Tuesday
Date: 08/14/2018

Groups Printed - Cars, PU, Vans - Heavy Trucks

	Buford Dr/Hwy 20 Northbound						Buford Dr/Hwy 20 Southbound						Mall of Georgia Blvd Eastbound						Mall of Georgia Blvd Westbound							
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Int. Total	
7:00 AM	19	358	38	2	0	417	1	314	6	0	0	321	2	8	29	0	0	39	97	5	3	0	0	105	882	
7:15 AM	21	345	33	0	0	399	1	323	4	0	0	328	18	5	28	0	0	51	125	4	6	0	0	135	913	
7:30 AM	27	419	45	1	0	492	5	373	5	1	0	384	16	6	36	0	0	58	121	5	3	0	0	129	1063	
7:45 AM	32	387	56	2	0	477	5	305	1	1	0	312	13	10	24	0	0	47	103	3	7	0	0	113	949	
Total	99	1509	172	5	0	1785	12	1315	16	2	0	1345	49	29	117	0	0	195	446	17	19	0	0	482	3807	
8:00 AM	29	388	72	1	0	490	4	306	9	0	0	319	5	9	25	0	0	39	100	8	1	0	0	109	957	
8:15 AM	31	377	57	1	0	466	4	323	17	0	0	344	11	6	40	0	0	57	95	7	4	0	0	106	973	
8:30 AM	32	357	53	1	0	443	5	321	7	0	0	333	12	6	39	0	0	57	116	11	9	0	0	136	969	
8:45 AM	43	382	53	3	0	481	8	296	16	0	0	320	12	7	22	0	0	41	85	9	12	0	0	106	948	
Total	135	1504	235	6	0	1880	21	1246	49	0	0	1316	40	28	126	0	0	194	396	35	26	0	0	457	3847	
BREAK																										
4:00 PM	85	392	160	5	0	642	13	447	39	2	0	501	40	36	121	0	0	197	81	27	22	0	0	130	1470	
4:15 PM	98	335	170	5	0	608	21	366	34	0	0	421	44	50	112	0	0	206	129	41	19	0	0	189	1424	
4:30 PM	89	369	182	1	0	641	8	458	43	2	0	511	33	33	85	0	0	151	103	35	20	1	0	159	1462	
4:45 PM	104	414	195	3	0	716	11	404	39	1	0	455	45	49	97	0	0	191	88	34	26	0	0	148	1510	
Total	376	1510	707	14	0	2607	53	1675	155	5	0	1888	162	168	415	0	0	745	401	137	87	1	0	626	5866	
5:00 PM	75	438	170	4	0	687	17	461	45	1	0	524	41	33	99	0	0	173	82	18	19	0	0	119	1503	
5:15 PM	89	393	198	4	0	684	14	441	42	1	0	498	53	47	105	0	0	205	117	23	23	0	0	163	1550	
5:30 PM	79	466	192	5	0	742	6	546	47	0	0	599	32	41	86	0	0	159	85	34	17	1	0	137	1637	
5:45 PM	102	361	212	4	0	679	18	347	40	3	0	408	50	43	100	0	0	193	119	38	15	0	0	172	1452	
Total	345	1658	772	17	0	2792	55	1795	174	5	0	2029	176	164	390	0	0	730	403	113	74	1	0	591	6142	
Grand Total	955	6181	1886	42	0	9064	141	6031	394	12	0	6578	427	389	1048	0	0	1864	1646	302	206	2	0	2156	19662	
Apprch %	10.5	68.2	20.8	0.5	0.0		2.1	91.7	6.0	0.2	0.0		22.9	20.9	56.2	0.0	0.0		76.3	14.0	9.6	0.1	0.0			
Total %	4.9	31.4	9.6	0.2	0.0	46.1	0.7	30.7	2.0	0.1	0.0	33.5	2.2	2.0	5.3	0.0	0.0	9.5	8.4	1.5	1.0	0.0	0.0	11.0		
Cars, PU, Vans	955	6181	1886	42	0	9064	141	6031	394	0	0	6578	427	389	1048	0	0	1864	1646	302	206	0	0	2156	19662	
% Cars, PU, Vans	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	0.0	0.0	100.0	100.0	100.0	100.0	0.0	0.0	100.0	100.0	100.0	100.0	0.0	0.0	100.0	100.0	

Location: Buford Dr/Hwy 20 & Mall of Georgia Blvd
City: Buford

Day: Tuesday
Date: 08/14/2018

	Buford Dr/Hwy 20 Northbound						Buford Dr/Hwy 20 Southbound						Mall of Georgia Blvd Eastbound						Mall of Georgia Blvd Westbound						
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total				
Peak Hour Analysis from 07:00 AM to 09:00 AM																									
Peak Hour for Entire Intersection Begins at 07:30 AM																									
7:30 AM	27	419	45	1	492	5	373	5	1	384	16	6	36	0	58	121	5	3	0	129	1063				
7:45 AM	29	387	56	2	477	5	305	1	1	312	13	10	24	0	47	103	3	7	0	113	949				
8:00 AM	32	388	72	1	490	4	306	9	0	319	5	9	25	0	39	100	8	1	0	109	957				
8:15 AM	31	377	57	1	466	4	323	17	0	344	11	6	40	0	57	95	7	4	0	106	973				
Total Volume	119	1571	230	5	1925	18	1307	32	2	1359	45	31	125	0	201	419	23	15	0	457	3942				
% App. Total	6.2	81.6	11.9	0.3	100	1.3	96.2	2.4	0.1	100	22.4	15.4	62.2	0.0	100	91.7	5.0	3.3	0.0	100					
PHF	0.978					0.885					0.866					0.886					0.927				
Cars, PU, Vans	119	1571	230	5	1925	18	1307	32	2	1359	45	31	125	0	201	419	23	15	0	457	3942				
% Cars, PU, Vans	100	100	100	100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0				

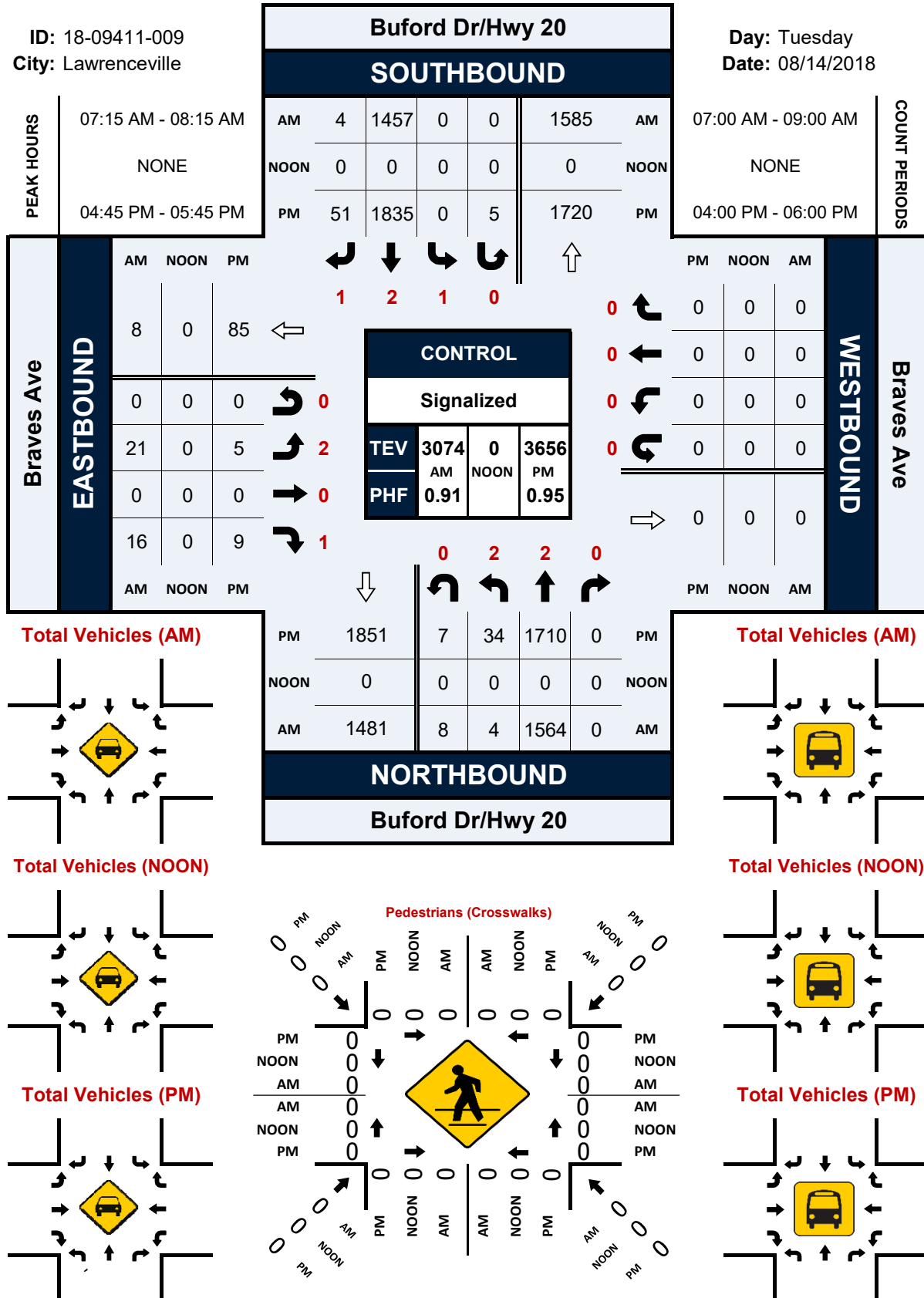
[illegible]

Buford Dr/Hwy 20 & Braves Ave

Peak Hour Turning Movement Count

ID: 18-09411-009
City: Lawrenceville

Day: Tuesday
Date: 08/14/2018



Day: Tuesday
Date: 08/14/2018

	Buford Dr/Hwy 20 Northbound						Buford Dr/Hwy 20 Southbound						Braves Ave Eastbound						Braves Ave Westbound						
Start Time	Left	Thru	Rgt	Uturn	Peds	App.Total	Left	Thru	Rgt	Uturn	Peds	App.Total	Left	Thru	Rgt	Uturn	Peds	App.Total	Left	Thru	Rgt	Uturn	Peds	App.Total	Int.Total
7:00 AM	2	344	0	0	0	346	0	330	1	0	0	331	6	0	8	0	0	14	0	0	0	0	0	0	691
7:15 AM	3	381	0	3	0	387	0	335	1	0	0	336	5	0	4	0	0	9	0	0	0	0	0	0	732
7:30 AM	0	406	0	3	0	409	0	427	0	0	0	427	4	0	3	0	0	7	0	0	0	0	0	0	843
7:45 AM	0	401	0	0	0	401	0	363	3	0	0	366	8	0	1	0	0	9	0	0	0	0	0	0	776
Total	5	1532	0	6	0	1543	0	1455	5	0	0	1460	23	0	16	0	0	39	0	0	0	0	0	0	3042
8:00 AM	1	376	0	2	0	379	0	332	0	0	0	332	4	0	8	0	0	12	0	0	0	0	0	0	723
8:15 AM	3	411	0	1	0	415	0	279	0	1	0	280	3	0	9	0	0	12	0	0	0	0	0	0	707
8:30 AM	2	368	0	2	0	372	0	382	4	1	0	387	3	0	4	0	0	7	0	0	0	0	0	0	766
8:45 AM	2	351	0	2	0	355	0	274	1	0	0	275	3	0	1	0	0	4	0	0	0	0	0	0	634
Total	8	1506	0	7	0	1521	0	1267	5	2	0	1274	13	0	22	0	0	35	0	0	0	0	0	0	2830
BREAK																									
4:00 PM	5	373	0	1	0	379	0	430	10	0	0	440	2	0	4	0	0	6	0	0	0	0	0	0	825
4:15 PM	3	330	0	0	0	333	0	433	10	0	0	443	4	0	1	0	0	5	0	0	0	0	0	0	781
4:30 PM	5	403	0	1	0	409	0	418	12	1	0	431	2	0	1	0	0	5	0	0	0	0	0	0	845
4:45 PM	6	401	0	2	0	409	0	434	11	2	0	447	2	0	2	0	0	4	0	0	0	0	0	0	860
Total	19	1507	0	4	0	1530	0	1715	43	3	0	1761	10	0	10	0	0	20	0	0	0	0	0	0	3311
5:00 PM	9	449	0	0	0	458	0	473	10	0	0	483	1	0	3	0	0	4	0	0	0	0	0	0	945
5:15 PM	10	389	0	4	0	403	0	473	12	2	0	487	0	0	3	0	0	3	0	0	0	0	0	0	893
5:30 PM	9	471	0	1	0	481	0	455	18	1	0	474	2	0	1	0	0	3	0	0	0	0	0	0	958
5:45 PM	8	390	0	2	0	400	0	418	24	0	0	442	1	0	0	0	0	1	0	0	0	0	0	0	843
Total	36	1699	0	7	0	1742	0	1819	64	3	0	1886	4	0	7	0	0	11	0	0	0	0	0	0	3639
Grand Total	68	6244	0	24	0	6336	0	6256	117	8	0	6381	50	0	55	0	0	105	0	0	0	0	0	0	12822
Apprch %	1.1	98.5	0.0																						

Project ID: 18-09411-009
Location: Buford Dr/Hwy 20 & Braves Ave
City: Lawrenceville

PEAK HOURS

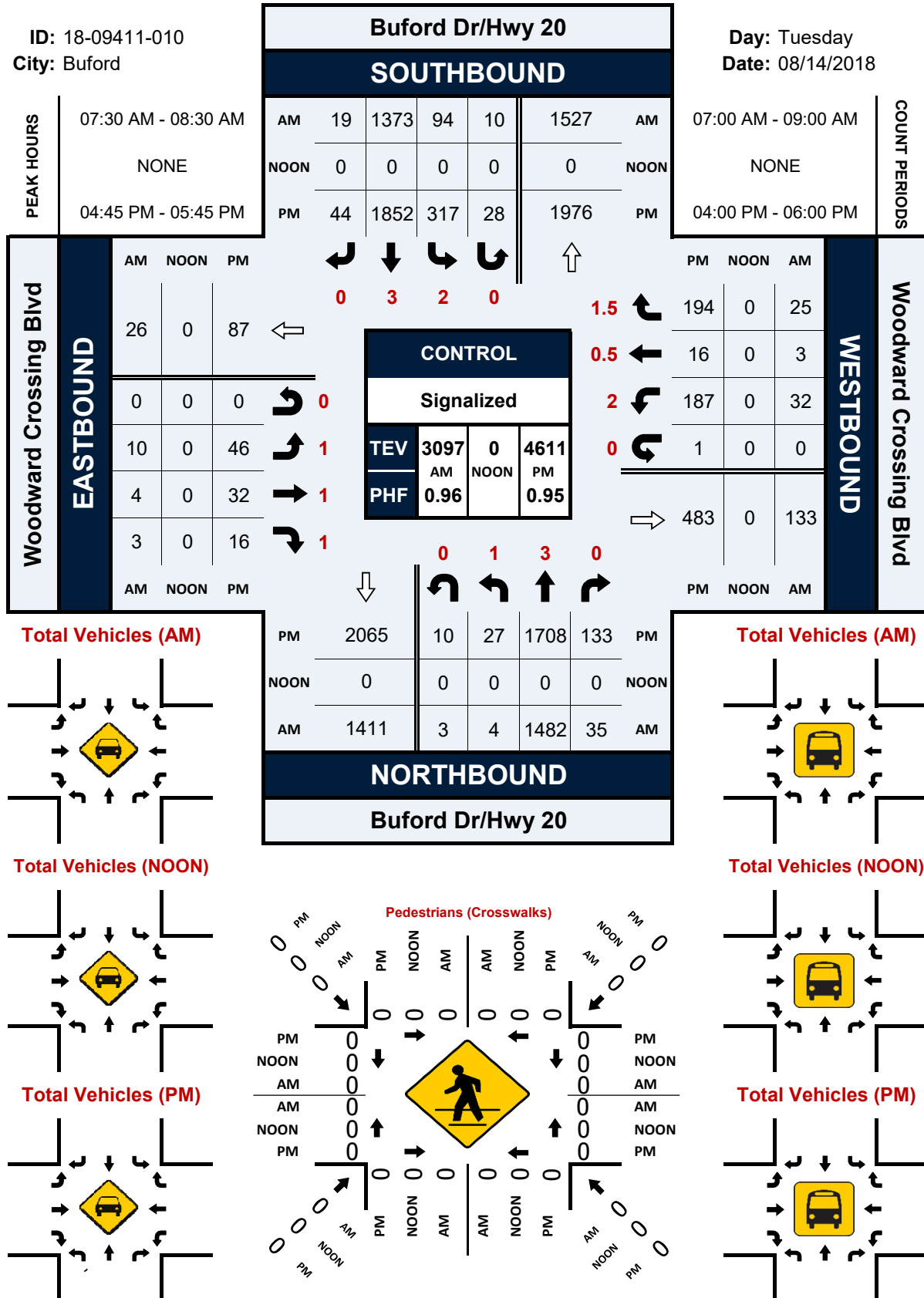
Day: Tuesday
Date: 08/14/2018

AM

	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					Braves Ave Eastbound					Braves Ave Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM to 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
7:15 AM	3	381	0	3	387	0	335	1	0	336	5	0	4	0	9	0	0	0	0	0	732
7:30 AM	0	406	0	3	409	0	427	0	0	427	4	0	3	0	7	0	0	0	0	0	843
7:45 AM	0	401	0	0	401	0	363	3	0	366	8	0	1	0	9	0	0	0	0	0	776
8:00 AM	1	376	0	2	379	0	332	0	0	332	4	0	8	0	12	0	0	0	0	0	723
Total Volume	4	1564	0	8	1576	0	1457	4	0	1461	21	0	16	0	37	0	0	0	0	0	3074
% App. Total	0.3	99.2	0.0	0.5	100	0.0	99.7	0.3	0.0	100	56.8	0.0	43.2	0.0	100	0.0	0.0	0.0	0.0	0.0	0
PHF					0.963					0.855					0.771						0.912
Cars, PU, Vans	4	1564	0	8	1576	0	1457	4	0	1461	21	0	16	0	37	0	0	0	0	0	3074
% Cars, PU, Vans	100.0	100.0	0.0	100.0	100.0	0.0	100.0	100.0	0.0	100.0	100.0	0.0	100.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0

PM

	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					Braves Ave Eastbound					Braves Ave Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM to 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
4:45 PM	6	401	0	2	409	0	434	11	2	447	2	0	2	0	4	0	0	0	0	0	860
5:00 PM	9	449	0	0	458	0	473	10	0	483	1	0	3	0	4	0	0	0	0	0	945
5:15 PM	10	389	0	4	403	0	473	12	2	487	0	0	3	0	3	0	0	0	0	0	893
5:30 PM	9	471	0	1	481	0	455	18	1	474	2	0	1	0	3	0	0	0	0	0	958
Total Volume	34	1710	0	7	1751	0	1835	51	5	1891	5	0	9	0	14	0	0	0	0	0	3656
% App. Total	1.9	97.7	0.0	0.4	100	0.0	97.0	2.7	0.3	100	35.7	0.0	64.3	0.0	100	0.0	0.0	0.0	0.0	0.0	0
PHF					0.910					0.971					0.875						0.954
Cars, PU, Vans	34	1710	0	7	1751	0	1835	51	5	1891	5	0	9	0	14	0	0	0	0	0	3656
% Cars, PU, Vans	100.0	100.0	0.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0



Project ID: 18-09411-010
Location: Buford Dr/Hwy 20 & Woodward Crossing Blvd
City: Buford

Day: Tuesday
Date: 08/14/2018

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	Buford Dr/Hwy 20 Northbound						Buford Dr/Hwy 20 Southbound						Woodward Crossing Blvd Eastbound						Woodward Crossing Blvd Westbound						Int. Total
	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	
7:00 AM	0	341	6	0	0	347	14	274	1	2	0	291	0	0	0	0	0	0	5	0	8	0	0	13	651
7:15 AM	0	358	9	2	0	369	11	326	6	1	0	344	1	2	0	0	0	3	4	1	12	0	0	17	733
7:30 AM	1	386	2	1	0	390	16	380	3	3	0	402	1	0	1	0	0	2	8	1	5	0	0	14	808
7:45 AM	0	390	13	2	0	405	18	332	5	4	0	359	0	1	0	0	0	1	6	1	10	0	0	17	782
Total	1	1475	30	5	0	1511	59	1312	15	10	0	1396	2	3	1	0	0	6	23	3	35	0	0	61	2974
8:00 AM	2	381	12	0	0	395	28	314	4	0	0	346	6	2	1	0	0	9	8	1	6	0	0	15	765
8:15 AM	1	325	8	0	0	334	32	347	7	3	0	389	3	1	1	0	0	5	10	0	4	0	0	14	742
8:30 AM	3	335	10	0	0	348	30	334	4	6	0	374	2	0	1	0	0	3	14	0	11	0	0	25	750
8:45 AM	2	364	16	1	0	383	42	303	1	2	0	348	2	0	0	0	0	2	11	2	9	0	0	22	755
Total	8	1405	46	1	0	1460	132	1298	16	11	0	1457	13	3	3	0	0	19	43	3	30	0	0	76	3012
BREAK																									
4:00 PM	2	436	31	0	0	469	66	425	8	10	0	509	10	7	3	0	0	20	45	8	52	0	0	105	1103
4:15 PM	5	365	27	2	0	399	76	378	4	8	0	466	17	6	2	0	0	25	44	2	46	0	0	92	982
4:30 PM	6	377	34	2	0	419	51	432	14	5	0	502	10	3	2	0	0	15	45	3	54	0	0	102	1038
4:45 PM	10	382	33	4	0	429	85	419	11	7	0	522	18	10	4	0	0	32	42	2	38	0	0	82	1065
Total	23	1560	125	8	0	1716	278	1654	37	30	0	1999	55	26	11	0	0	92	176	15	190	0	0	381	4188
5:00 PM	4	443	35	3	0	485	62	463	11	12	0	548	5	9	3	0	0	17	55	6	45	0	0	106	1156
5:15 PM	6	398	34	3	0	441	92	471	12	7	0	582	16	8	6	0	0	30	49	5	67	1	0	122	1175
5:30 PM	7	485	31	0	0	523	78	499	10	2	0	589	7	5	3	0	0	15	41	3	44	0	0	88	1215
5:45 PM	9	390	19	1	0	419	97	367	10	4	0	478	10	9	5	0	0	24	48	8	53	0	0	109	1030
Total	26	1716	119	7	0	1868	329	1800	43	25	0	2197	38	31	17	0	0	86	193	22	209	1	0	425	4576
Grand Total	58	6156	320	21	0	6555	798	6064	111	76	0	7049	108	63	32	0	0	203	435	43	464	1	0	943	14750
Apprch %	0.9	93.9	4.9	0.3	0.0		11.3	86.0	1.6	1.1	0.0		53.2	31.0	15.8	0.0	0.0		46.1	4.6	49.2	0.1	0.0		
Total %	0.4	41.7	2.2	0.1	0.0	44.4	5.4	41.1	0.8	0.5	0.0	47.8	0.7	0.4	0.2	0.0	0.0	1.4	2.9	0.3	3.1	0.0	0.0	6.4	
Cars, PU, Vans	58	6156	320	21	0	6555	798	6064	111	76	0	7049	108	63	32	0	0	203	435	43	464	1	0	943	14750
% Cars, PU, Vans	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	0.0	0.0	100.0	100.0	100.0	100.0	0.0	0.0	100.0	100.0	100.0	100.0	0.0	0.0	100.0	100.0

Location: Buford Dr/Hwy 20 & Woodward Crossing Blvd
City: Buford

Day: Tuesday
Date: 08/14/2018

	Buford Dr/Hwy 20 Northbound					Buford Dr/Hwy 20 Southbound					Woodward Crossing Blvd Eastbound					Woodward Crossing Blvd Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM to 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
7:30 AM	1	386	2	1	390	16	380	3	3	402	1	0	1	0	2	8	1	5	0	14	808
7:45 AM	0	390	13	2	405	18	332	5	4	359	0	1	0	0	1	6	1	10	0	17	782
8:00 AM	2	381	12	0	395	28	314	4	0	346	6	2	1	0	9	8	1	6	0	15	765
8:15 AM	1	325	8	0	334	32	347	7	3	389	3	1	1	0	5	10	0	4	0	14	742
Total Volume	4	1482	35	3	1524	94	1373	19	10	1496	10	4	3	0	17	32	3	25	0	60	3097
% App. Total	0.3	97.2	2.3	0.2	100	6.3	91.8	1.3	0.7	100	58.8	23.5	17.6	0.0	100	53.3	5.0	41.7	0.0	100	
PHF	0.941					0.930					0.472					0.882					0.958
Cars, PU, Vans	4	1482	35	3	1524	94	1373	19	10	1496	10	4	3	0	17	32	3	25	0	60	3097
% Cars, PU, Vans	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0

[illegible]

VOLUME

Buford Dr/Hwy 20 Bet. I-85 NB Ramps & Brand Smart Way

Day: Tuesday
Date: 8/14/2018City: Buford
Project #: GA18_9412_001

DAILY TOTALS					NB	SB	EB					WB	Total
					30,520	29,834						0	0
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00	48	78			126		12:00	426	405			831	
00:15	41	66			107		12:15	398	358			756	
00:30	47	54			101		12:30	436	434			870	
00:45	27	163	67	265	94	428	12:45	405	1665	413	1610	818	3275
01:00	16	48			64		13:00	417	401			818	
01:15	20	43			63		13:15	430	451			881	
01:30	34	39			73		13:30	444	464			908	
01:45	25	95	48	178	73	273	13:45	457	1748	421	1737	878	3485
02:00	36	45			81		14:00	403	445			848	
02:15	26	30			56		14:15	452	465			917	
02:30	40	41			81		14:30	499	467			966	
02:45	25	127	29	145	54	272	14:45	443	1797	512	1889	955	3686
03:00	28	39			67		15:00	416	536			952	
03:15	46	30			76		15:15	462	501			963	
03:30	51	37			88		15:30	486	495			981	
03:45	63	188	51	157	114	345	15:45	480	1844	483	2015	963	3859
04:00	66	51			117		16:00	471	535			1006	
04:15	75	54			129		16:15	485	576			1061	
04:30	114	59			173		16:30	497	537			1034	
04:45	140	395	56	220	196	615	16:45	566	2019	573	2221	1139	4240
05:00	137	57			194		17:00	538	574			1112	
05:15	212	101			313		17:15	569	633			1202	
05:30	320	120			440		17:30	561	584			1145	
05:45	360	1029	157	435	517	1464	17:45	528	2196	567	2358	1095	4554
06:00	366	200			566		18:00	483	586			1069	
06:15	433	271			704		18:15	484	577			1061	
06:30	497	263			760		18:30	496	554			1050	
06:45	513	1809	357	1091	870	2900	18:45	437	1900	520	2237	957	4137
07:00	485	379			864		19:00	372	495			867	
07:15	495	389			884		19:15	350	476			826	
07:30	636	462			1098		19:30	350	521			871	
07:45	524	2140	359	1589	883	3729	19:45	332	1404	423	1915	755	3319
08:00	528	377			905		20:00	301	435			736	
08:15	514	351			865		20:15	269	434			703	
08:30	448	397			845		20:30	228	402			630	
08:45	476	1966	339	1464	815	3430	20:45	225	1023	333	1604	558	2627
09:00	468	341			809		21:00	213	420			633	
09:15	460	296			756		21:15	202	394			596	
09:30	452	279			731		21:30	227	331			558	
09:45	477	1857	305	1221	782	3078	21:45	219	861	312	1457	531	2318
10:00	415	330			745		22:00	182	249			431	
10:15	431	300			731		22:15	137	215			352	
10:30	495	340			835		22:30	96	181			277	
10:45	441	1782	331	1301	772	3083	22:45	97	512	160	805	257	1317
11:00	410	313			723		23:00	88	129			217	
11:15	413	362			775		23:15	64	123			187	
11:30	457	371			828		23:30	64	140			204	
11:45	452	1732	369	1415	821	3147	23:45	52	268	113	505	165	773
TOTALS	13283	9481			22764		TOTALS	17237	20353			37590	
SPLIT %	58.4%	41.6%			37.7%		SPLIT %	45.9%	54.1%			62.3%	

DAILY TOTALS					NB	SB						EB	WB	Total	
					30,520	29,834						0	0	60,354	
AM Peak Hour	07:30	07:00			07:15		PM Peak Hour	16:45	17:15			16:45			
AM Pk Volume	2202	1589			3770		PM Pk Volume	2234	2370			4598			
Pk Hr Factor	0.866	0.860			0.858		Pk Hr Factor	0.982	0.936			0.956			
7 - 9 Volume	4106	3053	0	0	7159		4 - 6 Volume	4215	4579	0	0	8794			
7 - 9 Peak Hour	07:30	07:00			07:15		4 - 6 Peak Hour	16:45	16:45			16:45			
7 - 9 Pk Volume	2202	1589	0	0	3770		4 - 6 Pk Volume	2234	2364	0	0	4598			
Pk Hr Factor	0.866	0.860	0.000	0.000	0.858		Pk Hr Factor	0.982	0.934	0.000	0.000	0.956			

VOLUME

Laurel Crossing Pkwy E/O Buford Dr/Hwy 20

Day: Tuesday
Date: 8/14/2018City: Buford
Project #: GA18_9412_002

DAILY TOTALS					NB	SB	EB					WB	Total		
					0	0	975					973	1,948		
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL			
00:00			6	2	8		12:00			9	13	22			
00:15			1	3	4		12:15			14	9	23			
00:30			7	1	8		12:30			16	9	25			
00:45			1	15	1	7	12:45			11	50	14	45		
01:00			0		1		13:00			10		10	20		
01:15			0		1		13:15			9		12	21		
01:30			1		1		13:30			10		10	20		
01:45			3	4	1	4	13:45			14	43	9	41		
02:00			0		2		14:00			6		14	20		
02:15			1		1		14:15			14		7	21		
02:30			3		3		14:30			18		16	34		
02:45			0	4	1	7	14:45			19	57	14	51		
03:00			2		2		15:00			20		13	33		
03:15			2		0		15:15			16		17	33		
03:30			1		0		15:30			17		12	29		
03:45			2	7	1	3	15:45			14	67	11	53		
04:00			3		1		16:00			16		6	22		
04:15			2		3		16:15			14		8	22		
04:30			0		1		16:30			18		16	34		
04:45			1	6	4	9	16:45			19	67	15	45		
05:00			0		4		17:00			18		11	29		
05:15			5		8		17:15			29		13	42		
05:30			2		13		17:30			23		7	30		
05:45			4	11	16	41	17:45			21	91	13	44		
06:00			1		17		18:00			35		12	47		
06:15			0		21		18:15			33		18	51		
06:30			4		28		18:30			25		14	39		
06:45			6	11	26	92	18:45			22	115	10	54		
07:00			3		29		19:00			21		9	30		
07:15			6		26		19:15			31		8	39		
07:30			5		34		19:30			21		17	38		
07:45			5	19	22	111	19:45			18	91	11	45		
08:00			12		19		20:00			21		12	33		
08:15			8		20		20:15			20		13	33		
08:30			4		24		20:30			20		13	33		
08:45			11	35	12	75	20:45			18	79	9	47		
09:00			4		20		21:00			17		9	26		
09:15			4		16		21:15			20		7	27		
09:30			4		11		21:30			9		3	12		
09:45			3	15	9	56	21:45			9	55	6	25		
10:00			11		15		22:00			8		6	14		
10:15			7		9		22:15			17		5	22		
10:30			10		11		22:30			8		9	17		
10:45			4	32	7	42	22:45			11	44	4	24		
11:00			12		7		23:00			9		2	11		
11:15			6		9		23:15			4		4	8		
11:30			6		14		23:30			10		5	15		
11:45			9	33	11	41	23:45			1	24	0	11		
TOTALS	192					488	680	TOTALS	783					485	1268
SPLIT %	28.2%					71.8%	34.9%	SPLIT %	61.8%					38.2%	65.1%

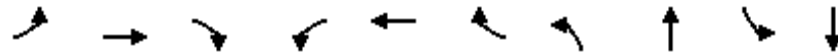
DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						975	973						1,948
AM Peak Hour			11:45	06:45	06:45		PM Peak Hour			18:00	14:30	17:45							
AM Pk Volume			48	115	135		PM Pk Volume			115	60	171							
Pk Hr Factor			0.750	0.846	0.865		Pk Hr Factor			0.821	0.882	0.838							
7 - 9 Volume	0	0	54	186	240		4 - 6 Volume	0	0	158	89	247							
7 - 9 Peak Hour			08:00	07:00	07:00		4 - 6 Peak Hour			17:00	16:30	16:30							
7 - 9 Pk Volume	0	0	35	111	130		4 - 6 Pk Volume	0	0	91	55	139							
Pk Hr Factor	0.000	0.000	0.729	0.816	0.833		Pk Hr Factor	0.000	0.000	0.784	0.859	0.827							

Appendix D: Synchro, HCS, and Signal Timing

Timings

1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

09/15/2018



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	8	5	2	26	4	33	8	1515	81	1352
Future Volume (vph)	8	5	2	26	4	33	8	1515	81	1352
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		1	6	5	2
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	1	6	5	2
Switch Phase										
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	12.0	4.0	12.0
Minimum Split (s)	10.9	13.4	13.4	10.5	13.4	13.4	11.3	25.3	11.3	19.3
Total Split (s)	20.0	24.0	24.0	20.0	24.0	24.0	17.0	76.0	20.0	79.0
Total Split (%)	14.3%	17.1%	17.1%	14.3%	17.1%	17.1%	12.1%	54.3%	14.3%	56.4%
Yellow Time (s)	3.9	4.4	4.4	3.5	4.4	4.4	4.6	4.6	4.6	4.6
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.7	2.7	2.7	2.7
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)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3	7.3	7.3
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 74 (53%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Splits and Phases: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

Ø2 (R)			Ø1			Ø4		Ø3
79 s			17 s			24 s		20 s
Ø5	Ø6 (R)					Ø8		Ø7
20 s	76 s					24 s		20 s

HCM Signalized Intersection Capacity Analysis

1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	5	2	26	4	33	8	1515	36	81	1352	18
Future Volume (vph)	8	5	2	26	4	33	8	1515	36	81	1352	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3		7.3	7.3	
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91		0.97	0.91	
Frt	1.00	1.00	0.85	1.00	0.88	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1557	1504	1770	5067		3433	5075	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1557	1504	1770	5067		3433	5075	
Peak-hour factor, PHF	0.42	0.42	0.42	0.93	0.93	0.93	0.96	0.96	0.96	0.90	0.90	0.90
Adj. Flow (vph)	19	12	5	28	4	35	8	1578	38	90	1502	20
RTOR Reduction (vph)	0	0	5	0	16	18	0	1	0	0	1	0
Lane Group Flow (vph)	19	12	0	28	4	1	8	1615	0	90	1521	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8						
Actuated Green, G (s)	6.1	3.0	3.0	7.8	4.3	4.3	1.9	91.7		9.0	98.8	
Effective Green, g (s)	6.1	3.0	3.0	7.8	4.3	4.3	1.9	91.7		9.0	98.8	
Actuated g/C Ratio	0.04	0.02	0.02	0.06	0.03	0.03	0.01	0.66		0.06	0.71	
Clearance Time (s)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3		7.3	7.3	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	77	39	33	191	47	46	24	3318		220	3581	
v/s Ratio Prot	c0.01	c0.01		0.01	0.00		0.00	c0.32		0.03	c0.30	
v/s Ratio Perm			0.00			0.00						
v/c Ratio	0.25	0.31	0.00	0.15	0.10	0.01	0.33	0.49		0.41	0.42	
Uniform Delay, d1	64.7	67.5	67.0	62.9	66.0	65.8	68.4	12.2		62.9	8.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.62	0.49		1.00	1.00	
Incremental Delay, d2	1.7	4.4	0.0	0.4	0.9	0.1	6.4	0.4		1.2	0.4	
Delay (s)	66.4	71.9	67.1	63.3	66.8	65.9	48.6	6.4		64.2	9.0	
Level of Service	E	E	E	E	E	E	D	A		E	A	
Approach Delay (s)		68.3			65.1			6.6			12.1	
Approach LOS		E			E			A			B	
Intersection Summary												
HCM 2000 Control Delay			11.1									
HCM 2000 Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			140.0									
Intersection Capacity Utilization			56.4%									
Analysis Period (min)			15									
c Critical Lane Group												

Timings

2: Buford Dr NE & Mall of Georgia Blvd

09/17/2018

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	52	30	113	449	20	17	113	1539	206	17	1307
Future Volume (vph)	52	30	113	449	20	17	113	1539	206	17	1307
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	7	4		3	8		1	6		5	2
Permitted Phases			4			8			6		
Detector Phase	7	4	4	3	8	8	1	6	6	5	2
Switch Phase											
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0
Minimum Split (s)	10.6	13.1	13.1	10.6	13.1	13.1	10.9	19.3	19.3	10.9	19.3
Total Split (s)	17.0	21.0	21.0	32.0	36.0	36.0	18.0	70.0	70.0	17.0	69.0
Total Split (%)	12.1%	15.0%	15.0%	22.9%	25.7%	25.7%	12.9%	50.0%	50.0%	12.1%	49.3%
Yellow Time (s)	4.1	5.1	5.1	4.1	5.1	5.1	4.4	5.3	5.3	4.4	5.3
All-Red Time (s)	2.5	2.0	2.0	2.5	2.0	2.0	2.5	2.0	2.0	2.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	7.1	7.1	6.6	7.1	7.1	6.9	7.3	7.3	6.9	7.3
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 140

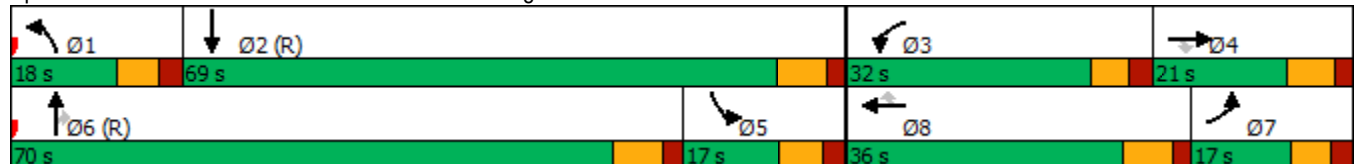
Actuated Cycle Length: 140

Offset: 73 (52%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Splits and Phases: 2: Buford Dr NE & Mall of Georgia Blvd



HCM 6th Signalized Intersection Summary

2: Buford Dr NE & Mall of Georgia Blvd

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	30	113	449	20	17	113	1539	206	17	1307	19
Future Volume (veh/h)	52	30	113	449	20	17	113	1539	206	17	1307	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	62	36	0	499	22	19	120	1637	0	20	1502	22
Peak Hour Factor	0.84	0.84	0.84	0.90	0.90	0.90	0.94	0.94	0.94	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	542	80		555	80	68	170	2513		261	2849	42
Arrive On Green	0.16	0.04	0.00	0.16	0.04	0.04	0.05	0.45	0.00	0.29	1.00	1.00
Sat Flow, veh/h	3456	1870	1585	3456	1870	1585	3563	5611	1585	1781	5185	76
Grp Volume(v), veh/h	62	36	0	499	22	19	120	1637	0	20	986	538
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1728	1870	1585	1781	1870	1585	1781	1702	1857
Q Serve(g_s), s	2.2	2.6	0.0	19.8	1.6	1.4	4.6	31.8	0.0	1.1	0.0	0.0
Cycle Q Clear(g_c), s	2.2	2.6	0.0	19.8	1.6	1.4	4.6	31.8	0.0	1.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	542	80		555	80	68	170	2513		261	1871	1020
V/C Ratio(X)	0.11	0.45		0.90	0.27	0.28	0.70	0.65		0.08	0.53	0.53
Avail Cap(c_a), veh/h	542	186		627	386	327	282	2513		261	1871	1020
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.94	0.94	0.94
Uniform Delay (d), s/veh	50.7	65.4	0.0	57.6	64.9	46.4	65.7	30.1	0.0	42.6	0.0	0.0
Incr Delay (d2), s/veh	0.1	3.9	0.0	14.7	1.8	2.2	5.2	1.3	0.0	0.1	1.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.3	0.0	9.6	0.8	0.7	2.2	14.1	0.0	0.5	0.3	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.8	69.4	0.0	72.4	66.7	48.6	70.9	31.5	0.0	42.7	1.0	1.8
LnGrp LOS	D	E		E	E	D	E	C		D	A	A
Approach Vol, veh/h		98	A		540			1757	A		1544	
Approach Delay, s/veh		57.6			71.3			34.2			1.8	
Approach LOS		E			E			C			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.6	84.2	29.1	13.1	27.8	70.0	29.1	13.1				
Change Period (Y+Rc), s	6.9	7.3	6.6	7.1	7.3	* 7.3	7.1	* 7.1				
Max Green Setting (Gmax), s	11.1	61.7	25.4	13.9	10.1	* 63	10.4	* 29				
Max Q Clear Time (g_c+I1), s	6.6	2.0	21.8	4.6	3.1	33.8	4.2	3.6				
Green Ext Time (p_c), s	0.1	14.0	0.7	0.1	0.0	13.7	0.1	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			27.2									
HCM 6th LOS			C									
Notes												
User approved volume balancing among the lanes for turning movement.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

5: Buford Dr NE & Brand Smart Way

09/15/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	171	67	102	2039	1478	80
Future Volume (vph)	171	67	102	2039	1478	80
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	
Permitted Phases	4	4	6			2
Detector Phase	4	4	1	6	2	2
Switch Phase						
Minimum Initial (s)	6.0	6.0	4.0	12.0	12.0	12.0
Minimum Split (s)	12.2	12.2	9.7	18.1	18.1	18.1
Total Split (s)	25.0	25.0	20.0	115.0	95.0	95.0
Total Split (%)	17.9%	17.9%	14.3%	82.1%	67.9%	67.9%
Yellow Time (s)	3.2	3.2	3.2	4.7	4.7	4.7
All-Red Time (s)	3.0	3.0	2.5	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	5.7	6.1	6.1	6.1
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 140

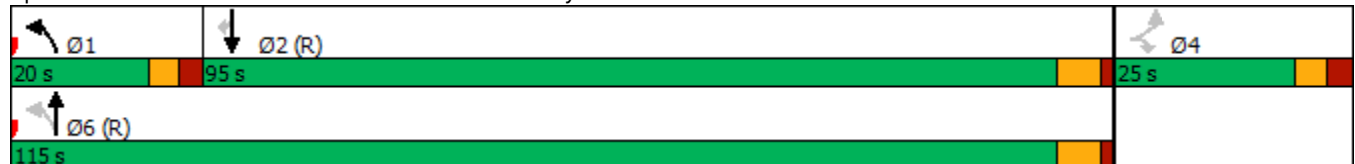
Actuated Cycle Length: 140

Offset: 118 (84%), Referenced to phase 2:SBT and 6:NBTL, Start of 1st Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Splits and Phases: 5: Buford Dr NE & Brand Smart Way



HCM Signalized Intersection Capacity Analysis

5: Buford Dr NE & Brand Smart Way

09/15/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←←	→	←	→→	→→	→
Traffic Volume (vph)	171	67	102	2039	1478	80
Future Volume (vph)	171	67	102	2039	1478	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	5.7	6.1	6.1	6.1
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.08	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	150	3539	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.84	0.84
Adj. Flow (vph)	190	74	113	2266	1760	95
RTOR Reduction (vph)	0	67	0	0	0	23
Lane Group Flow (vph)	190	7	113	2266	1760	72
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	
Permitted Phases	4	4	6			2
Actuated Green, G (s)	13.0	13.0	114.7	114.7	100.2	100.2
Effective Green, g (s)	13.0	13.0	114.7	114.7	100.2	100.2
Actuated g/C Ratio	0.09	0.09	0.82	0.82	0.72	0.72
Clearance Time (s)	6.2	6.2	5.7	6.1	6.1	6.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	318	146	224	2899	2532	1132
v/s Ratio Prot			0.03	0.64	0.50	
v/s Ratio Perm	0.06	0.00	0.38			0.05
v/c Ratio	0.60	0.05	0.50	0.78	0.70	0.06
Uniform Delay, d1	61.0	57.9	13.9	6.4	11.3	5.9
Progression Factor	1.00	1.00	2.55	0.48	0.54	0.50
Incremental Delay, d2	3.0	0.1	1.1	1.3	1.5	0.1
Delay (s)	64.0	58.0	36.5	4.4	7.6	3.0
Level of Service	E	E	D	A	A	A
Approach Delay (s)	62.3			5.9	7.3	
Approach LOS	E			A	A	

Intersection Summary

HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th TWSC
6: Buford Dr NE & Laurel Crossing Pkwy NE

09/15/2018

Intersection						
Int Delay, s/veh	29.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	33	69	2030	15	21	1577
Future Vol, veh/h	33	69	2030	15	21	1577
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	0	0	-	175	325	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	93	93	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	81	2183	16	24	1834
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	3148	1092	0	0	2183	0
Stage 1	2183	-	-	-	-	-
Stage 2	965	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 8	210	-	-	240	-
Stage 1	72	-	-	-	-	-
Stage 2	330	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 7	210	-	-	240	-
Mov Cap-2 Maneuver	~ 7	-	-	-	-	-
Stage 1	65	-	-	-	-	-
Stage 2	330	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, \$	1014.8		0		0.3	
HCM LOS	F					
Minor Lane/Major Mvmt		NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)		-	-	7 210	240	-
HCM Lane V/C Ratio		-	-	5.546 0.387	0.102	-
HCM Control Delay (s)		-	\$	3068.6 32.6	21.7	-
HCM Lane LOS		-	-	F D	C	-
HCM 95th %tile Q(veh)		-	-	6.3 1.7	0.3	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Timings

7: Buford Dr NE & Rock Springs Rd

09/15/2018

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 						 			 	
Traffic Volume (vph)	246	19	86	73	39	76	1570	9	27	1390	181
Future Volume (vph)	246	19	86	73	39	76	1570	9	27	1390	181
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8	1	6		5	2	
Permitted Phases	4		4	8		6		6	2		2
Detector Phase	7	4	4	8	8	1	6	6	5	2	2
Switch Phase											
Minimum Initial (s)	4.0	6.0	6.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0	12.0
Minimum Split (s)	11.0	12.5	12.5	14.0	14.0	10.8	19.3	19.3	12.0	19.3	19.3
Total Split (s)	23.0	46.0	46.0	23.0	23.0	17.0	77.0	77.0	17.0	77.0	77.0
Total Split (%)	16.4%	32.9%	32.9%	16.4%	16.4%	12.1%	55.0%	55.0%	12.1%	55.0%	55.0%
Yellow Time (s)	4.0	3.5	3.5	5.0	5.0	3.8	4.7	4.7	5.0	4.7	4.7
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.6	2.6	3.0	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	6.5	6.5	8.0	8.0	6.8	7.3	7.3	8.0	7.3	7.3
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 140

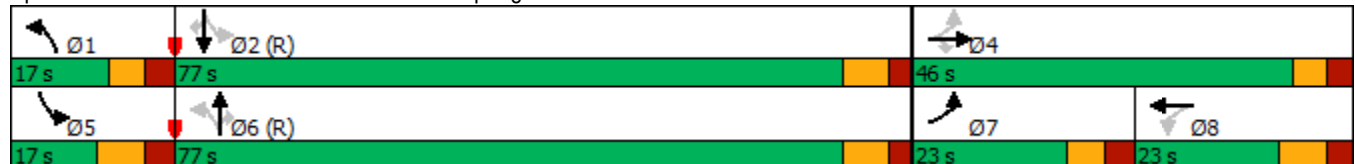
Actuated Cycle Length: 140

Offset: 110 (79%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Splits and Phases: 7: Buford Dr NE & Rock Springs Rd



HCM 6th Signalized Intersection Summary

7: Buford Dr NE & Rock Springs Rd

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	246	19	86	73	39	237	76	1570	9	27	1390	181
Future Volume (veh/h)	246	19	86	73	39	237	76	1570	9	27	1390	181
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	286	22	0	92	49	300	80	1653	0	29	1479	0
Peak Hour Factor	0.86	0.86	0.86	0.79	0.79	0.79	0.95	0.95	0.95	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	408	459		200	24	149	311	2022		256	2005	
Arrive On Green	0.09	0.25	0.00	0.11	0.11	0.11	0.06	1.00	0.00	0.04	1.00	0.00
Sat Flow, veh/h	3456	1870	1585	1390	227	1392	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	286	22	0	92	0	349	80	1653	0	29	1479	0
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1390	0	1620	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	10.0	1.3	0.0	8.9	0.0	15.0	2.7	0.0	0.0	1.0	0.0	0.0
Cycle Q Clear(g_c), s	10.0	1.3	0.0	8.9	0.0	15.0	2.7	0.0	0.0	1.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.86	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	408	459		200	0	174	311	2022		256	2005	
V/C Ratio(X)	0.70	0.05		0.46	0.00	2.01	0.26	0.82		0.11	0.74	
Avail Cap(c_a), veh/h	498	528		200	0	174	383	2022		336	2005	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	0.83	0.83	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.7	40.3	0.0	59.8	0.0	62.5	11.5	0.0	0.0	12.1	0.0	0.0
Incr Delay (d2), s/veh	3.4	0.0	0.0	1.6	0.0	474.7	0.4	3.2	0.0	0.2	2.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.6	0.0	3.2	0.0	29.0	1.0	0.9	0.0	0.4	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.1	40.4	0.0	61.4	0.0	537.2	11.9	3.2	0.0	12.3	2.5	0.0
LnGrp LOS	D	D		E	A	F	B	A		B	A	
Approach Vol, veh/h	308			A			441			1733		
Approach Delay, s/veh	51.2			438.0			3.6			2.7		
Approach LOS	D			F			A			A		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.3	86.3		42.4	10.7	86.9	19.4	23.0				
Change Period (Y+Rc), s	* 6.8	* 7.3		* 8	8.0	* 7.3	7.0	8.0				
Max Green Setting (Gmax), s	* 10	* 70		* 40	9.0	* 70	16.0	15.0				
Max Q Clear Time (g_c+I1), s	4.7	2.0		3.3	3.0	2.0	12.0	17.0				
Green Ext Time (p_c), s	0.1	15.2		0.1	0.0	18.9	0.4	0.0				

Intersection Summary

HCM 6th Ctrl Delay 54.9

HCM 6th LOS D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

8: Buford Dr NE & Tech Center Pkwy NE

09/15/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗	↖	↖	↕	↕	↖
Traffic Volume (vph)	105	38	45	1525	1437	123
Future Volume (vph)	105	38	45	1525	1437	123
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	8		1	6	2	
Permitted Phases		8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	6.0	6.0	4.0	20.0	20.0	20.0
Minimum Split (s)	12.4	12.4	10.0	26.6	26.6	26.6
Total Split (s)	30.0	30.0	19.0	110.0	91.0	91.0
Total Split (%)	21.4%	21.4%	13.6%	78.6%	65.0%	65.0%
Yellow Time (s)	3.5	3.5	3.3	5.0	5.0	5.0
All-Red Time (s)	2.9	2.9	2.7	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.0	6.6	6.6	6.6
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 140

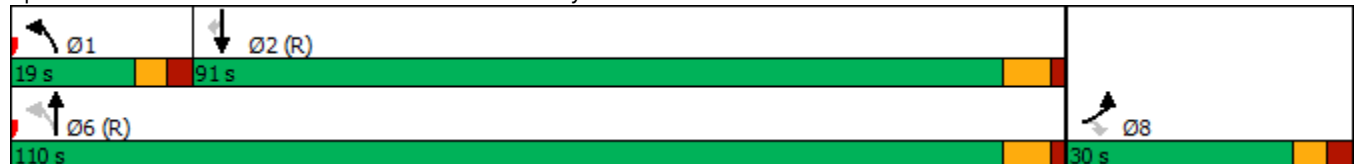
Actuated Cycle Length: 140

Offset: 74 (53%), Referenced to phase 2:SBT and 6:NBTL, Start of 1st Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Splits and Phases: 8: Buford Dr NE & Tech Center Pkwy NE



HCM 6th Signalized Intersection Summary

8: Buford Dr NE & Tech Center Pkwy NE

09/15/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔↔	↔	↔	↑↑	↑↑	↔
Traffic Volume (veh/h)	105	38	45	1525	1437	123
Future Volume (veh/h)	105	38	45	1525	1437	123
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	133	0	46	1572	1633	0
Peak Hour Factor	0.79	0.79	0.97	0.97	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	187		336	3031	2794	
Arrive On Green	0.05	0.00	0.05	1.00	1.00	0.00
Sat Flow, veh/h	3456	1585	1781	3647	3647	1585
Grp Volume(v), veh/h	133	0	46	1572	1633	0
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777	1777	1585
Q Serve(g_s), s	5.3	0.0	0.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.3	0.0	0.7	0.0	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	187		336	3031	2794	
V/C Ratio(X)	0.71		0.14	0.52	0.58	
Avail Cap(c_a), veh/h	583		459	3031	2794	
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.84	0.84	0.56	0.00
Uniform Delay (d), s/veh	65.1	0.0	2.2	0.0	0.0	0.0
Incr Delay (d2), s/veh	4.9	0.0	0.2	0.5	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.2	0.2	0.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	70.0	0.0	2.3	0.5	0.5	0.0
LnGrp LOS	E		A	A	A	
Approach Vol, veh/h	133	A		1618	1633	A
Approach Delay, s/veh	70.0			0.6	0.5	
Approach LOS	E			A	A	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.3	116.7			126.0	14.0
Change Period (Y+Rc), s	6.0	* 6.6			* 6.6	6.4
Max Green Setting (Gmax), s	13.0	* 84			* 1E2	23.6
Max Q Clear Time (g_c+I1), s	2.7	2.0			2.0	7.3
Green Ext Time (p_c), s	0.0	18.9			17.7	0.3

Intersection Summary

HCM 6th Ctrl Delay	3.3
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

9: Buford Dr NE & Braves Ave

09/15/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3	Ø5
Lane Configurations								
Traffic Volume (vph)	21	16	12	1564	1457	4		
Future Volume (vph)	21	16	12	1564	1457	4		
Turn Type	Prot	Perm	Prot	NA	NA	Perm		
Protected Phases	4		1	6	2		3	5
Permitted Phases		4				2		
Detector Phase	4	4	1	6	2	2		
Switch Phase								
Minimum Initial (s)	6.0	6.0	4.0	12.0	12.0	12.0	1.0	4.0
Minimum Split (s)	12.4	12.4	10.3	18.9	18.9	18.9	5.5	9.6
Total Split (s)	28.0	28.0	15.0	86.0	88.0	88.0	9.0	17.0
Total Split (%)	20.0%	20.0%	10.7%	61.4%	62.9%	62.9%	6%	12%
Yellow Time (s)	3.4	3.4	3.7	5.4	5.4	5.4	2.0	3.0
All-Red Time (s)	3.0	3.0	2.6	1.5	1.5	1.5	0.0	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.4	6.4	6.3	6.9	6.9	6.9		
Lead/Lag	Lag	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max	None	None

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 89 (64%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Splits and Phases: 9: Buford Dr NE & Braves Ave



HCM Signalized Intersection Capacity Analysis

9: Buford Dr NE & Braves Ave

09/15/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	16	12	1564	1457	4
Future Volume (vph)	21	16	12	1564	1457	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4	6.3	6.9	6.9	6.9
Lane Util. Factor	1.00	1.00	0.97	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	3433	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	3433	3539	3539	1583
Peak-hour factor, PHF	0.77	0.77	0.96	0.96	0.86	0.86
Adj. Flow (vph)	27	21	12	1629	1694	5
RTOR Reduction (vph)	0	20	0	0	0	1
Lane Group Flow (vph)	27	1	13	1629	1694	4
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		1	6	2	
Permitted Phases		4				2
Actuated Green, G (s)	6.6	6.6	2.7	120.1	111.1	111.1
Effective Green, g (s)	6.6	6.6	2.7	120.1	111.1	111.1
Actuated g/C Ratio	0.05	0.05	0.02	0.86	0.79	0.79
Clearance Time (s)	6.4	6.4	6.3	6.9	6.9	6.9
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	83	74	66	3035	2808	1256
v/s Ratio Prot	c0.02		0.00	c0.46	c0.48	
v/s Ratio Perm		0.00				0.00
v/c Ratio	0.33	0.01	0.20	0.54	0.60	0.00
Uniform Delay, d1	64.5	63.6	67.6	2.6	5.7	3.0
Progression Factor	1.00	1.00	1.37	0.42	1.21	2.14
Incremental Delay, d2	2.3	0.1	1.0	0.5	0.8	0.0
Delay (s)	66.8	63.7	93.3	1.6	7.7	6.4
Level of Service	E	E	F	A	A	A
Approach Delay (s)	65.4			2.3	7.7	
Approach LOS	E			A	A	

Intersection Summary

HCM 2000 Control Delay	5.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.6
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Timings

10: Buford Dr NE & Old Peachtree Rd NE

09/15/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	152	103	144	393	363	109	1103	64	126	1270	40
Future Volume (vph)	92	152	103	144	393	363	109	1103	64	126	1270	40
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8			6			2
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	15.0	15.0	4.0	15.0	15.0
Minimum Split (s)	10.5	13.4	13.4	10.5	13.4	13.4	10.6	21.6	21.6	10.5	21.6	21.6
Total Split (s)	17.0	42.0	42.0	15.0	40.0	40.0	22.0	66.0	66.0	17.0	61.0	61.0
Total Split (%)	12.1%	30.0%	30.0%	10.7%	28.6%	28.6%	15.7%	47.1%	47.1%	12.1%	43.6%	43.6%
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	4.7	4.7	4.7	3.5	4.7	4.7
All-Red Time (s)	3.0	2.9	2.9	3.0	2.9	2.9	1.9	1.9	1.9	3.0	1.9	1.9
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)	6.5	7.4	7.4	6.5	7.4	7.4	6.6	6.6	6.6	6.5	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 140

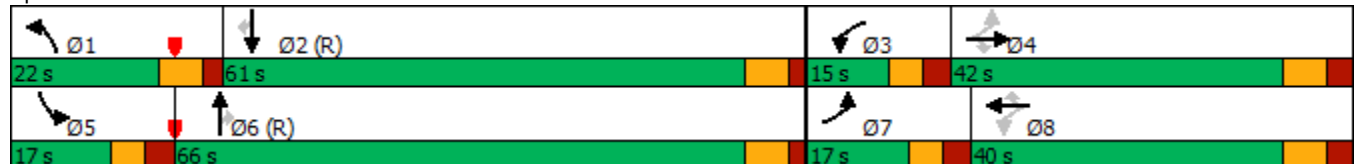
Actuated Cycle Length: 140

Offset: 43 (31%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Splits and Phases: 10: Buford Dr NE & Old Peachtree Rd NE



HCM 6th Signalized Intersection Summary 10: Buford Dr NE & Old Peachtree Rd NE

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	152	103	144	393	363	109	1103	64	126	1270	40
Future Volume (veh/h)	92	152	103	144	393	363	109	1103	64	126	1270	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	163	111	152	414	382	115	1161	67	140	1411	44
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	161	426	361	330	436	369	138	1648	735	190	1565	698
Arrive On Green	0.06	0.23	0.23	0.06	0.23	0.23	0.08	0.46	0.46	0.02	0.15	0.15
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	99	163	111	152	414	382	115	1161	67	140	1411	44
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	5.9	10.3	8.1	8.5	30.5	32.6	8.9	36.4	3.3	5.6	54.7	3.4
Cycle Q Clear(g_c), s	5.9	10.3	8.1	8.5	30.5	32.6	8.9	36.4	3.3	5.6	54.7	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	161	426	361	330	436	369	138	1648	735	190	1565	698
V/C Ratio(X)	0.62	0.38	0.31	0.46	0.95	1.03	0.83	0.70	0.09	0.74	0.90	0.06
Avail Cap(c_a), veh/h	195	462	392	330	436	369	196	1648	735	259	1565	698
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80
Uniform Delay (d), s/veh	41.6	45.7	44.9	39.9	52.9	53.7	63.7	29.9	21.0	67.7	56.8	34.9
Incr Delay (d2), s/veh	4.0	0.6	0.5	1.0	30.8	56.2	18.2	2.6	0.2	5.6	7.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	4.8	3.2	4.1	17.7	18.4	4.6	15.3	1.3	2.7	27.6	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.6	46.3	45.4	40.9	83.7	109.9	81.9	32.5	21.3	73.3	64.1	35.1
LnGrp LOS	D	D	D	D	F	F	F	C	C	E	E	D
Approach Vol, veh/h	373			948			1343			1595		
Approach Delay, s/veh	45.8			87.4			36.1			64.1		
Approach LOS	D			F			D			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.5	68.2	15.0	39.3	14.2	71.5	14.3	40.0				
Change Period (Y+Rc), s	* 6.6	* 6.6	6.5	7.4	6.5	* 6.6	6.5	7.4				
Max Green Setting (Gmax), s	* 15	* 54	8.5	34.6	10.5	* 59	10.5	32.6				
Max Q Clear Time (g_c+I1), s	10.9	56.7	10.5	12.3	7.6	38.4	7.9	34.6				
Green Ext Time (p_c), s	0.1	0.0	0.0	1.1	0.1	8.0	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay 58.9

HCM 6th LOS E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queuing and Blocking Report
Existing AM

09/15/2018

Intersection: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	L	TR	R	L	T	T	TR	L
Maximum Queue (ft)	52	28	24	49	93	72	48	28	189	236	244	118
Average Queue (ft)	9	9	1	4	22	20	5	7	83	100	117	11
95th Queue (ft)	34	29	8	22	59	55	24	24	162	186	204	33
Link Distance (ft)	330	330	330			1590	1590		3054	3054	3054	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				250	250	300			500			
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

Movement	SB	SB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	131	581	582	482
Average Queue (ft)	49	78	71	42
95th Queue (ft)	93	265	259	198
Link Distance (ft)		1465	1465	1465
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	500			
Storage Blk Time (%)		1		
Queuing Penalty (veh)		1		

Queuing and Blocking Report
Existing AM

09/15/2018

Intersection: 2: Buford Dr NE & Mall of Georgia Blvd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	L	L	T	R	L	L	T	T	TR
Maximum Queue (ft)	50	29	72	323	358	41	39	81	141	278	305	326
Average Queue (ft)	24	3	32	177	225	11	10	35	61	153	176	182
95th Queue (ft)	54	15	68	261	302	33	24	72	102	240	259	271
Link Distance (ft)	1056	1056	1056			1308				979	979	979
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				275	275		400	375	375			
Storage Blk Time (%)				0	2							
Queuing Penalty (veh)				0	1							

Intersection: 2: Buford Dr NE & Mall of Georgia Blvd

Movement	SB	SB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	398	518	547	492
Average Queue (ft)	37	160	179	156
95th Queue (ft)	156	299	327	292
Link Distance (ft)		3054	3054	3054
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	300			
Storage Blk Time (%)		1		
Queuing Penalty (veh)		0		

Intersection: 3: Buford Dr NE & I-85 SB Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Queuing and Blocking Report
Existing AM

09/15/2018

Intersection: 4: Buford Dr NE & I-85 NB Ramp

Movement	WB
Directions Served	R
Maximum Queue (ft)	1076
Average Queue (ft)	531
95th Queue (ft)	983
Link Distance (ft)	1061
Upstream Blk Time (%)	7
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Buford Dr NE & Brand Smart Way

Movement	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	L	R	L	T	T	T	T
Maximum Queue (ft)	135	122	56	92	243	287	271	246
Average Queue (ft)	79	72	4	54	93	125	102	129
95th Queue (ft)	125	112	27	84	183	213	192	211
Link Distance (ft)	864	864	864		1166	1166	1076	1076
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)				300				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 6: Buford Dr NE & Laurel Crossing Pkwy NE

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	291	99	53
Average Queue (ft)	202	4	9
95th Queue (ft)	319	34	29
Link Distance (ft)	3679	3679	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			325
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report
Existing AM

09/15/2018

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	EB	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	T	R	L	TR	L	T	T	L	T	T
Maximum Queue (ft)	216	194	41	61	300	1082	249	412	387	66	572	570
Average Queue (ft)	88	98	9	8	169	514	51	187	182	18	363	399
95th Queue (ft)	141	160	30	34	385	954	150	319	314	46	497	546
Link Distance (ft)	2600	2600	2600			2242		412	412		1184	1184
Upstream Blk Time (%)								0				
Queuing Penalty (veh)								1				
Storage Bay Dist (ft)				150	200		175			225		
Storage Blk Time (%)						74		10	15		22	35
Queuing Penalty (veh)						54		7	1		6	63

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	SB
Directions Served	R
Maximum Queue (ft)	175
Average Queue (ft)	87
95th Queue (ft)	230
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	75
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Buford Dr NE & Tech Center Pkwy NE

Movement	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	L	R	L	T	T	T	T
Maximum Queue (ft)	93	96	56	115	98	108	140	118
Average Queue (ft)	46	42	4	42	34	46	80	76
95th Queue (ft)	85	85	28	88	84	95	130	119
Link Distance (ft)	2083	2083	2083		1479	1479	412	412
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)				250				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Queuing and Blocking Report

Existing AM

09/15/2018

Intersection: 9: Buford Dr NE & Braves Ave

Movement	EB	NB	NB	NB	SB	SB
Directions Served	L	L	T	T	T	T
Maximum Queue (ft)	73	75	51	75	265	264
Average Queue (ft)	20	18	5	14	72	85
95th Queue (ft)	55	40	25	57	191	220
Link Distance (ft)	766		1552	1552	1479	1479
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		850				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	L
Maximum Queue (ft)	130	235	102	275	940	500	156	461	470	49	80	86
Average Queue (ft)	64	105	36	156	409	223	92	301	285	13	36	57
95th Queue (ft)	116	204	84	323	742	478	158	401	401	38	74	84
Link Distance (ft)	2063	2063			2738			1230	1230			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			300	225		400	375			375	375	375
Storage Blk Time (%)					41			2	2			
Queuing Penalty (veh)					206			3	1			

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	557	551	135
Average Queue (ft)	364	378	16
95th Queue (ft)	560	567	84
Link Distance (ft)	1552	1552	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			110
Storage Blk Time (%)	9	41	0
Queuing Penalty (veh)	11	16	0

Network Summary

Network wide Queuing Penalty: 372

Timings

1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

09/15/2018

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	46	32	16	188	16	194	37	1708	345	1852
Future Volume (vph)	46	32	16	188	16	194	37	1708	345	1852
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		1	6	5	2
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	1	6	5	2
Switch Phase										
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	12.0	4.0	12.0
Minimum Split (s)	10.9	13.4	13.4	10.5	13.4	13.4	11.3	25.3	11.3	19.3
Total Split (s)	23.0	25.0	25.0	27.0	29.0	29.0	18.0	105.0	43.0	130.0
Total Split (%)	11.5%	12.5%	12.5%	13.5%	14.5%	14.5%	9.0%	52.5%	21.5%	65.0%
Yellow Time (s)	3.9	4.4	4.4	3.5	4.4	4.4	4.6	4.6	4.6	4.6
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.7	2.7	2.7	2.7
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)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3	7.3	7.3
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary

Cycle Length: 200

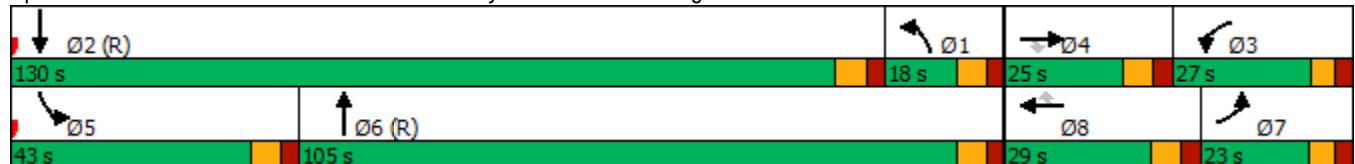
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Splits and Phases: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd



HCM Signalized Intersection Capacity Analysis

1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	32	16	188	16	194	37	1708	133	345	1852	44
Future Volume (vph)	46	32	16	188	16	194	37	1708	133	345	1852	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3		7.3	7.3	
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91		0.97	0.91	
Frt	1.00	1.00	0.85	1.00	0.87	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1545	1504	1770	5030		3433	5068	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1545	1504	1770	5030		3433	5068	
Peak-hour factor, PHF	0.73	0.73	0.73	0.82	0.82	0.82	0.90	0.90	0.90	0.95	0.95	0.95
Adj. Flow (vph)	63	44	22	229	20	237	41	1898	148	363	1949	46
RTOR Reduction (vph)	0	0	21	0	104	122	0	4	0	0	1	0
Lane Group Flow (vph)	63	44	1	229	25	6	41	2042	0	363	1994	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8						
Actuated Green, G (s)	18.8	8.8	8.8	20.1	9.7	9.7	8.6	116.2		26.4	134.0	
Effective Green, g (s)	18.8	8.8	8.8	20.1	9.7	9.7	8.6	116.2		26.4	134.0	
Actuated g/C Ratio	0.09	0.04	0.04	0.10	0.05	0.05	0.04	0.58		0.13	0.67	
Clearance Time (s)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3		7.3	7.3	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	166	81	69	345	74	72	76	2922		453	3395	
v/s Ratio Prot	0.04	c0.02		c0.07	0.02		0.02	c0.41		c0.11	0.39	
v/s Ratio Perm			0.00			0.00						
v/c Ratio	0.38	0.54	0.01	0.66	0.34	0.09	0.54	0.70		0.80	0.59	
Uniform Delay, d1	85.1	93.6	91.5	86.7	92.1	90.9	93.8	29.6		84.3	18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.28		1.00	1.00	
Incremental Delay, d2	1.5	7.2	0.1	4.8	2.8	0.5	4.9	1.0		9.8	0.8	
Delay (s)	86.6	100.9	91.5	91.4	94.8	91.4	67.4	9.2		94.1	18.7	
Level of Service	F	F	F	F	F	F	E	A		F	B	
Approach Delay (s)		92.3			92.3			10.3			30.3	
Approach LOS		F			F			B			C	
Intersection Summary												
HCM 2000 Control Delay			29.6									
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			200.0									
Intersection Capacity Utilization			76.2%									
Analysis Period (min)			15									

c Critical Lane Group

Timings

2: Buford Dr NE & Mall of Georgia Blvd

09/17/2018

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	 			 			 	  			  
Traffic Volume (vph)	171	170	387	372	109	85	363	1711	755	51	1852
Future Volume (vph)	171	170	387	372	109	85	363	1711	755	51	1852
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	7	4		3	8		1	6		5	2
Permitted Phases			4			8			6		
Detector Phase	7	4	4	3	8	8	1	6	6	5	2
Switch Phase											
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0
Minimum Split (s)	10.6	13.1	13.1	10.6	13.1	13.1	10.9	19.3	19.3	10.9	19.3
Total Split (s)	27.0	30.0	30.0	35.0	38.0	38.0	32.0	116.0	116.0	19.0	103.0
Total Split (%)	13.5%	15.0%	15.0%	17.5%	19.0%	19.0%	16.0%	58.0%	58.0%	9.5%	51.5%
Yellow Time (s)	4.1	5.1	5.1	4.1	5.1	5.1	4.4	5.3	5.3	4.4	5.3
All-Red Time (s)	2.5	2.0	2.0	2.5	2.0	2.0	2.5	2.0	2.0	2.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	7.1	7.1	6.6	7.1	7.1	6.9	7.3	7.3	6.9	7.3
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 200

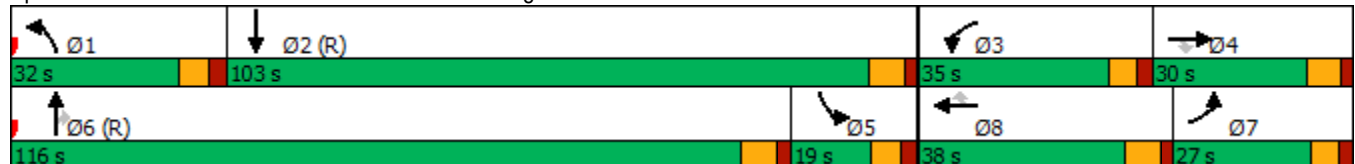
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Splits and Phases: 2: Buford Dr NE & Mall of Georgia Blvd



HCM 6th Signalized Intersection Summary

2: Buford Dr NE & Mall of Georgia Blvd

09/17/2018

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations	 			 			 	  			  			
Traffic Volume (veh/h)	171	170	387	372	109	85	363	1711	755	51	1852	173		
Future Volume (veh/h)	171	170	387	372	109	85	363	1711	755	51	1852	173		
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Work Zone On Approach	No			No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870		
Adj Flow Rate, veh/h	192	191	0	428	125	98	382	2020	0	59	2129	199		
Peak Hour Factor	0.89	0.89	0.89	0.87	0.87	0.87	0.95	0.95	0.95	0.87	0.87	0.87		
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2		
Cap, veh/h	564	208		463	149	126	418	3050		124	2367	219		
Arrive On Green	0.16	0.11	0.00	0.13	0.08	0.08	0.12	0.54	0.00	0.14	1.00	1.00		
Sat Flow, veh/h	3456	1870	1585	3456	1870	1585	3563	5611	1585	1781	4756	440		
Grp Volume(v), veh/h	192	191	0	428	125	98	382	2020	0	59	1517	811		
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1728	1870	1585	1781	1870	1585	1781	1702	1791		
Q Serve(g_s), s	9.8	20.2	0.0	24.5	13.2	9.7	21.2	51.4	0.0	6.1	3.8	4.4		
Cycle Q Clear(g_c), s	9.8	20.2	0.0	24.5	13.2	9.7	21.2	51.4	0.0	6.1	3.8	4.4		
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.25		
Lane Grp Cap(c), veh/h	564	208		463	149	126	418	3050		124	1694	891		
V/C Ratio(X)	0.34	0.92		0.92	0.84	0.78	0.91	0.66		0.48	0.90	0.91		
Avail Cap(c_a), veh/h	564	214		491	289	245	447	3050		124	1694	891		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.79	0.79	0.79		
Uniform Delay (d), s/veh	74.1	87.9	0.0	85.6	90.8	57.3	87.3	32.6	0.0	82.7	0.2	0.2		
Incr Delay (d2), s/veh	0.4	38.8	0.0	22.7	11.7	9.7	22.3	1.1	0.0	2.2	6.3	12.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.4	12.1	0.0	12.3	6.9	4.2	11.0	23.0	0.0	2.8	1.7	3.2		
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh	74.5	126.8	0.0	108.3	102.5	67.0	109.5	33.7	0.0	85.0	6.6	12.5		
LnGrp LOS	E	F		F	F	E	F	C		F	A	B		
Approach Vol, veh/h	383		A	651			2402		A	2387				
Approach Delay, s/veh	100.6			100.9			45.8			10.5				
Approach LOS	F			F			D			B				
Timer - Assigned Phs	1	2	3	4	5	6	7	8						
Phs Duration (G+Y+Rc), s	30.4	106.8	33.4	29.4	21.2	116.0	39.8	23.0						
Change Period (Y+Rc), s	6.9	7.3	6.6	7.1	7.3	* 7.3	7.1	* 7.1						
Max Green Setting (Gmax), s	25.1	95.7	28.4	22.9	12.1	* 1.1E2	20.4	* 31						
Max Q Clear Time (g_c+I1), s	23.2	6.4	26.5	22.2	8.1	53.4	11.8	15.2						
Green Ext Time (p_c), s	0.3	35.1	0.3	0.1	0.0	24.1	0.4	0.7						

Intersection Summary

HCM 6th Ctrl Delay	41.1
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

5: Buford Dr NE & Brand Smart Way

09/15/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	148	79	110	2091	2223	168
Future Volume (vph)	148	79	110	2091	2223	168
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	
Permitted Phases	4	4	6			2
Detector Phase	4	4	1	6	2	2
Switch Phase						
Minimum Initial (s)	6.0	6.0	4.0	12.0	12.0	12.0
Minimum Split (s)	12.2	12.2	9.7	18.1	18.1	18.1
Total Split (s)	35.0	35.0	25.0	165.0	140.0	140.0
Total Split (%)	17.5%	17.5%	12.5%	82.5%	70.0%	70.0%
Yellow Time (s)	3.2	3.2	3.2	4.7	4.7	4.7
All-Red Time (s)	3.0	3.0	2.5	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	5.7	6.1	6.1	6.1
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 200

Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of 1st Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Splits and Phases: 5: Buford Dr NE & Brand Smart Way

Ø1	Ø2 (R)	Ø4
25 s	140 s	35 s
Ø6 (R)		
165 s		

HCM Signalized Intersection Capacity Analysis

5: Buford Dr NE & Brand Smart Way

09/15/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	148	79	110	2091	2223	168
Future Volume (vph)	148	79	110	2091	2223	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	5.7	6.1	6.1	6.1
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.03	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	47	3539	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.96	0.96	0.93	0.93
Adj. Flow (vph)	164	88	115	2178	2390	181
RTOR Reduction (vph)	0	81	0	0	0	20
Lane Group Flow (vph)	164	7	115	2178	2390	161
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	
Permitted Phases	4	4	6			2
Actuated Green, G (s)	14.9	14.9	172.8	172.8	153.6	153.6
Effective Green, g (s)	14.9	14.9	172.8	172.8	153.6	153.6
Actuated g/C Ratio	0.07	0.07	0.86	0.86	0.77	0.77
Clearance Time (s)	6.2	6.2	5.7	6.1	6.1	6.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	255	117	156	3057	2717	1215
v/s Ratio Prot			0.05	c0.62	c0.68	
v/s Ratio Perm	c0.05	0.00	0.59			0.10
v/c Ratio	0.64	0.06	0.74	0.71	0.88	0.13
Uniform Delay, d1	90.0	86.0	72.3	4.8	16.6	6.0
Progression Factor	1.00	1.00	1.10	0.70	0.86	1.33
Incremental Delay, d2	5.5	0.2	11.7	1.0	2.9	0.1
Delay (s)	95.4	86.2	91.5	4.4	17.2	8.1
Level of Service	F	F	F	A	B	A
Approach Delay (s)	92.2			8.7	16.6	
Approach LOS	F			A	B	

Intersection Summary

HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	200.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th TWSC
6: Buford Dr NE & Laurel Crossing Pkwy NE

09/15/2018

Intersection							
Int Delay, s/veh	47.5						
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations							
Traffic Vol, veh/h	18	43	2142	44	87	2256	
Future Vol, veh/h	18	43	2142	44	87	2256	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	Yield	-	Yield	-	None	
Storage Length	0	0	-	175	325	-	
Veh in Median Storage, #	0	-	0	-	-	0	
Grade, %	0	-	0	-	-	0	
Peak Hour Factor	69	69	96	96	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	26	62	2231	46	95	2452	
Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	3647	1116	0	0	2231	0	
Stage 1	2231	-	-	-	-	-	
Stage 2	1416	-	-	-	-	-	
Critical Hdwy	6.84	6.94	-	-	4.14	-	
Critical Hdwy Stg 1	5.84	-	-	-	-	-	
Critical Hdwy Stg 2	5.84	-	-	-	-	-	
Follow-up Hdwy	3.52	3.32	-	-	2.22	-	
Pot Cap-1 Maneuver	~ 4	202	-	-	229	-	
Stage 1	67	-	-	-	-	-	
Stage 2	190	-	-	-	-	-	
Platoon blocked, %			-	-		-	
Mov Cap-1 Maneuver	~ 2	202	-	-	229	-	
Mov Cap-2 Maneuver	~ 2	-	-	-	-	-	
Stage 1	39	-	-	-	-	-	
Stage 2	190	-	-	-	-	-	
Approach	WB		NB		SB		
HCM Control Delay, \$	2602.5		0		1.2		
HCM LOS	F						
Minor Lane/Major Mvmt		NBT	NBRWBLn1	WBLn2	SBL	SBT	
Capacity (veh/h)		-	-	2	202	229	-
HCM Lane V/C Ratio		-	-	13.043	0.309	0.413	-
HCM Control Delay (s)		-	\$	8746.6	30.6	31.4	-
HCM Lane LOS		-	-	F	D	D	-
HCM 95th %tile Q(veh)		-	-	5	1.2	1.9	-
Notes							
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon	

Timings

7: Buford Dr NE & Rock Springs Rd

09/15/2018

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	33	23	106	33	23	60	1717	55	194	1841	244
Future Volume (vph)	33	23	106	33	23	60	1717	55	194	1841	244
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8	1	6		5	2	
Permitted Phases	4		4	8		6		6	2		2
Detector Phase	7	4	4	8	8	1	6	6	5	2	2
Switch Phase											
Minimum Initial (s)	4.0	6.0	6.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0	12.0
Minimum Split (s)	11.0	12.5	12.5	14.0	14.0	10.8	19.3	19.3	12.0	19.3	19.3
Total Split (s)	28.0	48.0	48.0	20.0	20.0	17.0	117.0	117.0	35.0	135.0	135.0
Total Split (%)	14.0%	24.0%	24.0%	10.0%	10.0%	8.5%	58.5%	58.5%	17.5%	67.5%	67.5%
Yellow Time (s)	4.0	3.5	3.5	5.0	5.0	3.8	4.7	4.7	5.0	4.7	4.7
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.6	2.6	3.0	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	6.5	6.5	8.0	8.0	6.8	7.3	7.3	8.0	7.3	7.3
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 200

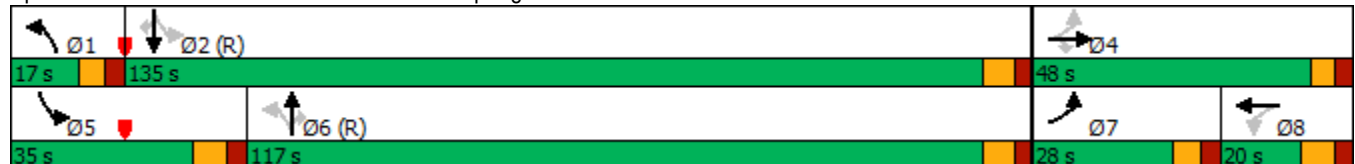
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Splits and Phases: 7: Buford Dr NE & Rock Springs Rd



HCM 6th Signalized Intersection Summary

7: Buford Dr NE & Rock Springs Rd

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	23	106	33	23	106	60	1717	55	194	1841	244
Future Volume (veh/h)	33	23	106	33	23	106	60	1717	55	194	1841	244
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	30	0	38	27	123	66	1887	0	206	1959	0
Peak Hour Factor	0.77	0.77	0.77	0.86	0.86	0.86	0.91	0.91	0.91	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	215		119	18	80	233	2570		291	2683	
Arrive On Green	0.02	0.11	0.00	0.06	0.06	0.06	0.04	1.00	0.00	0.09	1.00	0.00
Sat Flow, veh/h	3456	1870	1585	1380	293	1336	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	43	30	0	38	0	150	66	1887	0	206	1959	0
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1380	0	1630	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	2.3	2.9	0.0	5.3	0.0	12.0	2.0	0.0	0.0	6.6	0.0	0.0
Cycle Q Clear(g_c), s	2.3	2.9	0.0	5.3	0.0	12.0	2.0	0.0	0.0	6.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.82	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	140	215		119	0	98	233	2570		291	2683	
V/C Ratio(X)	0.31	0.14		0.32	0.00	1.53	0.28	0.73		0.71	0.73	
Avail Cap(c_a), veh/h	435	388		119	0	98	289	2570		450	2683	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	0.78	0.78	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	84.4	79.6	0.0	90.9	0.0	94.0	6.7	0.0	0.0	5.8	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.3	0.0	1.5	0.0	284.9	0.5	1.5	0.0	3.2	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.4	0.0	2.0	0.0	12.8	0.7	0.5	0.0	2.2	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	85.6	79.9	0.0	92.4	0.0	378.9	7.2	1.5	0.0	8.9	1.8	0.0
LnGrp LOS	F	E		F	A	F	A	A		A	A	
Approach Vol, veh/h		73	A		188			1953	A		2165	A
Approach Delay, s/veh		83.3			321.0			1.7			2.5	
Approach LOS		F			F			A			A	
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.8	158.3		31.0	17.1	152.0	11.0	20.0				
Change Period (Y+Rc), s	* 6.8	* 7.3		* 8	8.0	* 7.3	7.0	8.0				
Max Green Setting (Gmax), s	* 10	* 1.3E2		* 42	27.0	* 1.1E2	21.0	12.0				
Max Q Clear Time (g_c+I1), s	4.0	2.0		4.9	8.6	2.0	4.3	14.0				
Green Ext Time (p_c), s	0.0	30.7		0.1	0.5	27.4	0.1	0.0				

Intersection Summary

HCM 6th Ctrl Delay 17.1

HCM 6th LOS B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

8: Buford Dr NE & Tech Center Pkwy NE

09/15/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔↔	↔	↔	↑↑	↑↑	↔
Traffic Volume (vph)	177	91	53	1665	1795	146
Future Volume (vph)	177	91	53	1665	1795	146
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	8		1	6	2	
Permitted Phases		8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	6.0	6.0	4.0	20.0	20.0	20.0
Minimum Split (s)	12.4	12.4	10.0	26.6	26.6	26.6
Total Split (s)	30.0	30.0	17.0	170.0	153.0	153.0
Total Split (%)	15.0%	15.0%	8.5%	85.0%	76.5%	76.5%
Yellow Time (s)	3.5	3.5	3.3	5.0	5.0	5.0
All-Red Time (s)	2.9	2.9	2.7	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.0	6.6	6.6	6.6
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 200

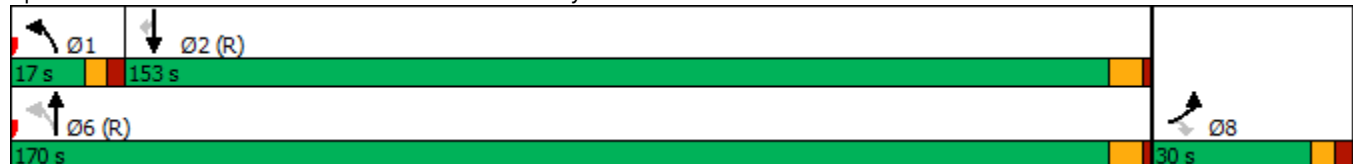
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of 1st Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Splits and Phases: 8: Buford Dr NE & Tech Center Pkwy NE



HCM 6th Signalized Intersection Summary

8: Buford Dr NE & Tech Center Pkwy NE

09/15/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←←	→	←	↑↑	↑↑	↙
Traffic Volume (veh/h)	177	91	53	1665	1795	146
Future Volume (veh/h)	177	91	53	1665	1795	146
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	208	0	55	1734	2017	0
Peak Hour Factor	0.85	0.85	0.96	0.96	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	248		242	3068	2894	
Arrive On Green	0.07	0.00	0.04	1.00	1.00	0.00
Sat Flow, veh/h	3456	1585	1781	3647	3647	1585
Grp Volume(v), veh/h	208	0	55	1734	2017	0
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777	1777	1585
Q Serve(g_s), s	11.9	0.0	1.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	11.9	0.0	1.0	0.0	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	248		242	3068	2894	
V/C Ratio(X)	0.84		0.23	0.57	0.70	
Avail Cap(c_a), veh/h	408		306	3068	2894	
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.80	0.80	0.58	0.00
Uniform Delay (d), s/veh	91.7	0.0	2.5	0.0	0.0	0.0
Incr Delay (d2), s/veh	7.9	0.0	0.4	0.6	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	0.3	0.3	0.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	99.6	0.0	2.9	0.6	0.8	0.0
LnGrp LOS	F		A	A	A	
Approach Vol, veh/h	208	A		1789	2017	A
Approach Delay, s/veh	99.6			0.7	0.8	
Approach LOS	F			A	A	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.8	169.4			179.3	20.7
Change Period (Y+Rc), s	6.0	* 6.6			* 6.6	6.4
Max Green Setting (Gmax), s	11.0	* 1.5E2			* 1.6E2	23.6
Max Q Clear Time (g_c+I1), s	3.0	2.0			2.0	13.9
Green Ext Time (p_c), s	0.0	33.8			22.4	0.5

Intersection Summary

HCM 6th Ctrl Delay	5.9
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

9: Buford Dr NE & Braves Ave

09/15/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3	Ø5
Lane Configurations								
Traffic Volume (vph)	5	9	41	1710	1835	51		
Future Volume (vph)	5	9	41	1710	1835	51		
Turn Type	Prot	Perm	Prot	NA	NA	Perm		
Protected Phases	4		1	6	2		3	5
Permitted Phases		4				2		
Detector Phase	4	4	1	6	2	2		
Switch Phase								
Minimum Initial (s)	6.0	6.0	4.0	12.0	12.0	12.0	5.0	5.0
Minimum Split (s)	12.4	12.4	10.3	18.9	18.9	18.9	9.5	9.5
Total Split (s)	28.0	28.0	18.0	146.0	145.0	145.0	9.0	17.0
Total Split (%)	14.0%	14.0%	9.0%	73.0%	72.5%	72.5%	5%	9%
Yellow Time (s)	3.4	3.4	3.7	5.4	5.4	5.4	3.0	3.0
All-Red Time (s)	3.0	3.0	2.6	1.5	1.5	1.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.4	6.4	6.3	6.9	6.9	6.9		
Lead/Lag	Lag	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max	None	None

Intersection Summary

Cycle Length: 200

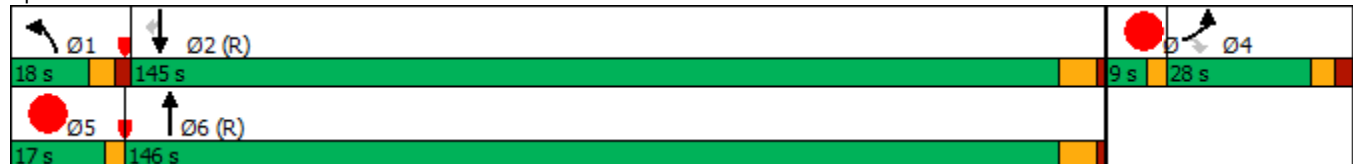
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Splits and Phases: 9: Buford Dr NE & Braves Ave



HCM Signalized Intersection Capacity Analysis

9: Buford Dr NE & Braves Ave

09/15/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	9	41	1710	1835	51
Future Volume (vph)	5	9	41	1710	1835	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4	6.3	6.9	6.9	6.9
Lane Util. Factor	1.00	1.00	0.97	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	3433	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	3433	3539	3539	1583
Peak-hour factor, PHF	0.88	0.88	0.91	0.91	0.97	0.97
Adj. Flow (vph)	6	10	45	1879	1892	53
RTOR Reduction (vph)	0	10	0	0	0	8
Lane Group Flow (vph)	6	0	45	1879	1892	45
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		1	6	2	
Permitted Phases		4				2
Actuated Green, G (s)	4.1	4.1	6.8	182.6	169.5	169.5
Effective Green, g (s)	4.1	4.1	6.8	182.6	169.5	169.5
Actuated g/C Ratio	0.02	0.02	0.03	0.91	0.85	0.85
Clearance Time (s)	6.4	6.4	6.3	6.9	6.9	6.9
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	36	32	116	3231	2999	1341
v/s Ratio Prot	c0.00		0.01	c0.53	c0.53	
v/s Ratio Perm		0.00				0.03
v/c Ratio	0.17	0.01	0.39	0.58	0.63	0.03
Uniform Delay, d1	96.3	96.0	94.6	1.6	5.0	2.4
Progression Factor	1.00	1.00	0.94	2.43	0.46	0.96
Incremental Delay, d2	2.2	0.1	1.0	0.4	0.7	0.0
Delay (s)	98.5	96.0	89.8	4.3	3.0	2.3
Level of Service	F	F	F	A	A	A
Approach Delay (s)	96.9			6.3	3.0	
Approach LOS	F			A	A	
Intersection Summary						
HCM 2000 Control Delay			5.0		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.64			
Actuated Cycle Length (s)			200.0		Sum of lost time (s)	22.6
Intersection Capacity Utilization			66.8%		ICU Level of Service	C
Analysis Period (min)			15			

c Critical Lane Group

Timings

10: Buford Dr NE & Old Peachtree Rd NE

09/15/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	172	477	105	54	218	202	108	1418	102	300	1417	50
Future Volume (vph)	172	477	105	54	218	202	108	1418	102	300	1417	50
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8			6			2
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	15.0	15.0	4.0	15.0	15.0
Minimum Split (s)	10.5	13.4	13.4	10.5	13.4	13.4	10.6	21.6	21.6	10.5	21.6	21.6
Total Split (s)	24.0	65.0	65.0	17.0	58.0	58.0	24.0	89.0	89.0	29.0	94.0	94.0
Total Split (%)	12.0%	32.5%	32.5%	8.5%	29.0%	29.0%	12.0%	44.5%	44.5%	14.5%	47.0%	47.0%
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	4.7	4.7	4.7	3.5	4.7	4.7
All-Red Time (s)	3.0	2.9	2.9	3.0	2.9	2.9	1.9	1.9	1.9	3.0	1.9	1.9
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)	6.5	7.4	7.4	6.5	7.4	7.4	6.6	6.6	6.6	6.5	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 200

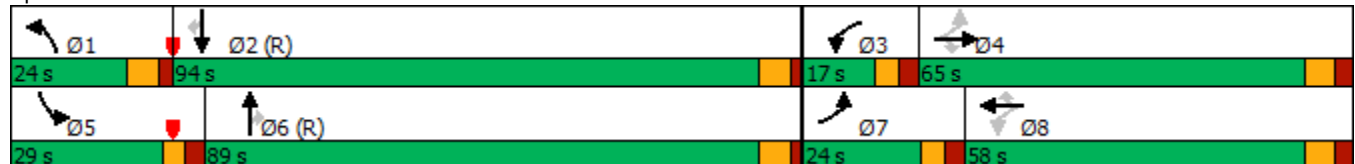
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Splits and Phases: 10: Buford Dr NE & Old Peachtree Rd NE



HCM 6th Signalized Intersection Summary 10: Buford Dr NE & Old Peachtree Rd NE

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	172	477	105	54	218	202	108	1418	102	300	1417	50
Future Volume (veh/h)	172	477	105	54	218	202	108	1418	102	300	1417	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	185	513	113	57	229	213	114	1493	107	333	1574	56
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	307	530	449	105	428	363	131	1575	703	364	1686	752
Arrive On Green	0.09	0.28	0.28	0.03	0.23	0.23	0.07	0.44	0.44	0.21	0.95	0.95
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	185	513	113	57	229	213	114	1493	107	333	1574	56
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	15.6	54.2	11.0	4.9	21.5	23.9	12.7	80.7	8.1	18.8	39.6	0.4
Cycle Q Clear(g_c), s	15.6	54.2	11.0	4.9	21.5	23.9	12.7	80.7	8.1	18.8	39.6	0.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	307	530	449	105	428	363	131	1575	703	364	1686	752
V/C Ratio(X)	0.60	0.97	0.25	0.54	0.53	0.59	0.87	0.95	0.15	0.92	0.93	0.07
Avail Cap(c_a), veh/h	307	539	456	140	473	401	155	1575	703	389	1686	752
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.76	0.76	0.76
Uniform Delay (d), s/veh	52.3	70.8	55.3	61.3	67.7	68.7	91.7	53.5	33.2	78.1	3.7	2.7
Incr Delay (d2), s/veh	3.3	30.4	0.3	4.3	1.0	1.8	34.2	13.3	0.5	20.5	8.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	30.1	4.4	2.3	10.4	9.8	7.0	37.9	3.2	8.5	4.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.6	101.2	55.6	65.6	68.8	70.5	125.9	66.7	33.7	98.6	12.5	2.8
LnGrp LOS	E	F	E	E	E	E	F	E	C	F	B	A
Approach Vol, veh/h	811			499			1714			1963		
Approach Delay, s/veh	84.4			69.2			68.6			26.8		
Approach LOS	F			E			E			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.3	101.5	13.1	64.1	27.6	95.3	24.0	53.2				
Change Period (Y+Rc), s	* 6.6	* 6.6	6.5	7.4	6.5	* 6.6	6.5	7.4				
Max Green Setting (Gmax), s	* 17	* 87	10.5	57.6	22.5	* 82	17.5	50.6				
Max Q Clear Time (g_c+I1), s	14.7	41.6	6.9	56.2	20.8	82.7	17.6	25.9				
Green Ext Time (p_c), s	0.1	16.2	0.0	0.5	0.2	0.0	0.0	1.9				
Intersection Summary												
HCM 6th Ctrl Delay			54.8									
HCM 6th LOS			D									
Notes												

Queuing and Blocking Report
Existing AM

09/15/2018

Intersection: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	L	TR	R	L	T	T	TR	L
Maximum Queue (ft)	162	100	52	247	261	200	158	90	217	239	206	268
Average Queue (ft)	59	49	10	99	155	98	53	31	84	97	111	169
95th Queue (ft)	135	98	35	220	229	178	125	71	176	182	186	260
Link Distance (ft)	418	418	418			574	574		3049	3049	3049	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				250	250			300				500
Storage Blk Time (%)				0	1							
Queuing Penalty (veh)				0	1							

Intersection: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

Movement	SB	SB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	299	334	420	369
Average Queue (ft)	200	196	217	191
95th Queue (ft)	289	382	406	374
Link Distance (ft)		1465	1465	1465
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	500			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report
Existing AM

09/15/2018

Intersection: 2: Buford Dr NE & Mall of Georgia Blvd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	198	151	338	490	324	374	425	64	306	330	378	426
Average Queue (ft)	117	51	183	288	212	264	121	22	144	179	220	253
95th Queue (ft)	186	147	297	464	347	393	286	48	249	284	364	407
Link Distance (ft)	451	451	451	451			717				981	981
Upstream Blk Time (%)				4								
Queuing Penalty (veh)				0								
Storage Bay Dist (ft)					275	275		400	375	375		
Storage Blk Time (%)					1	13					0	
Queuing Penalty (veh)					3	26					1	

Intersection: 2: Buford Dr NE & Mall of Georgia Blvd

Movement	NB	NB	SB	SB	SB	SB
Directions Served	TR	R	L	T	T	TR
Maximum Queue (ft)	473	295	389	511	3044	3034
Average Queue (ft)	265	31	54	355	466	437
95th Queue (ft)	425	160	169	516	1305	1277
Link Distance (ft)	981	981		3049	3049	3049
Upstream Blk Time (%)					0	0
Queuing Penalty (veh)					1	0
Storage Bay Dist (ft)			300			
Storage Blk Time (%)				22		
Queuing Penalty (veh)				11		

Intersection: 3: Buford Dr NE & I-85 SB Ramp

Movement	SB
Directions Served	T
Maximum Queue (ft)	789
Average Queue (ft)	28
95th Queue (ft)	270
Link Distance (ft)	981
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report
Existing AM

09/15/2018

Intersection: 4: Buford Dr NE & I-85 NB Ramp

Movement	WB	SB	SB
Directions Served	R	T	T
Maximum Queue (ft)	1100	18	59
Average Queue (ft)	1078	1	2
95th Queue (ft)	1093	6	20
Link Distance (ft)	1061	1474	1474
Upstream Blk Time (%)	100		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Buford Dr NE & Brand Smart Way

Movement	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	L	R	L	T	T	T	T
Maximum Queue (ft)	181	161	160	177	298	324	1036	1042
Average Queue (ft)	85	87	41	91	97	129	371	377
95th Queue (ft)	155	151	125	168	254	308	774	787
Link Distance (ft)	864	864	864		1166	1166	1076	1076
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)				300				
Storage Blk Time (%)					0			
Queuing Penalty (veh)					0			

Intersection: 6: Buford Dr NE & Laurel Crossing Pkwy NE

Movement	WB	SB
Directions Served	L	L
Maximum Queue (ft)	92	141
Average Queue (ft)	29	80
95th Queue (ft)	65	137
Link Distance (ft)	3679	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		325
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report
Existing AM

09/15/2018

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	EB	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	TR	L	T	T	R	L	T
Maximum Queue (ft)	48	44	101	143	86	232	250	430	435	225	324	845
Average Queue (ft)	16	19	24	36	32	103	102	356	348	24	197	447
95th Queue (ft)	41	43	65	104	71	180	251	536	564	137	345	805
Link Distance (ft)	2600	2600	2600			2242		412	412			1184
Upstream Blk Time (%)								10	11			
Queuing Penalty (veh)								88	100			
Storage Bay Dist (ft)				150	200		175			125	225	
Storage Blk Time (%)				0		0		27	30		7	16
Queuing Penalty (veh)				0		0		16	16		68	32

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	872	175
Average Queue (ft)	485	75
95th Queue (ft)	818	217
Link Distance (ft)	1184	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		75
Storage Blk Time (%)	23	
Queuing Penalty (veh)	57	

Intersection: 8: Buford Dr NE & Tech Center Pkwy NE

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	351	340	56	75	256	274	451	461	200
Average Queue (ft)	224	225	12	32	111	122	98	96	7
95th Queue (ft)	348	353	49	69	242	252	337	321	68
Link Distance (ft)	2083	2083	2083		1479	1479	412	412	
Upstream Blk Time (%)							1	0	
Queuing Penalty (veh)							9	5	
Storage Bay Dist (ft)				250					150
Storage Blk Time (%)					1			2	
Queuing Penalty (veh)					0			3	

Queuing and Blocking Report

Existing AM

09/15/2018

Intersection: 9: Buford Dr NE & Braves Ave

Movement	EB	NB	NB	NB	NB	SB	SB
Directions Served	L	L	L	T	T	T	T
Maximum Queue (ft)	52	81	97	104	53	258	282
Average Queue (ft)	7	17	43	8	6	87	89
95th Queue (ft)	30	57	85	47	33	216	233
Link Distance (ft)	766			1552	1552	1479	1479
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		850	850				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	L
Maximum Queue (ft)	325	771	400	93	349	283	575	892	892	450	263	675
Average Queue (ft)	122	548	206	49	164	127	288	773	728	224	164	365
95th Queue (ft)	219	767	485	88	286	240	624	962	958	570	261	780
Link Distance (ft)	2063	2063			2738			858	858			
Upstream Blk Time (%)								13	8			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (ft)			300	225		400	375			375	375	375
Storage Blk Time (%)		41			9			47	43			
Queuing Penalty (veh)		43			23			51	44			

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	842	876	110
Average Queue (ft)	664	680	22
95th Queue (ft)	897	882	89
Link Distance (ft)	1552	1552	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			110
Storage Blk Time (%)	39	50	0
Queuing Penalty (veh)	117	25	1

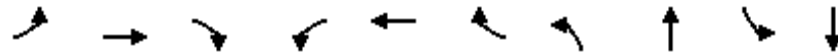
Network Summary

Network wide Queuing Penalty: 740

Timings

1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

09/15/2018



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	8	5	2	28	4	35	8	1608	86	1435
Future Volume (vph)	8	5	2	28	4	35	8	1608	86	1435
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		1	6	5	2
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	1	6	5	2
Switch Phase										
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	12.0	4.0	12.0
Minimum Split (s)	10.9	13.4	13.4	10.5	13.4	13.4	11.3	25.3	11.3	19.3
Total Split (s)	20.0	24.0	24.0	20.0	24.0	24.0	17.0	76.0	20.0	79.0
Total Split (%)	14.3%	17.1%	17.1%	14.3%	17.1%	17.1%	12.1%	54.3%	14.3%	56.4%
Yellow Time (s)	3.9	4.4	4.4	3.5	4.4	4.4	4.6	4.6	4.6	4.6
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.7	2.7	2.7	2.7
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)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3	7.3	7.3
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 74 (53%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Splits and Phases: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

Ø2 (R)			Ø1			Ø4		Ø3
79 s			17 s			24 s		20 s
Ø5			Ø6 (R)			Ø8		Ø7
20 s			76 s			24 s		20 s

HCM Signalized Intersection Capacity Analysis

1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	5	2	28	4	35	8	1608	38	86	1435	18
Future Volume (vph)	8	5	2	28	4	35	8	1608	38	86	1435	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3		7.3	7.3	
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91		0.97	0.91	
Frt	1.00	1.00	0.85	1.00	0.88	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1555	1504	1770	5068		3433	5076	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1555	1504	1770	5068		3433	5076	
Peak-hour factor, PHF	0.42	0.42	0.42	0.93	0.93	0.93	0.96	0.96	0.96	0.90	0.90	0.90
Adj. Flow (vph)	19	12	5	30	4	38	8	1675	40	96	1594	20
RTOR Reduction (vph)	0	0	5	0	16	20	0	1	0	0	1	0
Lane Group Flow (vph)	19	12	0	30	5	1	8	1714	0	96	1613	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8						
Actuated Green, G (s)	6.1	3.0	3.0	7.8	4.3	4.3	1.9	91.4		9.3	98.8	
Effective Green, g (s)	6.1	3.0	3.0	7.8	4.3	4.3	1.9	91.4		9.3	98.8	
Actuated g/C Ratio	0.04	0.02	0.02	0.06	0.03	0.03	0.01	0.65		0.07	0.71	
Clearance Time (s)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3		7.3	7.3	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	77	39	33	191	47	46	24	3308		228	3582	
v/s Ratio Prot	c0.01	c0.01		0.01	0.00		0.00	c0.34		0.03	c0.32	
v/s Ratio Perm			0.00			0.00						
v/c Ratio	0.25	0.31	0.00	0.16	0.10	0.01	0.33	0.52		0.42	0.45	
Uniform Delay, d1	64.7	67.5	67.0	63.0	66.0	65.8	68.4	12.7		62.8	8.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.68	0.55		1.00	1.00	
Incremental Delay, d2	1.7	4.4	0.0	0.4	0.9	0.1	6.1	0.4		1.3	0.4	
Delay (s)	66.4	71.9	67.1	63.4	66.9	65.9	52.5	7.5		64.0	9.3	
Level of Service	E	E	E	E	E	E	D	A		E	A	
Approach Delay (s)		68.3			65.1			7.7			12.4	
Approach LOS		E			E			A			B	
Intersection Summary												
HCM 2000 Control Delay			11.7				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			28.9		
Intersection Capacity Utilization			58.2%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

Timings

2: Buford Dr NE & Mall of Georgia Blvd

09/17/2018

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	 			 			 	 			 
Traffic Volume (vph)	52	30	113	476	21	18	113	1633	219	18	1387
Future Volume (vph)	52	30	113	476	21	18	113	1633	219	18	1387
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	7	4		3	8		1	6		5	2
Permitted Phases			4			8			6		
Detector Phase	7	4	4	3	8	8	1	6	6	5	2
Switch Phase											
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0
Minimum Split (s)	10.6	13.1	13.1	10.6	13.1	13.1	10.9	19.3	19.3	10.9	19.3
Total Split (s)	17.0	21.0	21.0	32.0	36.0	36.0	18.0	70.0	70.0	17.0	69.0
Total Split (%)	12.1%	15.0%	15.0%	22.9%	25.7%	25.7%	12.9%	50.0%	50.0%	12.1%	49.3%
Yellow Time (s)	4.1	5.1	5.1	4.1	5.1	5.1	4.4	5.3	5.3	4.4	5.3
All-Red Time (s)	2.5	2.0	2.0	2.5	2.0	2.0	2.5	2.0	2.0	2.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	7.1	7.1	6.6	7.1	7.1	6.9	7.3	7.3	6.9	7.3
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 140

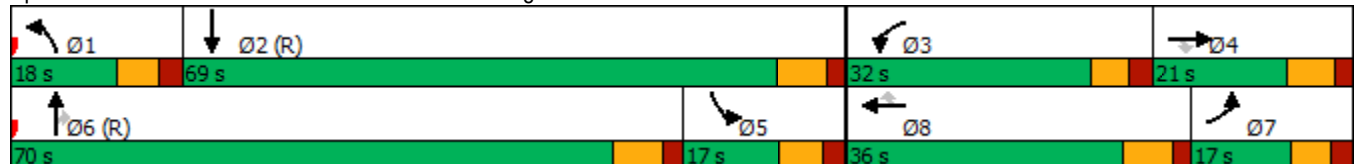
Actuated Cycle Length: 140

Offset: 73 (52%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Splits and Phases: 2: Buford Dr NE & Mall of Georgia Blvd



HCM 6th Signalized Intersection Summary

2: Buford Dr NE & Mall of Georgia Blvd

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 			 	  			  	
Traffic Volume (veh/h)	52	30	113	476	21	18	113	1633	219	18	1387	19
Future Volume (veh/h)	52	30	113	476	21	18	113	1633	219	18	1387	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	62	36	0	529	23	20	120	1737	0	21	1594	22
Peak Hour Factor	0.84	0.84	0.84	0.90	0.90	0.90	0.94	0.94	0.94	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	569	80		582	80	68	172	2513		248	2811	39
Arrive On Green	0.16	0.04	0.00	0.17	0.04	0.04	0.02	0.15	0.00	0.28	1.00	1.00
Sat Flow, veh/h	3456	1870	1585	3456	1870	1585	3563	5611	1585	1781	5190	72
Grp Volume(v), veh/h	62	36	0	529	23	20	120	1737	0	21	1045	571
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1728	1870	1585	1781	1870	1585	1781	1702	1857
Q Serve(g_s), s	2.1	2.6	0.0	21.0	1.7	1.4	4.7	41.1	0.0	1.2	0.0	0.0
Cycle Q Clear(g_c), s	2.1	2.6	0.0	21.0	1.7	1.4	4.7	41.1	0.0	1.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	569	80		582	80	68	172	2513		248	1844	1006
V/C Ratio(X)	0.11	0.45		0.91	0.29	0.29	0.70	0.69		0.08	0.57	0.57
Avail Cap(c_a), veh/h	569	186		627	386	327	282	2513		248	1844	1006
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.86	0.86	0.00	0.93	0.93	0.93
Uniform Delay (d), s/veh	49.8	65.4	0.0	57.2	64.9	46.4	67.9	50.5	0.0	43.9	0.0	0.0
Incr Delay (d2), s/veh	0.1	3.9	0.0	16.7	1.9	2.4	4.4	1.4	0.0	0.1	1.2	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.3	0.0	10.3	0.8	0.7	2.3	20.9	0.0	0.5	0.3	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.8	69.4	0.0	73.9	66.9	48.8	72.3	51.8	0.0	44.1	1.2	2.2
LnGrp LOS	D	E		E	E	D	E	D		D	A	A
Approach Vol, veh/h		98	A		572			1857	A		1637	
Approach Delay, s/veh		57.0			72.7			53.2			2.1	
Approach LOS		E			E			D			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.6	83.1	30.2	13.1	26.8	70.0	30.1	13.1				
Change Period (Y+Rc), s	6.9	7.3	6.6	7.1	7.3	* 7.3	7.1	* 7.1				
Max Green Setting (Gmax), s	11.1	61.7	25.4	13.9	10.1	* 63	10.4	* 29				
Max Q Clear Time (g_c+I1), s	6.7	2.0	23.0	4.6	3.2	43.1	4.1	3.7				
Green Ext Time (p_c), s	0.1	15.6	0.5	0.1	0.0	11.8	0.1	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			35.8									
HCM 6th LOS			D									
Notes												
User approved volume balancing among the lanes for turning movement.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

3: Buford Dr NE & I-85 SB Ramp

09/15/2018



Lane Group	EBR	WBR	NBT	NBR	SBT	SBR
Lane Configurations	↰ ↱	↰ ↱	↰ ↱ ↱	↰ ↱	↰ ↱	↰ ↱
Traffic Volume (vph)	244	187	1767	527	1449	560
Future Volume (vph)	244	187	1767	527	1449	560
Turn Type	Perm	Prot	NA	Perm	NA	Free
Protected Phases		4	2		6	
Permitted Phases	2			2	4	Free
Detector Phase	2	4	2	2	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	23.5	22.5	22.5	22.5	
Total Split (s)	115.0	25.0	115.0	115.0	115.0	
Total Split (%)	82.1%	17.9%	82.1%	82.1%	82.1%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	None	C-Max	C-Max	C-Max	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

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

Natural Cycle: 55

Control Type: Actuated-Coordinated

Splits and Phases: 3: Buford Dr NE & I-85 SB Ramp

HCM Signalized Intersection Capacity Analysis

3: Buford Dr NE & I-85 SB Ramp

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗↗		↗↗↗	↗		↗↗	↗
Traffic Volume (vph)	0	0	244	0	0	187	0	1767	527	0	1449	560
Future Volume (vph)	0	0	244	0	0	187	0	1767	527	0	1449	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.5			5.5		5.5	5.5		5.5	4.0
Lane Util. Factor			1.00			0.88		0.91	1.00		0.95	1.00
Frt			0.86			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			1611			2787		5085	1583		3539	1583
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			1611			2787		5085	1583		3539	1583
Peak-hour factor, PHF	0.82	0.82	0.82	0.77	0.77	0.77	0.90	0.90	0.90	0.85	0.85	0.85
Adj. Flow (vph)	0	0	298	0	0	243	0	1963	586	0	1705	659
RTOR Reduction (vph)	0	0	21	0	0	58	0	0	106	0	0	0
Lane Group Flow (vph)	0	0	277	0	0	185	0	1963	480	0	1705	659
Turn Type			Perm			Prot		NA	Perm		NA	Free
Protected Phases						4		2			6	
Permitted Phases			2						2		4	Free
Actuated Green, G (s)			114.6			14.4		114.6	114.6		129.0	140.0
Effective Green, g (s)			114.6			14.4		114.6	114.6		129.0	140.0
Actuated g/C Ratio			0.82			0.10		0.82	0.82		0.92	1.00
Clearance Time (s)			5.5			5.5		5.5	5.5		5.5	
Vehicle Extension (s)			3.0			3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)			1318			286		4162	1295		3539	1583
v/s Ratio Prot						0.07		0.39			c0.39	
v/s Ratio Perm			0.17						0.30		0.09	0.42
v/c Ratio			0.21			0.65		0.47	0.37		0.48	0.42
Uniform Delay, d1			2.8			60.3		3.8	3.3		0.8	0.0
Progression Factor			1.00			1.00		0.72	1.06		1.00	1.00
Incremental Delay, d2			0.4			4.9		0.3	0.6		0.1	0.6
Delay (s)			3.1			65.3		3.0	4.0		0.9	0.6
Level of Service			A			E		A	A		A	A
Approach Delay (s)		3.1			65.3			3.2			0.8	
Approach LOS		A			E			A			A	
Intersection Summary												
HCM 2000 Control Delay			4.9			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			11.0			
Intersection Capacity Utilization			64.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Timings

5: Buford Dr NE & Brand Smart Way

09/15/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰↰	↰	↰	↰↰	↰↰	↰
Traffic Volume (vph)	171	67	102	2164	1568	80
Future Volume (vph)	171	67	102	2164	1568	80
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	
Permitted Phases	4	4	6			2
Detector Phase	4	4	1	6	2	2
Switch Phase						
Minimum Initial (s)	6.0	6.0	4.0	12.0	12.0	12.0
Minimum Split (s)	12.2	12.2	9.7	18.1	18.1	18.1
Total Split (s)	25.0	25.0	20.0	115.0	95.0	95.0
Total Split (%)	17.9%	17.9%	14.3%	82.1%	67.9%	67.9%
Yellow Time (s)	3.2	3.2	3.2	4.7	4.7	4.7
All-Red Time (s)	3.0	3.0	2.5	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	5.7	6.1	6.1	6.1
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 140

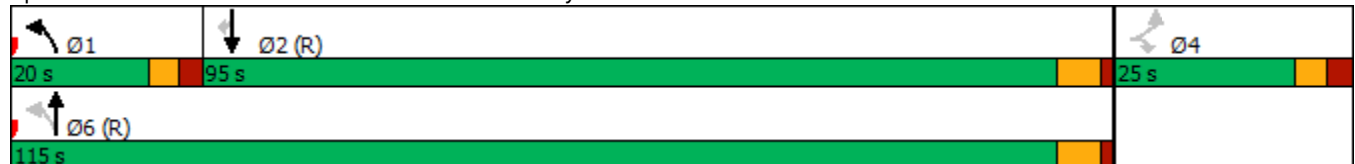
Actuated Cycle Length: 140

Offset: 118 (84%), Referenced to phase 2:SBT and 6:NBTL, Start of 1st Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Splits and Phases: 5: Buford Dr NE & Brand Smart Way



HCM Signalized Intersection Capacity Analysis

5: Buford Dr NE & Brand Smart Way

09/15/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←←	→	←	→→	→→	←
Traffic Volume (vph)	171	67	102	2164	1568	80
Future Volume (vph)	171	67	102	2164	1568	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	5.7	6.1	6.1	6.1
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.06	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	119	3539	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.84	0.84
Adj. Flow (vph)	190	74	113	2404	1867	95
RTOR Reduction (vph)	0	67	0	0	0	22
Lane Group Flow (vph)	190	7	113	2404	1867	73
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	
Permitted Phases	4	4	6			2
Actuated Green, G (s)	13.0	13.0	114.7	114.7	99.1	99.1
Effective Green, g (s)	13.0	13.0	114.7	114.7	99.1	99.1
Actuated g/C Ratio	0.09	0.09	0.82	0.82	0.71	0.71
Clearance Time (s)	6.2	6.2	5.7	6.1	6.1	6.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	318	146	214	2899	2505	1120
v/s Ratio Prot			0.04	0.68	0.53	
v/s Ratio Perm	0.06	0.00	0.40			0.05
v/c Ratio	0.60	0.05	0.53	0.83	0.75	0.07
Uniform Delay, d1	61.0	57.9	19.8	7.1	12.6	6.3
Progression Factor	1.00	1.00	2.01	0.55	0.57	0.50
Incremental Delay, d2	3.0	0.1	1.2	1.5	1.9	0.1
Delay (s)	64.0	58.0	40.9	5.5	9.1	3.2
Level of Service	E	E	D	A	A	A
Approach Delay (s)	62.3			7.1	8.8	
Approach LOS	E			A	A	

Intersection Summary

HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th TWSC
6: Buford Dr NE & Laurel Crossing Pkwy NE

09/15/2018

Intersection						
Int Delay, s/veh	39.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	33	69	2154	15	21	1674
Future Vol, veh/h	33	69	2154	15	21	1674
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	0	0	-	175	325	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	93	93	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	81	2316	16	24	1947
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	3338	1158	0	0	2316	0
Stage 1	2316	-	-	-	-	-
Stage 2	1022	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 6	189	-	-	212	-
Stage 1	60	-	-	-	-	-
Stage 2	308	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 5	189	-	-	212	-
Mov Cap-2 Maneuver	~ 5	-	-	-	-	-
Stage 1	53	-	-	-	-	-
Stage 2	308	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	1463.7	0		0.3		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	5	189	212	-
HCM Lane V/C Ratio	-	-	7.765	0.43	0.115	-
HCM Control Delay (s)	-	\$	4445.3	37.7	24.2	-
HCM Lane LOS	-	-	F	E	C	-
HCM 95th %tile Q(veh)	-	-	6.5	2	0.4	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Timings

7: Buford Dr NE & Rock Springs Rd

09/15/2018

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 						 			 	
Traffic Volume (vph)	261	20	91	77	41	81	1666	10	29	1475	192
Future Volume (vph)	261	20	91	77	41	81	1666	10	29	1475	192
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8	1	6		5	2	
Permitted Phases	4		4	8		6		6	2		2
Detector Phase	7	4	4	8	8	1	6	6	5	2	2
Switch Phase											
Minimum Initial (s)	4.0	6.0	6.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0	12.0
Minimum Split (s)	11.0	12.5	12.5	14.0	14.0	10.8	19.3	19.3	12.0	19.3	19.3
Total Split (s)	23.0	46.0	46.0	23.0	23.0	17.0	77.0	77.0	17.0	77.0	77.0
Total Split (%)	16.4%	32.9%	32.9%	16.4%	16.4%	12.1%	55.0%	55.0%	12.1%	55.0%	55.0%
Yellow Time (s)	4.0	3.5	3.5	5.0	5.0	3.8	4.7	4.7	5.0	4.7	4.7
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.6	2.6	3.0	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	6.5	6.5	8.0	8.0	6.8	7.3	7.3	8.0	7.3	7.3
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 140

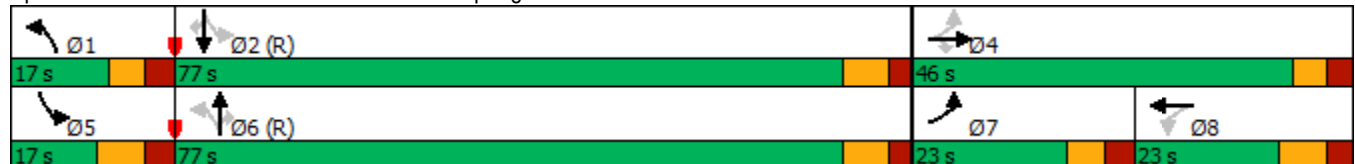
Actuated Cycle Length: 140

Offset: 110 (79%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Splits and Phases: 7: Buford Dr NE & Rock Springs Rd



HCM 6th Signalized Intersection Summary

7: Buford Dr NE & Rock Springs Rd

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	261	20	91	77	41	252	81	1666	10	29	1475	192
Future Volume (veh/h)	261	20	91	77	41	252	81	1666	10	29	1475	192
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	303	23	0	97	52	319	85	1754	0	31	1569	0
Peak Hour Factor	0.86	0.86	0.86	0.79	0.79	0.79	0.95	0.95	0.95	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	422	467		200	24	149	205	2004		240	1985	
Arrive On Green	0.09	0.25	0.00	0.11	0.11	0.11	0.07	1.00	0.00	0.03	0.74	0.00
Sat Flow, veh/h	3456	1870	1585	1388	227	1393	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	303	23	0	97	0	371	85	1754	0	31	1569	0
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1388	0	1620	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	10.6	1.3	0.0	9.4	0.0	15.0	2.9	0.0	0.0	1.0	38.5	0.0
Cycle Q Clear(g_c), s	10.6	1.3	0.0	9.4	0.0	15.0	2.9	0.0	0.0	1.0	38.5	0.0
Prop In Lane	1.00		1.00	1.00		0.86	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	422	467		200	0	174	205	2004		240	1985	
V/C Ratio(X)	0.72	0.05		0.48	0.00	2.14	0.41	0.88		0.13	0.79	
Avail Cap(c_a), veh/h	498	528		200	0	174	274	2004		319	1985	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	0.80	0.80	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.5	39.9	0.0	60.0	0.0	62.5	18.6	0.0	0.0	12.6	12.9	0.0
Incr Delay (d2), s/veh	4.1	0.0	0.0	1.8	0.0	530.8	1.1	4.6	0.0	0.2	3.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	0.6	0.0	3.4	0.0	31.7	1.1	1.3	0.0	0.4	10.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.5	40.0	0.0	61.8	0.0	593.3	19.7	4.6	0.0	12.8	16.2	0.0
LnGrp LOS	D	D		E	A	F	B	A		B	B	
Approach Vol, veh/h	326			A			468			1839		
Approach Delay, s/veh	51.6			483.2			5.3			16.1		
Approach LOS	D			F			A			B		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.6	85.5		42.9	10.8	86.3	19.9	23.0				
Change Period (Y+Rc), s	* 6.8	* 7.3		* 8	8.0	* 7.3	7.0	8.0				
Max Green Setting (Gmax), s	* 10	* 70		* 40	9.0	* 70	16.0	15.0				
Max Q Clear Time (g_c+I1), s	4.9	40.5		3.3	3.0	2.0	12.6	17.0				
Green Ext Time (p_c), s	0.1	13.3		0.1	0.0	21.4	0.4	0.0				

Intersection Summary

HCM 6th Ctrl Delay 65.8

HCM 6th LOS E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

8: Buford Dr NE & Tech Center Pkwy NE

09/15/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰↱	↰	↰	↰↱	↰↱	↰
Traffic Volume (vph)	111	40	48	1618	1525	131
Future Volume (vph)	111	40	48	1618	1525	131
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	8		1	6	2	
Permitted Phases		8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	6.0	6.0	4.0	20.0	20.0	20.0
Minimum Split (s)	12.4	12.4	10.0	26.6	26.6	26.6
Total Split (s)	30.0	30.0	19.0	110.0	91.0	91.0
Total Split (%)	21.4%	21.4%	13.6%	78.6%	65.0%	65.0%
Yellow Time (s)	3.5	3.5	3.3	5.0	5.0	5.0
All-Red Time (s)	2.9	2.9	2.7	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.0	6.6	6.6	6.6
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 140

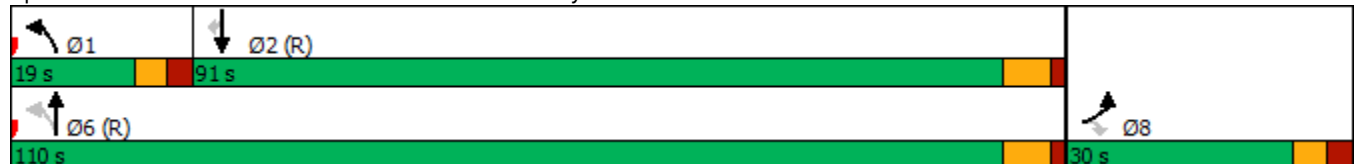
Actuated Cycle Length: 140

Offset: 74 (53%), Referenced to phase 2:SBT and 6:NBTL, Start of 1st Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Splits and Phases: 8: Buford Dr NE & Tech Center Pkwy NE



HCM 6th Signalized Intersection Summary

8: Buford Dr NE & Tech Center Pkwy NE

09/15/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←←	→	←	↑↑	↑↑	↔
Traffic Volume (veh/h)	111	40	48	1618	1525	131
Future Volume (veh/h)	111	40	48	1618	1525	131
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	0	49	1668	1733	0
Peak Hour Factor	0.79	0.79	0.97	0.97	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	196		314	3022	2783	
Arrive On Green	0.06	0.00	0.05	1.00	1.00	0.00
Sat Flow, veh/h	3456	1585	1781	3647	3647	1585
Grp Volume(v), veh/h	141	0	49	1668	1733	0
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777	1777	1585
Q Serve(g_s), s	5.6	0.0	0.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.6	0.0	0.7	0.0	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	196		314	3022	2783	
V/C Ratio(X)	0.72		0.16	0.55	0.62	
Avail Cap(c_a), veh/h	583		436	3022	2783	
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.83	0.83	0.47	0.00
Uniform Delay (d), s/veh	64.9	0.0	2.2	0.0	0.0	0.0
Incr Delay (d2), s/veh	4.9	0.0	0.2	0.6	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	0.2	0.3	0.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	69.8	0.0	2.4	0.6	0.5	0.0
LnGrp LOS	E		A	A	A	
Approach Vol, veh/h	141	A		1717	1733	A
Approach Delay, s/veh	69.8			0.7	0.5	
Approach LOS	E			A	A	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.4	116.3			125.7	14.3
Change Period (Y+Rc), s	6.0	* 6.6			* 6.6	6.4
Max Green Setting (Gmax), s	13.0	* 84			* 1E2	23.6
Max Q Clear Time (g_c+I1), s	2.7	2.0			2.0	7.6
Green Ext Time (p_c), s	0.0	21.6			20.2	0.4

Intersection Summary

HCM 6th Ctrl Delay	3.3
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

9: Buford Dr NE & Braves Ave

09/15/2018



Lane Group	EBL	NBL	NBT	SBT	SBR	Ø3	Ø5
Lane Configurations							
Traffic Volume (vph)	21	12	1660	1546	4		
Future Volume (vph)	21	12	1660	1546	4		
Turn Type	Prot	Prot	NA	NA	Perm		
Protected Phases	4	1	6	2		3	5
Permitted Phases					2		
Detector Phase	4	1	6	2	2		
Switch Phase							
Minimum Initial (s)	6.0	4.0	12.0	12.0	12.0	1.0	4.0
Minimum Split (s)	12.4	10.3	18.9	18.9	18.9	5.5	9.6
Total Split (s)	28.0	15.0	86.0	88.0	88.0	9.0	17.0
Total Split (%)	20.0%	10.7%	61.4%	62.9%	62.9%	6%	12%
Yellow Time (s)	3.4	3.7	5.4	5.4	5.4	2.0	3.0
All-Red Time (s)	3.0	2.6	1.5	1.5	1.5	0.0	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.4	6.3	6.9	6.9	6.9		
Lead/Lag	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	C-Max	C-Max	C-Max	None	None

Intersection Summary

Cycle Length: 140

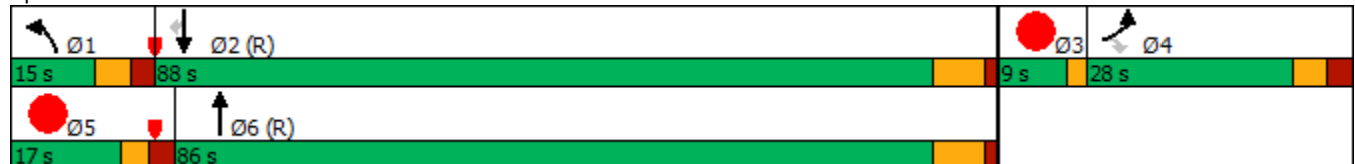
Actuated Cycle Length: 140

Offset: 89 (64%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Splits and Phases: 9: Buford Dr NE & Braves Ave



HCM Signalized Intersection Capacity Analysis

9: Buford Dr NE & Braves Ave

09/15/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	0	12	1660	1546	4
Future Volume (vph)	21	0	12	1660	1546	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		6.3	6.9	6.9	6.9
Lane Util. Factor	1.00		0.97	0.95	0.95	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770		3433	3539	3539	1583
Flt Permitted	0.95		0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770		3433	3539	3539	1583
Peak-hour factor, PHF	0.77	0.77	0.96	0.96	0.86	0.86
Adj. Flow (vph)	27	0	12	1729	1798	5
RTOR Reduction (vph)	0	0	0	0	0	1
Lane Group Flow (vph)	27	0	13	1729	1798	4
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		1	6	2	
Permitted Phases		4				2
Actuated Green, G (s)	5.3		2.7	121.4	112.4	112.4
Effective Green, g (s)	5.3		2.7	121.4	112.4	112.4
Actuated g/C Ratio	0.04		0.02	0.87	0.80	0.80
Clearance Time (s)	6.4		6.3	6.9	6.9	6.9
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	67		66	3068	2841	1270
v/s Ratio Prot	c0.02		0.00	c0.49	c0.51	
v/s Ratio Perm						0.00
v/c Ratio	0.40		0.20	0.56	0.63	0.00
Uniform Delay, d1	65.8		67.6	2.4	5.5	2.7
Progression Factor	1.00		1.36	0.51	1.31	2.12
Incremental Delay, d2	3.9		0.9	0.4	0.8	0.0
Delay (s)	69.7		92.5	1.7	8.1	5.8
Level of Service	E		F	A	A	A
Approach Delay (s)	69.7			2.4	8.1	
Approach LOS	E			A	A	

Intersection Summary

HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.6
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Timings

10: Buford Dr NE & Old Peachtree Rd NE

09/15/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	161	109	153	417	385	116	1171	68	134	1348	42
Future Volume (vph)	98	161	109	153	417	385	116	1171	68	134	1348	42
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8			6			2
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	15.0	15.0	4.0	15.0	15.0
Minimum Split (s)	10.5	13.4	13.4	10.5	13.4	13.4	10.6	21.6	21.6	10.5	21.6	21.6
Total Split (s)	17.0	42.0	42.0	15.0	40.0	40.0	22.0	66.0	66.0	17.0	61.0	61.0
Total Split (%)	12.1%	30.0%	30.0%	10.7%	28.6%	28.6%	15.7%	47.1%	47.1%	12.1%	43.6%	43.6%
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	4.7	4.7	4.7	3.5	4.7	4.7
All-Red Time (s)	3.0	2.9	2.9	3.0	2.9	2.9	1.9	1.9	1.9	3.0	1.9	1.9
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)	6.5	7.4	7.4	6.5	7.4	7.4	6.6	6.6	6.6	6.5	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 140

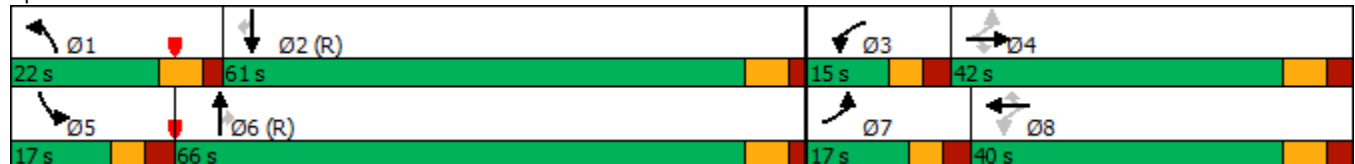
Actuated Cycle Length: 140

Offset: 43 (31%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Splits and Phases: 10: Buford Dr NE & Old Peachtree Rd NE



HCM 6th Signalized Intersection Summary

10: Buford Dr NE & Old Peachtree Rd NE

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	161	109	153	417	385	116	1171	68	134	1348	42
Future Volume (veh/h)	98	161	109	153	417	385	116	1171	68	134	1348	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	105	173	117	161	439	405	122	1233	72	149	1498	47
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	155	431	365	325	436	369	146	1629	727	199	1541	687
Arrive On Green	0.06	0.23	0.23	0.06	0.23	0.23	0.08	0.46	0.46	0.02	0.14	0.14
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	105	173	117	161	439	405	122	1233	72	149	1498	47
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	6.2	11.0	8.6	8.5	32.6	32.6	9.5	40.3	3.6	6.0	58.7	3.6
Cycle Q Clear(g_c), s	6.2	11.0	8.6	8.5	32.6	32.6	9.5	40.3	3.6	6.0	58.7	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	155	431	365	325	436	369	146	1629	727	199	1541	687
V/C Ratio(X)	0.68	0.40	0.32	0.50	1.01	1.10	0.84	0.76	0.10	0.75	0.97	0.07
Avail Cap(c_a), veh/h	185	462	392	325	436	369	196	1629	727	259	1541	687
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.78	0.78	0.78
Uniform Delay (d), s/veh	41.4	45.7	44.8	40.5	53.7	53.7	63.4	31.4	21.5	67.7	59.1	35.5
Incr Delay (d2), s/veh	7.5	0.6	0.5	1.2	45.1	75.6	20.4	3.3	0.3	6.6	14.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	5.1	3.4	0.7	20.4	20.4	5.0	17.1	1.4	2.9	31.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.8	46.3	45.3	41.7	98.8	129.3	83.8	34.8	21.8	74.2	73.8	35.7
LnGrp LOS	D	D	D	D	F	F	F	C	C	E	E	D
Approach Vol, veh/h		395			1005			1427			1694	
Approach Delay, s/veh		46.7			102.0			38.3			72.7	
Approach LOS		D			F			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	67.3	15.0	39.6	14.6	70.8	14.6	40.0				
Change Period (Y+Rc), s	* 6.6	* 6.6	6.5	7.4	6.5	* 6.6	6.5	7.4				
Max Green Setting (Gmax), s	* 15	* 54	8.5	34.6	10.5	* 59	10.5	32.6				
Max Q Clear Time (g_c+I1), s	11.5	60.7	10.5	13.0	8.0	42.3	8.2	34.6				
Green Ext Time (p_c), s	0.1	0.0	0.0	1.2	0.1	7.8	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			66.1									
HCM 6th LOS			E									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Queuing and Blocking Report
Background AM

09/15/2018

Intersection: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	L	TR	R	L	T	T	TR	L
Maximum Queue (ft)	29	49	27	27	69	51	50	29	231	267	309	68
Average Queue (ft)	5	7	2	2	28	20	4	10	94	119	135	17
95th Queue (ft)	22	31	13	14	56	38	22	29	170	195	216	49
Link Distance (ft)	330	330	330			1590	1590		3054	3054	3054	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				250	250			300				500
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

Movement	SB	SB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	127	546	484	421
Average Queue (ft)	62	108	93	68
95th Queue (ft)	106	303	287	239
Link Distance (ft)		1465	1465	1465
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	500			
Storage Blk Time (%)		1		
Queuing Penalty (veh)		1		

Queuing and Blocking Report

Background AM

09/15/2018

Intersection: 2: Buford Dr NE & Mall of Georgia Blvd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	72	29	74	99	324	374	425	40	92	115	249	265
Average Queue (ft)	31	5	23	7	190	237	35	6	23	62	123	145
95th Queue (ft)	63	23	60	48	294	335	162	21	65	98	239	256
Link Distance (ft)	1056	1056	1056	1056			1308				974	974
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)					275	275		400	375	375		
Storage Blk Time (%)					0	4						
Queuing Penalty (veh)					0	2						

Intersection: 2: Buford Dr NE & Mall of Georgia Blvd

Movement	NB	NB	SB	SB	SB	SB
Directions Served	TR	R	L	T	T	TR
Maximum Queue (ft)	309	275	71	339	417	362
Average Queue (ft)	172	24	21	143	173	143
95th Queue (ft)	302	144	53	247	293	253
Link Distance (ft)	974			3054	3054	3054
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		175	300			
Storage Blk Time (%)	7			1		
Queuing Penalty (veh)	8			0		

Intersection: 3: Buford Dr NE & I-85 SB Ramp

Movement	WB
Directions Served	R
Maximum Queue (ft)	124
Average Queue (ft)	4
95th Queue (ft)	42
Link Distance (ft)	867
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

Background AM

09/15/2018

Intersection: 4: Buford Dr NE & I-85 NB Ramp

Movement	WB
Directions Served	R
Maximum Queue (ft)	1083
Average Queue (ft)	875
95th Queue (ft)	1384
Link Distance (ft)	1031
Upstream Blk Time (%)	68
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Buford Dr NE & Brand Smart Way

Movement	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	L	R	L	T	T	T	T
Maximum Queue (ft)	180	198	118	172	235	247	298	288
Average Queue (ft)	80	81	7	65	103	148	131	164
95th Queue (ft)	130	149	51	131	188	240	241	273
Link Distance (ft)	864	864	864		1166	1166	1076	1076
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)				300				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 6: Buford Dr NE & Laurel Crossing Pkwy NE

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	479	100	74
Average Queue (ft)	204	6	18
95th Queue (ft)	441	42	56
Link Distance (ft)	3679	3679	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			325
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report
Background AM

09/15/2018

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	EB	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	T	R	L	TR	L	T	T	L	T	T
Maximum Queue (ft)	133	153	41	89	300	2125	250	412	413	324	771	777
Average Queue (ft)	72	83	7	17	256	1366	61	212	222	43	459	490
95th Queue (ft)	122	140	26	58	411	2093	163	363	374	177	687	707
Link Distance (ft)	2600	2600	2600			2242		412	412		1184	1184
Upstream Blk Time (%)								0	0			
Queuing Penalty (veh)								1	1			
Storage Bay Dist (ft)				150	200		175			225		
Storage Blk Time (%)						93		11	19		26	37
Queuing Penalty (veh)						72		9	2		7	72

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	SB
Directions Served	R
Maximum Queue (ft)	175
Average Queue (ft)	68
95th Queue (ft)	207
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	75
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Buford Dr NE & Tech Center Pkwy NE

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	L	T	T	T	T	R
Maximum Queue (ft)	96	118	71	96	118	222	257	200
Average Queue (ft)	48	40	26	41	47	85	89	7
95th Queue (ft)	88	88	61	97	107	165	174	68
Link Distance (ft)	2083	2083		1479	1479	412	412	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			250					150
Storage Blk Time (%)							1	
Queuing Penalty (veh)							1	

Queuing and Blocking Report

Background AM

09/15/2018

Intersection: 9: Buford Dr NE & Braves Ave

Movement	EB	NB	NB	NB	SB	SB
Directions Served	L	L	T	T	T	T
Maximum Queue (ft)	73	50	52	73	270	289
Average Queue (ft)	31	11	5	13	77	95
95th Queue (ft)	66	33	24	53	207	234
Link Distance (ft)	766		1552	1552	1479	1479
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		850				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	L
Maximum Queue (ft)	151	237	125	275	2582	500	175	428	418	38	92	106
Average Queue (ft)	73	91	52	212	1198	471	107	300	276	13	38	55
95th Queue (ft)	132	175	99	365	1955	609	166	387	363	30	85	98
Link Distance (ft)	2063	2063			2738			1230	1230			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			300	225		400	375			375	375	375
Storage Blk Time (%)					67	1		1				
Queuing Penalty (veh)					362	5		1				

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	691	701	135
Average Queue (ft)	416	431	14
95th Queue (ft)	627	636	70
Link Distance (ft)	1552	1552	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			110
Storage Blk Time (%)	14	47	
Queuing Penalty (veh)	19	20	

Network Summary

Network wide Queuing Penalty: 581

Timings

1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

09/17/2018

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	46	32	16	200	17	206	37	1813	366	1965
Future Volume (vph)	46	32	16	200	17	206	37	1813	366	1965
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		1	6	5	2
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	1	6	5	2
Switch Phase										
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	12.0	4.0	12.0
Minimum Split (s)	10.9	13.4	13.4	10.5	13.4	13.4	11.3	25.3	11.3	19.3
Total Split (s)	23.0	25.0	25.0	27.0	29.0	29.0	18.0	105.0	43.0	130.0
Total Split (%)	11.5%	12.5%	12.5%	13.5%	14.5%	14.5%	9.0%	52.5%	21.5%	65.0%
Yellow Time (s)	3.9	4.4	4.4	3.5	4.4	4.4	4.6	4.6	4.6	4.6
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.7	2.7	2.7	2.7
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)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3	7.3	7.3
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary

Cycle Length: 200

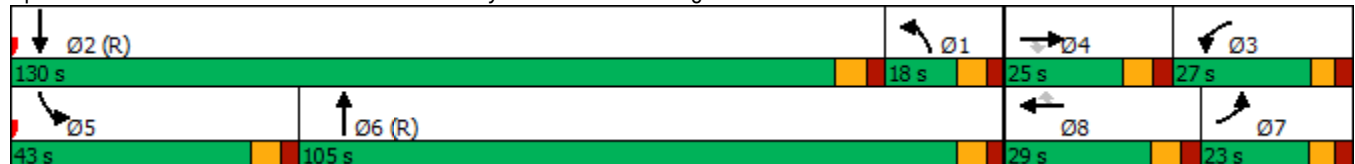
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

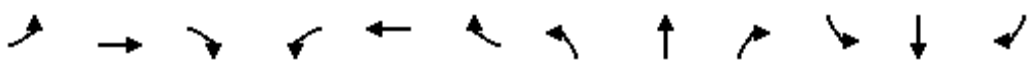
Splits and Phases: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd



HCM Signalized Intersection Capacity Analysis

1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	32	16	200	17	206	37	1813	141	366	1965	44
Future Volume (vph)	46	32	16	200	17	206	37	1813	141	366	1965	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3		7.3	7.3	
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91		0.97	0.91	
Frt	1.00	1.00	0.85	1.00	0.87	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1545	1504	1770	5030		3433	5069	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1545	1504	1770	5030		3433	5069	
Peak-hour factor, PHF	0.73	0.73	0.73	0.82	0.82	0.82	0.90	0.90	0.90	0.95	0.95	0.95
Adj. Flow (vph)	63	44	22	244	21	251	41	2014	157	385	2068	46
RTOR Reduction (vph)	0	0	21	0	105	129	0	4	0	0	1	0
Lane Group Flow (vph)	63	44	1	244	31	7	41	2167	0	385	2113	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8						
Actuated Green, G (s)	19.0	8.8	8.8	20.8	10.2	10.2	8.6	114.2		27.7	133.3	
Effective Green, g (s)	19.0	8.8	8.8	20.8	10.2	10.2	8.6	114.2		27.7	133.3	
Actuated g/C Ratio	0.10	0.04	0.04	0.10	0.05	0.05	0.04	0.57		0.14	0.67	
Clearance Time (s)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3		7.3	7.3	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	168	81	69	357	78	76	76	2872		475	3378	
v/s Ratio Prot	0.04	c0.02		c0.07	0.02		0.02	c0.43		c0.11	0.42	
v/s Ratio Perm			0.00			0.00						
v/c Ratio	0.38	0.54	0.01	0.68	0.39	0.09	0.54	0.75		0.81	0.63	
Uniform Delay, d1	84.9	93.6	91.5	86.4	91.9	90.5	93.8	32.3		83.6	19.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.64	0.27		1.00	1.00	
Incremental Delay, d2	1.4	7.2	0.1	5.3	3.2	0.5	4.6	1.2		10.1	0.9	
Delay (s)	86.3	100.9	91.5	91.8	95.2	91.0	64.9	9.8		93.7	20.0	
Level of Service	F	F	F	F	F	F	E	A		F	B	
Approach Delay (s)		92.2			92.5			10.8			31.3	
Approach LOS		F			F			B			C	
Intersection Summary												
HCM 2000 Control Delay			30.2									
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			200.0									
Intersection Capacity Utilization			79.3%									
Analysis Period (min)			15									
c Critical Lane Group												

Timings

2: Buford Dr NE & Mall of Georgia Blvd

09/17/2018

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	171	170	387	395	116	90	363	1816	801	54	1965
Future Volume (vph)	171	170	387	395	116	90	363	1816	801	54	1965
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	7	4		3	8		1	6		5	2
Permitted Phases			4			8			6		
Detector Phase	7	4	4	3	8	8	1	6	6	5	2
Switch Phase											
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0
Minimum Split (s)	10.6	13.1	13.1	10.6	13.1	13.1	10.9	19.3	19.3	10.9	19.3
Total Split (s)	27.0	30.0	30.0	35.0	38.0	38.0	32.0	116.0	116.0	19.0	103.0
Total Split (%)	13.5%	15.0%	15.0%	17.5%	19.0%	19.0%	16.0%	58.0%	58.0%	9.5%	51.5%
Yellow Time (s)	4.1	5.1	5.1	4.1	5.1	5.1	4.4	5.3	5.3	4.4	5.3
All-Red Time (s)	2.5	2.0	2.0	2.5	2.0	2.0	2.5	2.0	2.0	2.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	7.1	7.1	6.6	7.1	7.1	6.9	7.3	7.3	6.9	7.3
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 200

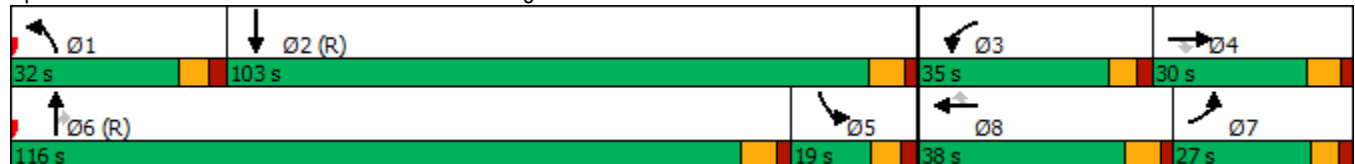
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Splits and Phases: 2: Buford Dr NE & Mall of Georgia Blvd



HCM 6th Signalized Intersection Summary

2: Buford Dr NE & Mall of Georgia Blvd

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	170	387	395	116	90	363	1816	801	54	1965	173
Future Volume (veh/h)	171	170	387	395	116	90	363	1816	801	54	1965	173
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	192	191	0	454	133	103	382	2143	0	62	2259	199
Peak Hour Factor	0.89	0.89	0.89	0.87	0.87	0.87	0.95	0.95	0.95	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	571	208		485	157	133	414	3050		113	2356	205
Arrive On Green	0.17	0.11	0.00	0.14	0.08	0.08	0.23	1.00	0.00	0.08	0.65	0.65
Sat Flow, veh/h	3456	1870	1585	3456	1870	1585	3563	5611	1585	1781	4784	416
Grp Volume(v), veh/h	192	191	0	454	133	103	382	2143	0	62	1599	859
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1728	1870	1585	1781	1870	1585	1781	1702	1796
Q Serve(g_s), s	9.8	20.2	0.0	26.0	14.0	10.1	20.9	0.0	0.0	6.7	86.4	90.9
Cycle Q Clear(g_c), s	9.8	20.2	0.0	26.0	14.0	10.1	20.9	0.0	0.0	6.7	86.4	90.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	571	208		485	157	133	414	3050		113	1676	884
V/C Ratio(X)	0.34	0.92		0.94	0.85	0.77	0.92	0.70		0.55	0.95	0.97
Avail Cap(c_a), veh/h	571	214		491	289	245	447	3050		113	1676	884
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(l)	1.00	1.00	0.00	1.00	1.00	1.00	0.70	0.70	0.00	0.75	0.75	0.75
Uniform Delay (d), s/veh	73.8	87.9	0.0	85.1	90.3	56.9	75.8	0.0	0.0	88.9	32.4	33.2
Incr Delay (d2), s/veh	0.3	38.8	0.0	25.4	11.6	9.1	18.2	1.0	0.0	4.3	10.9	20.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	12.1	0.0	13.3	7.3	4.4	9.7	0.3	0.0	3.2	33.3	39.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.1	126.8	0.0	110.4	102.0	66.1	94.1	1.0	0.0	93.1	43.3	53.5
LnGrp LOS	E	F		F	F	E	F	A		F	D	D
Approach Vol, veh/h	383			A			690			2525		
Approach Delay, s/veh	100.4			102.2			15.1			48.0		
Approach LOS	F			F			B			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.2	105.8	34.7	29.4	19.9	116.0	40.1	23.9				
Change Period (Y+Rc), s	6.9	7.3	6.6	7.1	7.3	* 7.3	7.1	* 7.1				
Max Green Setting (Gmax), s	25.1	95.7	28.4	22.9	12.1	* 1.1E2	20.4	* 31				
Max Q Clear Time (g_c+I1), s	22.9	92.9	28.0	22.2	8.7	2.0	11.8	16.0				
Green Ext Time (p_c), s	0.3	2.6	0.1	0.1	0.0	34.6	0.4	0.8				

Intersection Summary

HCM 6th Ctrl Delay 43.8

HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

3: Buford Dr NE & I-85 SB Ramp

09/17/2018



Lane Group	EBR	WBR	NBT	NBR	SBT	SBR
Lane Configurations	↰ ↱	↰ ↱	↰ ↱ ↱	↰ ↱	↰ ↱	↰ ↱
Traffic Volume (vph)	252	299	2605	157	2310	473
Future Volume (vph)	252	299	2605	157	2310	473
Turn Type	Perm	Prot	NA	Perm	NA	Free
Protected Phases		4	2		6	
Permitted Phases	2 4			2	4	Free
Detector Phase	2 4	4	2	2	6	
Switch Phase						
Minimum Initial (s)		5.0	5.0	5.0	5.0	
Minimum Split (s)		22.5	22.5	22.5	22.5	
Total Split (s)		70.0	130.0	130.0	130.0	
Total Split (%)		35.0%	65.0%	65.0%	65.0%	
Yellow Time (s)		3.5	3.5	3.5	3.5	
All-Red Time (s)		1.0	1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	
Total Lost Time (s)		4.5	4.5	4.5	4.5	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode		None	C-Max	C-Max	C-Max	

Intersection Summary

Cycle Length: 200
 Actuated Cycle Length: 200
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Buford Dr NE & I-85 SB Ramp

 Ø2 (R) 130 s	 Ø4 70 s
 Ø6 (R) 130 s	

HCM Signalized Intersection Capacity Analysis

3: Buford Dr NE & I-85 SB Ramp

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗↗		↗↗↗	↗		↗↗	↗
Traffic Volume (vph)	0	0	252	0	0	299	0	2605	157	0	2310	473
Future Volume (vph)	0	0	252	0	0	299	0	2605	157	0	2310	473
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.5			4.5		4.5	4.5		4.5	4.0
Lane Util. Factor			1.00			0.88		0.91	1.00		0.95	1.00
Frt			0.86			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			1611			2787		5085	1583		3539	1583
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			1611			2787		5085	1583		3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	0	0	260	0	0	308	0	2686	162	0	2432	498
RTOR Reduction (vph)	0	0	0	0	0	7	0	0	16	0	0	0
Lane Group Flow (vph)	0	0	260	0	0	301	0	2686	146	0	2432	498
Turn Type			Perm			Prot		NA	Perm		NA	Free
Protected Phases						4		2			6	
Permitted Phases			2 4						2		4	Free
Actuated Green, G (s)			200.0			27.3		163.7	163.7		191.0	200.0
Effective Green, g (s)			200.0			27.3		163.7	163.7		191.0	200.0
Actuated g/C Ratio			1.00			0.14		0.82	0.82		0.96	1.00
Clearance Time (s)						4.5		4.5	4.5		4.5	
Vehicle Extension (s)						3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)			1611			380		4162	1295		3539	1583
v/s Ratio Prot						0.11		0.53			c0.56	
v/s Ratio Perm			0.16						0.09		0.12	0.31
v/c Ratio			0.16			0.79		0.65	0.11		0.69	0.31
Uniform Delay, d1			0.0			83.6		7.0	3.6		0.6	0.0
Progression Factor			1.00			1.00		1.49	1.53		1.00	1.00
Incremental Delay, d2			0.0			10.8		0.7	0.2		0.1	0.0
Delay (s)			0.0			94.4		11.1	5.7		0.6	0.0
Level of Service			A			F		B	A		A	A
Approach Delay (s)		0.0			94.4			10.8			0.5	
Approach LOS		A			F			B			A	
Intersection Summary												
HCM 2000 Control Delay			9.7			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			200.0			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			87.0%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Timings

5: Buford Dr NE & Brand Smart Way

09/17/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	148	79	110	2219	2359	168
Future Volume (vph)	148	79	110	2219	2359	168
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	
Permitted Phases	4	4	6			2
Detector Phase	4	4	1	6	2	2
Switch Phase						
Minimum Initial (s)	6.0	6.0	4.0	12.0	12.0	12.0
Minimum Split (s)	12.2	12.2	9.7	18.1	18.1	18.1
Total Split (s)	35.0	35.0	25.0	165.0	140.0	140.0
Total Split (%)	17.5%	17.5%	12.5%	82.5%	70.0%	70.0%
Yellow Time (s)	3.2	3.2	3.2	4.7	4.7	4.7
All-Red Time (s)	3.0	3.0	2.5	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	5.7	6.1	6.1	6.1
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 200

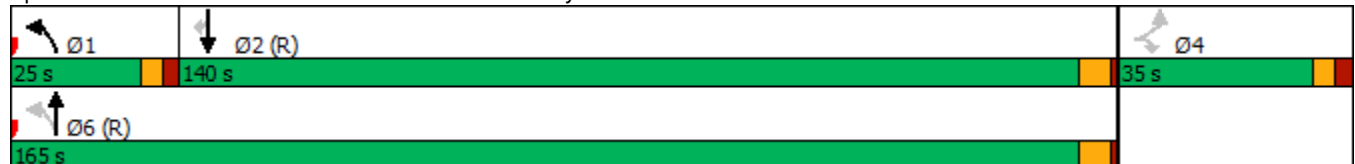
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of 1st Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Splits and Phases: 5: Buford Dr NE & Brand Smart Way



HCM Signalized Intersection Capacity Analysis

5: Buford Dr NE & Brand Smart Way

09/17/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←←	→	←	↑↑	↑↑	↖
Traffic Volume (vph)	148	79	110	2219	2359	168
Future Volume (vph)	148	79	110	2219	2359	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	5.7	6.1	6.1	6.1
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.03	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	47	3539	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.96	0.96	0.93	0.93
Adj. Flow (vph)	164	88	115	2311	2537	181
RTOR Reduction (vph)	0	81	0	0	0	19
Lane Group Flow (vph)	164	7	115	2311	2537	162
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	
Permitted Phases	4	4	6			2
Actuated Green, G (s)	14.9	14.9	172.8	172.8	153.6	153.6
Effective Green, g (s)	14.9	14.9	172.8	172.8	153.6	153.6
Actuated g/C Ratio	0.07	0.07	0.86	0.86	0.77	0.77
Clearance Time (s)	6.2	6.2	5.7	6.1	6.1	6.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	255	117	156	3057	2717	1215
v/s Ratio Prot			0.05	c0.65	c0.72	
v/s Ratio Perm	c0.05	0.00	0.59			0.10
v/c Ratio	0.64	0.06	0.74	0.76	0.93	0.13
Uniform Delay, d1	90.0	86.0	76.4	5.3	19.0	6.0
Progression Factor	1.00	1.00	1.10	1.08	1.02	1.53
Incremental Delay, d2	5.5	0.2	10.5	1.1	6.5	0.2
Delay (s)	95.4	86.2	94.4	6.9	25.9	9.4
Level of Service	F	F	F	A	C	A
Approach Delay (s)	92.2			11.0	24.8	
Approach LOS	F			B	C	
Intersection Summary						
HCM 2000 Control Delay			21.7		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.91			
Actuated Cycle Length (s)			200.0		Sum of lost time (s)	18.0
Intersection Capacity Utilization			91.3%		ICU Level of Service	F
Analysis Period (min)			15			

c Critical Lane Group

HCM 6th TWSC
6: Buford Dr NE & Laurel Crossing Pkwy NE

09/17/2018

Intersection						
Int Delay, s/veh	45					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	43	2273	44	87	2394
Future Vol, veh/h	18	43	2273	44	87	2394
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	0	0	-	175	325	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	69	69	96	96	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	62	2368	46	95	2602
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	3859	1184	0	0	2368	0
Stage 1	2368	-	-	-	-	-
Stage 2	1491	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 3	182	-	-	203	-
Stage 1	56	-	-	-	-	-
Stage 2	173	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 2	182	-	-	203	-
Mov Cap-2 Maneuver	~ 2	-	-	-	-	-
Stage 1	30	-	-	-	-	-
Stage 2	173	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, \$	2605.4	0		1.3		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	2	182	203	-
HCM Lane V/C Ratio	-	-	13.043	0.342	0.466	-
HCM Control Delay (s)	-	\$	8746.6	34.7	37.3	-
HCM Lane LOS	-	-	F	D	E	-
HCM 95th %tile Q(veh)	-	-	5	1.4	2.2	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Timings

7: Buford Dr NE & Rock Springs Rd

09/17/2018

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	35	24	112	35	24	64	1822	58	206	1954	259
Future Volume (vph)	35	24	112	35	24	64	1822	58	206	1954	259
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8	1	6		5	2	
Permitted Phases	4		4	8		6		6	2		2
Detector Phase	7	4	4	8	8	1	6	6	5	2	2
Switch Phase											
Minimum Initial (s)	4.0	6.0	6.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0	12.0
Minimum Split (s)	11.0	12.5	12.5	14.0	14.0	10.8	19.3	19.3	12.0	19.3	19.3
Total Split (s)	28.0	48.0	48.0	20.0	20.0	17.0	117.0	117.0	35.0	135.0	135.0
Total Split (%)	14.0%	24.0%	24.0%	10.0%	10.0%	8.5%	58.5%	58.5%	17.5%	67.5%	67.5%
Yellow Time (s)	4.0	3.5	3.5	5.0	5.0	3.8	4.7	4.7	5.0	4.7	4.7
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.6	2.6	3.0	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	6.5	6.5	8.0	8.0	6.8	7.3	7.3	8.0	7.3	7.3
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 200

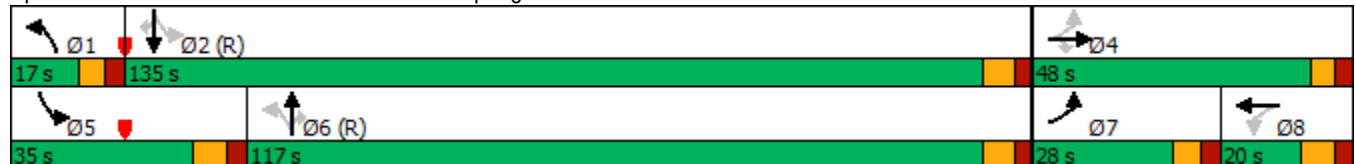
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Splits and Phases: 7: Buford Dr NE & Rock Springs Rd



HCM 6th Signalized Intersection Summary

7: Buford Dr NE & Rock Springs Rd

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	24	112	35	24	112	64	1822	58	206	1954	259
Future Volume (veh/h)	35	24	112	35	24	112	64	1822	58	206	1954	259
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	45	31	0	41	28	130	70	2002	0	219	2079	0
Peak Hour Factor	0.77	0.77	0.77	0.86	0.86	0.86	0.91	0.91	0.91	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	143	216		119	17	80	216	2559		276	2677	
Arrive On Green	0.02	0.12	0.00	0.06	0.06	0.06	0.04	1.00	0.00	0.10	1.00	0.00
Sat Flow, veh/h	3456	1870	1585	1378	289	1340	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	45	31	0	41	0	158	70	2002	0	219	2079	0
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1378	0	1629	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	2.4	3.0	0.0	5.8	0.0	12.0	2.2	0.0	0.0	7.1	0.0	0.0
Cycle Q Clear(g_c), s	2.4	3.0	0.0	5.8	0.0	12.0	2.2	0.0	0.0	7.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.82	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	143	216		119	0	98	216	2559		276	2677	
V/C Ratio(X)	0.31	0.14		0.35	0.00	1.62	0.32	0.78		0.79	0.78	
Avail Cap(c_a), veh/h	435	388		119	0	98	270	2559		431	2677	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	0.74	0.74	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	84.3	79.5	0.0	91.1	0.0	94.0	6.9	0.0	0.0	5.8	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.3	0.0	1.7	0.0	319.3	0.6	1.8	0.0	5.4	2.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.5	0.0	2.1	0.0	13.8	0.8	0.7	0.0	2.5	0.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	85.5	79.8	0.0	92.8	0.0	413.3	7.5	1.8	0.0	11.2	2.3	0.0
LnGrp LOS	F	E		F	A	F	A	A		B	A	
Approach Vol, veh/h	76			A			199			2072		
Approach Delay, s/veh	83.2						347.3			2.0		
Approach LOS	F						F			A		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.9	158.0		31.1	17.6	151.3	11.1	20.0				
Change Period (Y+Rc), s	* 6.8	* 7.3		* 8	8.0	* 7.3	7.0	8.0				
Max Green Setting (Gmax), s	* 10	* 1.3E2		* 42	27.0	* 1.1E2	21.0	12.0				
Max Q Clear Time (g_c+I1), s	4.2	2.0		5.0	9.1	2.0	4.4	14.0				
Green Ext Time (p_c), s	0.1	36.3		0.1	0.5	31.9	0.1	0.0				

Intersection Summary

HCM 6th Ctrl Delay 18.7

HCM 6th LOS B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

8: Buford Dr NE & Tech Center Pkwy NE

09/17/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗	↖	↖	↕	↕	↖
Traffic Volume (vph)	188	97	56	1767	1905	155
Future Volume (vph)	188	97	56	1767	1905	155
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	8		1	6	2	
Permitted Phases		8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	6.0	6.0	4.0	20.0	20.0	20.0
Minimum Split (s)	12.4	12.4	10.0	26.6	26.6	26.6
Total Split (s)	30.0	30.0	17.0	170.0	153.0	153.0
Total Split (%)	15.0%	15.0%	8.5%	85.0%	76.5%	76.5%
Yellow Time (s)	3.5	3.5	3.3	5.0	5.0	5.0
All-Red Time (s)	2.9	2.9	2.7	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.0	6.6	6.6	6.6
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 200

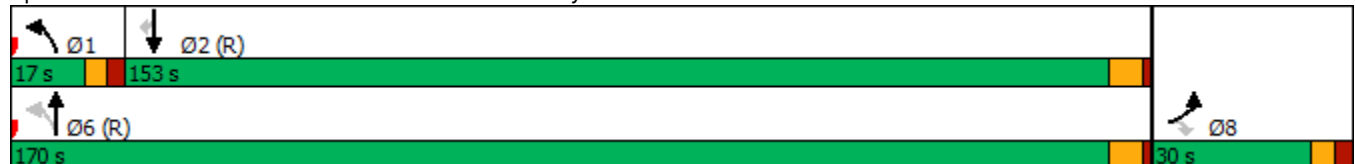
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of 1st Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Splits and Phases: 8: Buford Dr NE & Tech Center Pkwy NE



HCM 6th Signalized Intersection Summary

8: Buford Dr NE & Tech Center Pkwy NE

09/17/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←←	→	←	↑↑	↑↑	↖
Traffic Volume (veh/h)	188	97	56	1767	1905	155
Future Volume (veh/h)	188	97	56	1767	1905	155
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	221	0	58	1841	2140	0
Peak Hour Factor	0.85	0.85	0.96	0.96	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	261		222	3054	2880	
Arrive On Green	0.08	0.00	0.04	1.00	1.00	0.00
Sat Flow, veh/h	3456	1585	1781	3647	3647	1585
Grp Volume(v), veh/h	221	0	58	1841	2140	0
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777	1777	1585
Q Serve(g_s), s	12.6	0.0	1.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	12.6	0.0	1.1	0.0	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	261		222	3054	2880	
V/C Ratio(X)	0.85		0.26	0.60	0.74	
Avail Cap(c_a), veh/h	408		286	3054	2880	
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.77	0.77	0.50	0.00
Uniform Delay (d), s/veh	91.3	0.0	2.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	9.5	0.0	0.5	0.7	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	0.0	0.3	0.3	0.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	100.8	0.0	3.1	0.7	0.9	0.0
LnGrp LOS	F		A	A	A	
Approach Vol, veh/h	221	A		1899	2140	A
Approach Delay, s/veh	100.8			0.8	0.9	
Approach LOS	F			A	A	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.8	168.7			178.5	21.5
Change Period (Y+Rc), s	6.0	* 6.6			* 6.6	6.4
Max Green Setting (Gmax), s	11.0	* 1.5E2			* 1.6E2	23.6
Max Q Clear Time (g_c+I1), s	3.1	2.0			2.0	14.6
Green Ext Time (p_c), s	0.0	40.3			26.2	0.5

Intersection Summary

HCM 6th Ctrl Delay	6.0
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

9: Buford Dr NE & Braves Ave

09/17/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3	Ø5
Lane Configurations								
Traffic Volume (vph)	5	9	41	1815	1947	51		
Future Volume (vph)	5	9	41	1815	1947	51		
Turn Type	Prot	Perm	Prot	NA	NA	Perm		
Protected Phases	4		1	6	2		3	5
Permitted Phases		4				2		
Detector Phase	4	4	1	6	2	2		
Switch Phase								
Minimum Initial (s)	6.0	6.0	4.0	12.0	12.0	12.0	5.0	5.0
Minimum Split (s)	12.4	12.4	10.3	18.9	18.9	18.9	9.5	9.5
Total Split (s)	28.0	28.0	18.0	146.0	145.0	145.0	9.0	17.0
Total Split (%)	14.0%	14.0%	9.0%	73.0%	72.5%	72.5%	5%	9%
Yellow Time (s)	3.4	3.4	3.7	5.4	5.4	5.4	3.0	3.0
All-Red Time (s)	3.0	3.0	2.6	1.5	1.5	1.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.4	6.4	6.3	6.9	6.9	6.9		
Lead/Lag	Lag	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max	None	None

Intersection Summary

Cycle Length: 200

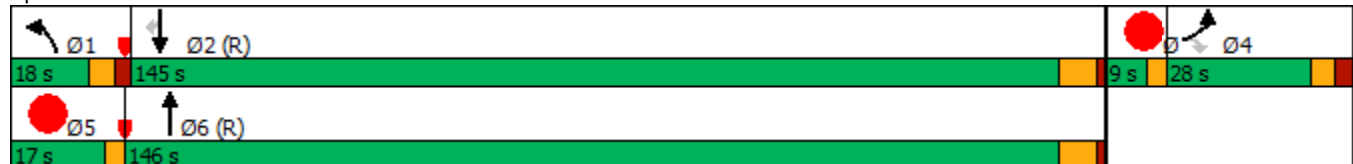
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Splits and Phases: 9: Buford Dr NE & Braves Ave



HCM Signalized Intersection Capacity Analysis

9: Buford Dr NE & Braves Ave

09/17/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	9	41	1815	1947	51
Future Volume (vph)	5	9	41	1815	1947	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4	6.3	6.9	6.9	6.9
Lane Util. Factor	1.00	1.00	0.97	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	3433	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	3433	3539	3539	1583
Peak-hour factor, PHF	0.88	0.88	0.91	0.91	0.97	0.97
Adj. Flow (vph)	6	10	45	1995	2007	53
RTOR Reduction (vph)	0	10	0	0	0	8
Lane Group Flow (vph)	6	0	45	1995	2007	45
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		1	6	2	
Permitted Phases		4				2
Actuated Green, G (s)	4.1	4.1	6.8	182.6	169.5	169.5
Effective Green, g (s)	4.1	4.1	6.8	182.6	169.5	169.5
Actuated g/C Ratio	0.02	0.02	0.03	0.91	0.85	0.85
Clearance Time (s)	6.4	6.4	6.3	6.9	6.9	6.9
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	36	32	116	3231	2999	1341
v/s Ratio Prot	c0.00		0.01	c0.56	c0.57	
v/s Ratio Perm		0.00				0.03
v/c Ratio	0.17	0.01	0.39	0.62	0.67	0.03
Uniform Delay, d1	96.3	96.0	94.6	1.7	5.4	2.4
Progression Factor	1.00	1.00	0.93	3.44	0.74	1.73
Incremental Delay, d2	2.2	0.1	0.7	0.3	0.8	0.0
Delay (s)	98.5	96.0	89.1	6.3	4.7	4.2
Level of Service	F	F	F	A	A	A
Approach Delay (s)	96.9			8.1	4.7	
Approach LOS	F			A	A	
Intersection Summary						
HCM 2000 Control Delay			6.8		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.68			
Actuated Cycle Length (s)			200.0		Sum of lost time (s)	22.6
Intersection Capacity Utilization			69.9%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Timings

10: Buford Dr NE & Old Peachtree Rd NE

09/17/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	506	111	57	231	214	115	1505	108	318	1504	53
Future Volume (vph)	183	506	111	57	231	214	115	1505	108	318	1504	53
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8			6			2
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	15.0	15.0	4.0	15.0	15.0
Minimum Split (s)	10.5	13.4	13.4	10.5	13.4	13.4	10.6	21.6	21.6	10.5	21.6	21.6
Total Split (s)	24.0	65.0	65.0	17.0	58.0	58.0	24.0	89.0	89.0	29.0	94.0	94.0
Total Split (%)	12.0%	32.5%	32.5%	8.5%	29.0%	29.0%	12.0%	44.5%	44.5%	14.5%	47.0%	47.0%
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	4.7	4.7	4.7	3.5	4.7	4.7
All-Red Time (s)	3.0	2.9	2.9	3.0	2.9	2.9	1.9	1.9	1.9	3.0	1.9	1.9
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)	6.5	7.4	7.4	6.5	7.4	7.4	6.6	6.6	6.6	6.5	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 200

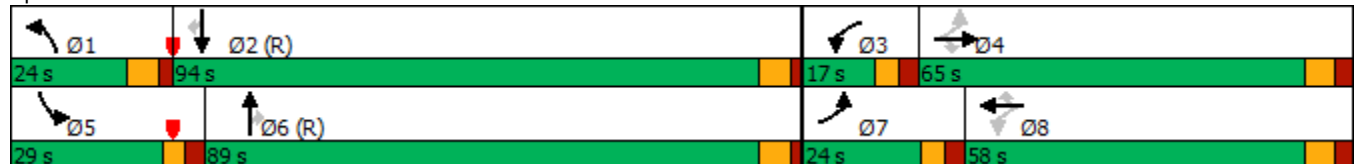
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Splits and Phases: 10: Buford Dr NE & Old Peachtree Rd NE



HCM 6th Signalized Intersection Summary

10: Buford Dr NE & Old Peachtree Rd NE

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	183	506	111	57	231	214	115	1505	108	318	1504	53
Future Volume (veh/h)	183	506	111	57	231	214	115	1505	108	318	1504	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	197	544	119	60	243	225	121	1584	114	353	1671	59
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	303	539	456	97	439	372	138	1536	685	381	1652	737
Arrive On Green	0.09	0.29	0.29	0.03	0.23	0.23	0.08	0.43	0.43	0.22	0.93	0.93
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	197	544	119	60	243	225	121	1584	114	353	1671	59
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	16.6	57.6	11.6	5.1	22.9	25.3	13.4	86.5	8.8	20.0	93.0	0.6
Cycle Q Clear(g_c), s	16.6	57.6	11.6	5.1	22.9	25.3	13.4	86.5	8.8	20.0	93.0	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	303	539	456	97	439	372	138	1536	685	381	1652	737
V/C Ratio(X)	0.65	1.01	0.26	0.62	0.55	0.60	0.88	1.03	0.17	0.93	1.01	0.08
Avail Cap(c_a), veh/h	303	539	456	130	473	401	155	1536	685	389	1652	737
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.72	0.72
Uniform Delay (d), s/veh	52.1	71.2	54.8	60.8	67.3	68.2	91.3	56.8	34.7	77.1	7.0	3.8
Incr Delay (d2), s/veh	4.8	41.3	0.3	6.2	1.2	2.3	36.9	31.3	0.5	21.8	21.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	33.4	4.7	2.5	11.0	10.4	7.6	44.2	3.5	9.1	8.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.9	112.5	55.1	67.0	68.5	70.5	128.2	88.1	35.3	99.0	28.7	3.9
LnGrp LOS	E	F	E	E	E	E	F	F	D	F	F	A
Approach Vol, veh/h	860			528			1819			2083		
Approach Delay, s/veh	91.8			69.2			87.5			39.9		
Approach LOS	F			E			F			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.1	99.6	13.4	65.0	28.6	93.1	24.0	54.4				
Change Period (Y+Rc), s	* 6.6	* 6.6	6.5	7.4	6.5	* 6.6	6.5	7.4				
Max Green Setting (Gmax), s	* 17	* 87	10.5	57.6	22.5	* 82	17.5	50.6				
Max Q Clear Time (g_c+I1), s	15.4	95.0	7.1	59.6	22.0	88.5	18.6	27.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.1	0.0	0.0	2.0				
Intersection Summary												
HCM 6th Ctrl Delay			67.6									
HCM 6th LOS			E									
Notes												

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queuing and Blocking Report
Background PM

09/17/2018

Intersection: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	L	TR	R	L	T	T	TR	L
Maximum Queue (ft)	114	116	30	187	270	181	147	111	156	179	214	298
Average Queue (ft)	49	44	14	94	159	80	43	25	78	91	114	179
95th Queue (ft)	97	85	37	207	249	152	101	68	143	173	185	299
Link Distance (ft)	418	418	418			574	574		3049	3049	3049	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				250	250			300				500
Storage Blk Time (%)					1							
Queuing Penalty (veh)					1							

Intersection: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

Movement	SB	SB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	323	404	391	435
Average Queue (ft)	218	225	234	198
95th Queue (ft)	317	429	434	403
Link Distance (ft)		1465	1465	1465
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	500			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

Background PM

09/17/2018

Intersection: 2: Buford Dr NE & Mall of Georgia Blvd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	203	167	460	490	320	374	451	62	212	243	380	432
Average Queue (ft)	122	83	228	390	218	271	141	21	121	145	226	248
95th Queue (ft)	194	177	392	565	316	365	279	43	206	221	389	419
Link Distance (ft)	451	451	451	451			717				976	976
Upstream Blk Time (%)			2	23								
Queuing Penalty (veh)			0	0								
Storage Bay Dist (ft)					275	275		400	375	375		
Storage Blk Time (%)					1	10					0	
Queuing Penalty (veh)					1	21					1	

Intersection: 2: Buford Dr NE & Mall of Georgia Blvd

Movement	NB	NB	SB	SB	SB	SB
Directions Served	TR	R	L	T	T	TR
Maximum Queue (ft)	484	275	400	931	3015	955
Average Queue (ft)	271	146	119	489	619	439
95th Queue (ft)	445	370	342	786	1433	695
Link Distance (ft)	976			3049	3049	3049
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		175	300			
Storage Blk Time (%)	21	0		36		
Queuing Penalty (veh)	85	1		20		

Intersection: 3: Buford Dr NE & I-85 SB Ramp

Movement	WB	WB	SB
Directions Served	R	R	T
Maximum Queue (ft)	882	897	53
Average Queue (ft)	547	538	2
95th Queue (ft)	944	937	18
Link Distance (ft)	867	867	976
Upstream Blk Time (%)	15	17	
Queuing Penalty (veh)	0	0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report

Background PM

09/17/2018

Intersection: 4: Buford Dr NE & I-85 NB Ramp

Movement	WB	SB
Directions Served	R	T
Maximum Queue (ft)	1083	45
Average Queue (ft)	1050	2
95th Queue (ft)	1064	15
Link Distance (ft)	1031	1467
Upstream Blk Time (%)	99	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Buford Dr NE & Brand Smart Way

Movement	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	L	R	L	T	T	T	T
Maximum Queue (ft)	166	138	141	224	406	365	988	1041
Average Queue (ft)	86	71	42	95	121	180	472	501
95th Queue (ft)	139	125	108	191	297	360	815	882
Link Distance (ft)	864	864	864		1166	1166	1076	1076
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)				300				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 6: Buford Dr NE & Laurel Crossing Pkwy NE

Movement	WB	SB
Directions Served	L	L
Maximum Queue (ft)	112	224
Average Queue (ft)	26	86
95th Queue (ft)	69	159
Link Distance (ft)	3679	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		325
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

Background PM

09/17/2018

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	EB	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	TR	L	T	T	R	L	T
Maximum Queue (ft)	48	65	62	186	90	283	250	454	448	225	324	1014
Average Queue (ft)	16	17	25	48	31	112	80	375	395	40	211	563
95th Queue (ft)	41	45	61	123	75	214	229	530	486	181	368	939
Link Distance (ft)	2600	2600	2600			2242		412	412			1184
Upstream Blk Time (%)								13	14			
Queuing Penalty (veh)								124	135			
Storage Bay Dist (ft)				150	200		175			125	225	
Storage Blk Time (%)				1		4		30	32		10	20
Queuing Penalty (veh)				0		1		19	19		94	41

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	1057	175
Average Queue (ft)	577	68
95th Queue (ft)	960	208
Link Distance (ft)	1184	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		75
Storage Blk Time (%)	25	0
Queuing Penalty (veh)	64	0

Intersection: 8: Buford Dr NE & Tech Center Pkwy NE

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	524	544	121	137	290	308	424	496	200
Average Queue (ft)	327	331	25	52	158	167	100	109	21
95th Queue (ft)	553	558	83	105	273	291	312	349	123
Link Distance (ft)	2083	2083	2083		1479	1479	412	412	
Upstream Blk Time (%)							0	1	
Queuing Penalty (veh)							3	9	
Storage Bay Dist (ft)				250					150
Storage Blk Time (%)					2			3	
Queuing Penalty (veh)					1			4	

Queuing and Blocking Report

Background PM

09/17/2018

Intersection: 9: Buford Dr NE & Braves Ave

Movement	EB	NB	NB	NB	NB	SB	SB
Directions Served	L	L	L	T	T	T	T
Maximum Queue (ft)	52	52	74	110	129	297	333
Average Queue (ft)	9	10	29	5	6	75	81
95th Queue (ft)	36	29	62	39	48	192	207
Link Distance (ft)	766			1552	1552	1479	1479
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		850	850				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	L
Maximum Queue (ft)	305	771	400	274	430	257	575	910	892	450	265	675
Average Queue (ft)	151	439	166	62	230	131	331	866	850	186	168	519
95th Queue (ft)	243	680	453	189	369	217	709	923	956	534	255	894
Link Distance (ft)	2063	2063			2738			858	858			
Upstream Blk Time (%)								48	45			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (ft)			300	225		400	375			375	375	375
Storage Blk Time (%)		29			15		0	56	54			
Queuing Penalty (veh)		33			42		0	64	59			

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	1104	1168	110
Average Queue (ft)	813	831	13
95th Queue (ft)	1087	1110	69
Link Distance (ft)	1552	1552	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			110
Storage Blk Time (%)	43	51	0
Queuing Penalty (veh)	136	27	1

Network Summary

Network wide Queuing Penalty: 1005

Timings

7: Buford Dr NE & Rock Springs Rd

09/17/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	261	20	91	77	41	252	81	1666	10	29	1475	192
Future Volume (vph)	261	20	91	77	41	252	81	1666	10	29	1475	192
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Detector Phase	7	4	4	8	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	6.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0	12.0
Minimum Split (s)	11.0	12.5	12.5	14.0	14.0	14.0	10.8	19.3	19.3	12.0	19.3	19.3
Total Split (s)	23.0	46.0	46.0	23.0	23.0	23.0	17.0	77.0	77.0	17.0	77.0	77.0
Total Split (%)	16.4%	32.9%	32.9%	16.4%	16.4%	16.4%	12.1%	55.0%	55.0%	12.1%	55.0%	55.0%
Yellow Time (s)	4.0	3.5	3.5	5.0	5.0	5.0	3.8	4.7	4.7	5.0	4.7	4.7
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.6	2.6	3.0	2.6	2.6
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)	7.0	6.5	6.5	8.0	8.0	8.0	6.8	7.3	7.3	8.0	7.3	7.3
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 140

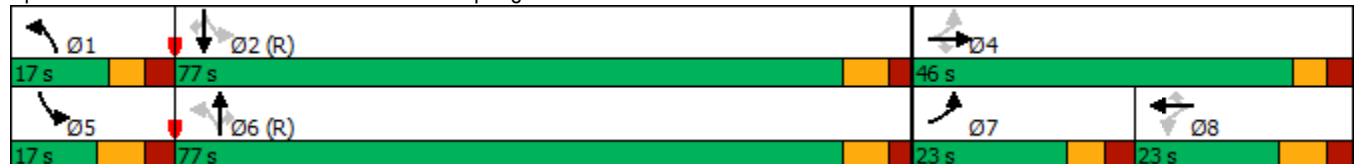
Actuated Cycle Length: 140

Offset: 110 (79%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Splits and Phases: 7: Buford Dr NE & Rock Springs Rd



HCM 6th Signalized Intersection Summary

7: Buford Dr NE & Rock Springs Rd

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	261	20	91	77	41	252	81	1666	10	29	1475	192
Future Volume (veh/h)	261	20	91	77	41	252	81	1666	10	29	1475	192
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	303	23	0	97	52	0	85	1754	0	31	1569	0
Peak Hour Factor	0.86	0.86	0.86	0.79	0.79	0.79	0.95	0.95	0.95	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	580	427		168	157		221	2080		246	2064	
Arrive On Green	0.09	0.23	0.00	0.08	0.08	0.00	0.07	1.00	0.00	0.03	0.77	0.00
Sat Flow, veh/h	3456	1870	1585	1388	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	303	23	0	97	52	0	85	1754	0	31	1569	0
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1388	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	10.9	1.3	0.0	9.6	3.7	0.0	2.8	0.0	0.0	1.0	34.1	0.0
Cycle Q Clear(g_c), s	10.9	1.3	0.0	9.6	3.7	0.0	2.8	0.0	0.0	1.0	34.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	580	427		168	157		221	2080		246	2064	
V/C Ratio(X)	0.52	0.05		0.58	0.33		0.38	0.84		0.13	0.76	
Avail Cap(c_a), veh/h	649	528		200	200		292	2080		325	2064	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.80	0.80	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.2	42.2	0.0	63.2	60.4	0.0	15.9	0.0	0.0	11.3	10.6	0.0
Incr Delay (d2), s/veh	0.7	0.1	0.0	3.1	1.2	0.0	0.9	3.5	0.0	0.2	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	0.6	0.0	3.5	1.8	0.0	1.0	1.0	0.0	0.4	8.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.9	42.3	0.0	66.3	61.6	0.0	16.8	3.5	0.0	11.5	13.2	0.0
LnGrp LOS	D	D		E	E		B	A		B	B	
Approach Vol, veh/h	326		A	149		A	1839		A	1600		A
Approach Delay, s/veh	50.3			64.7			4.2			13.2		
Approach LOS	D			E			A			B		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.4	88.6		39.9	10.8	89.3	20.2	19.8				
Change Period (Y+Rc), s	* 6.8	* 7.3		* 8	8.0	* 7.3	7.0	8.0				
Max Green Setting (Gmax), s	* 10	* 70		* 40	9.0	* 70	16.0	15.0				
Max Q Clear Time (g_c+I1), s	4.8	36.1		3.3	3.0	2.0	12.9	11.6				
Green Ext Time (p_c), s	0.1	14.2		0.1	0.0	21.4	0.3	0.1				

Intersection Summary

HCM 6th Ctrl Delay 14.0

HCM 6th LOS B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

10: Buford Dr NE & Old Peachtree Rd NE

09/17/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	161	109	153	417	385	116	1171	68	134	1348	42
Future Volume (vph)	98	161	109	153	417	385	116	1171	68	134	1348	42
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8			6			2
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	15.0	15.0	4.0	15.0	15.0
Minimum Split (s)	10.5	13.4	13.4	10.5	13.4	13.4	10.6	21.6	21.6	10.5	21.6	21.6
Total Split (s)	17.0	42.0	42.0	15.0	40.0	40.0	22.0	66.0	66.0	17.0	61.0	61.0
Total Split (%)	12.1%	30.0%	30.0%	10.7%	28.6%	28.6%	15.7%	47.1%	47.1%	12.1%	43.6%	43.6%
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	4.7	4.7	4.7	3.5	4.7	4.7
All-Red Time (s)	3.0	2.9	2.9	3.0	2.9	2.9	1.9	1.9	1.9	3.0	1.9	1.9
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)	6.5	7.4	7.4	6.5	7.4	7.4	6.6	6.6	6.6	6.5	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 140

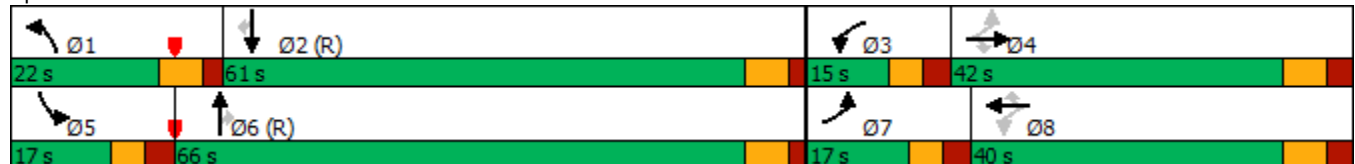
Actuated Cycle Length: 140

Offset: 43 (31%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Splits and Phases: 10: Buford Dr NE & Old Peachtree Rd NE



HCM 6th Signalized Intersection Summary

10: Buford Dr NE & Old Peachtree Rd NE

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	161	109	153	417	385	116	1171	68	134	1348	42
Future Volume (veh/h)	98	161	109	153	417	385	116	1171	68	134	1348	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	105	173	117	161	439	405	122	1233	72	149	1498	47
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	155	818	365	368	436	369	146	2341	727	199	1541	687
Arrive On Green	0.06	0.23	0.23	0.06	0.23	0.23	0.08	0.46	0.46	0.02	0.14	0.14
Sat Flow, veh/h	1781	3554	1585	1781	1870	1585	1781	5106	1585	3456	3554	1585
Grp Volume(v), veh/h	105	173	117	161	439	405	122	1233	72	149	1498	47
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1702	1585	1728	1777	1585
Q Serve(g_s), s	6.2	5.5	8.6	8.5	32.6	32.6	9.5	24.1	3.6	6.0	58.7	3.6
Cycle Q Clear(g_c), s	6.2	5.5	8.6	8.5	32.6	32.6	9.5	24.1	3.6	6.0	58.7	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	155	818	365	368	436	369	146	2341	727	199	1541	687
V/C Ratio(X)	0.68	0.21	0.32	0.44	1.01	1.10	0.84	0.53	0.10	0.75	0.97	0.07
Avail Cap(c_a), veh/h	185	878	392	368	436	369	196	2341	727	259	1541	687
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.78	0.78	0.78
Uniform Delay (d), s/veh	41.4	43.6	44.8	39.5	53.7	53.7	63.4	27.1	21.5	67.7	59.1	35.5
Incr Delay (d2), s/veh	7.5	0.1	0.5	0.8	45.1	75.6	20.4	0.9	0.3	6.6	14.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	2.4	3.4	0.4	20.4	20.4	5.0	9.5	1.4	2.9	31.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.8	43.7	45.3	40.3	98.8	129.3	83.8	27.9	21.8	74.2	73.8	35.7
LnGrp LOS	D	D	D	D	F	F	F	C	C	E	E	D
Approach Vol, veh/h		395			1005			1427			1694	
Approach Delay, s/veh		45.5			101.7			32.4			72.7	
Approach LOS		D			F			C			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	67.3	15.0	39.6	14.6	70.8	14.6	40.0				
Change Period (Y+Rc), s	* 6.6	* 6.6	6.5	7.4	6.5	* 6.6	6.5	7.4				
Max Green Setting (Gmax), s	* 15	* 54	8.5	34.6	10.5	* 59	10.5	32.6				
Max Q Clear Time (g_c+I1), s	11.5	60.7	10.5	10.6	8.0	26.1	8.2	34.6				
Green Ext Time (p_c), s	0.1	0.0	0.0	1.3	0.1	9.8	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			64.1									
HCM 6th LOS			E									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Queuing and Blocking Report
Background AM Improved

09/17/2018

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	T	R	L	T	T	R	L
Maximum Queue (ft)	158	171	40	130	300	321	225	243	413	426	224	44
Average Queue (ft)	81	83	7	24	69	66	137	66	221	227	8	18
95th Queue (ft)	135	141	24	78	180	228	248	156	373	391	77	45
Link Distance (ft)	2600	2600	2600			2240			412	412		
Upstream Blk Time (%)									0	1		
Queuing Penalty (veh)									2	7		
Storage Bay Dist (ft)				150	200		200	175			125	225
Storage Blk Time (%)						0	12		13	20		
Queuing Penalty (veh)						0	14		11	2		

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	657	708	175
Average Queue (ft)	423	451	99
95th Queue (ft)	640	661	240
Link Distance (ft)	1184	1184	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			75
Storage Blk Time (%)	22	35	
Queuing Penalty (veh)	6	67	

Queuing and Blocking Report

Background AM Improved

09/17/2018

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	R	L	T	T	T	R
Maximum Queue (ft)	135	132	107	78	275	1210	500	216	342	303	243	35
Average Queue (ft)	60	64	39	29	183	561	284	92	255	209	158	6
95th Queue (ft)	108	103	86	64	337	1026	560	173	353	289	235	20
Link Distance (ft)	2063	2063	2063			2732			1217	1217	1217	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				300	225		400	375				375
Storage Blk Time (%)						50						
Queuing Penalty (veh)						268						

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	108	674	816	791	135
Average Queue (ft)	51	91	486	489	32
95th Queue (ft)	99	283	790	782	119
Link Distance (ft)			1552	1552	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	375	375			110
Storage Blk Time (%)			24	48	0
Queuing Penalty (veh)			32	20	0

Zone Summary

Zone wide Queuing Penalty: 430

Timings

7: Buford Dr NE & Rock Springs Rd

09/17/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 		 	 	 	 	 	 	
Traffic Volume (vph)	35	24	112	35	24	112	64	1822	58	206	1954	259
Future Volume (vph)	35	24	112	35	24	112	64	1822	58	206	1954	259
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Detector Phase	7	4	4	8	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	6.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0	12.0
Minimum Split (s)	11.0	12.5	12.5	14.0	14.0	14.0	10.8	19.3	19.3	12.0	19.3	19.3
Total Split (s)	28.0	48.0	48.0	20.0	20.0	20.0	17.0	117.0	117.0	35.0	135.0	135.0
Total Split (%)	14.0%	24.0%	24.0%	10.0%	10.0%	10.0%	8.5%	58.5%	58.5%	17.5%	67.5%	67.5%
Yellow Time (s)	4.0	3.5	3.5	5.0	5.0	5.0	3.8	4.7	4.7	5.0	4.7	4.7
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.6	2.6	3.0	2.6	2.6
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)	7.0	6.5	6.5	8.0	8.0	8.0	6.8	7.3	7.3	8.0	7.3	7.3
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 200

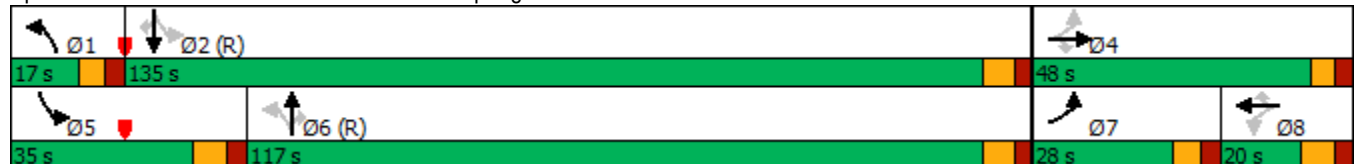
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Splits and Phases: 7: Buford Dr NE & Rock Springs Rd



HCM 6th Signalized Intersection Summary

7: Buford Dr NE & Rock Springs Rd

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	24	112	35	24	112	64	1822	58	206	1954	259
Future Volume (veh/h)	35	24	112	35	24	112	64	1822	58	206	1954	259
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	45	31	0	41	28	0	70	2002	0	219	2079	0
Peak Hour Factor	0.77	0.77	0.77	0.86	0.86	0.86	0.91	0.91	0.91	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	211	178		91	74		219	2640		276	2752	
Arrive On Green	0.02	0.10	0.00	0.04	0.04	0.00	0.04	1.00	0.00	0.09	1.00	0.00
Sat Flow, veh/h	3456	1870	1585	1378	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	45	31	0	41	28	0	70	2002	0	219	2079	0
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1378	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	2.5	3.0	0.0	5.9	2.9	0.0	2.0	0.0	0.0	6.5	0.0	0.0
Cycle Q Clear(g_c), s	2.5	3.0	0.0	5.9	2.9	0.0	2.0	0.0	0.0	6.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	211	178		91	74		219	2640		276	2752	
V/C Ratio(X)	0.21	0.17		0.45	0.38		0.32	0.76		0.79	0.76	
Avail Cap(c_a), veh/h	502	388		119	112		275	2640		436	2752	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.74	0.74	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	87.6	83.2	0.0	95.1	93.6	0.0	5.7	0.0	0.0	4.9	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.5	0.0	3.5	3.2	0.0	0.6	1.6	0.0	5.2	2.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.5	0.0	2.2	1.5	0.0	0.7	0.6	0.0	2.3	0.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	88.1	83.7	0.0	98.6	96.8	0.0	6.4	1.6	0.0	10.1	2.0	0.0
LnGrp LOS	F	F		F	F		A	A		B	A	
Approach Vol, veh/h	76		A	69		A	2072		A	2298		A
Approach Delay, s/veh	86.3			97.9			1.7			2.8		
Approach LOS	F			F			A			A		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.8	162.2		27.1	17.1	155.9	11.2	15.9				
Change Period (Y+Rc), s	* 6.8	* 7.3		* 8	8.0	* 7.3	7.0	8.0				
Max Green Setting (Gmax), s	* 10	* 1.3E2		* 42	27.0	* 1.1E2	21.0	12.0				
Max Q Clear Time (g_c+I1), s	4.0	2.0		5.0	8.5	2.0	4.5	7.9				
Green Ext Time (p_c), s	0.1	36.3		0.1	0.5	31.9	0.1	0.1				

Intersection Summary

HCM 6th Ctrl Delay	5.1
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

10: Buford Dr NE & Old Peachtree Rd NE

09/17/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	506	111	57	231	214	115	1505	108	318	1504	53
Future Volume (vph)	183	506	111	57	231	214	115	1505	108	318	1504	53
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8			6			2
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	15.0	15.0	4.0	15.0	15.0
Minimum Split (s)	10.5	13.4	13.4	10.5	13.4	13.4	10.6	21.6	21.6	10.5	21.6	21.6
Total Split (s)	24.0	65.0	65.0	17.0	58.0	58.0	24.0	89.0	89.0	29.0	94.0	94.0
Total Split (%)	12.0%	32.5%	32.5%	8.5%	29.0%	29.0%	12.0%	44.5%	44.5%	14.5%	47.0%	47.0%
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	4.7	4.7	4.7	3.5	4.7	4.7
All-Red Time (s)	3.0	2.9	2.9	3.0	2.9	2.9	1.9	1.9	1.9	3.0	1.9	1.9
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)	6.5	7.4	7.4	6.5	7.4	7.4	6.6	6.6	6.6	6.5	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 200

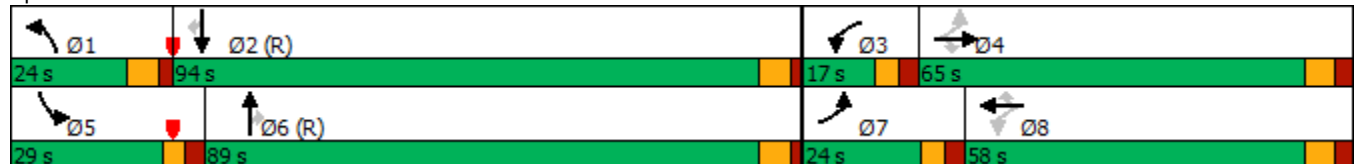
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Splits and Phases: 10: Buford Dr NE & Old Peachtree Rd NE



HCM 6th Signalized Intersection Summary

10: Buford Dr NE & Old Peachtree Rd NE

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	183	506	111	57	231	214	115	1505	108	318	1504	53
Future Volume (veh/h)	183	506	111	57	231	214	115	1505	108	318	1504	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	197	544	119	60	243	225	121	1584	114	353	1671	59
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	223	744	332	153	297	252	138	2596	806	381	1922	857
Arrive On Green	0.09	0.21	0.21	0.04	0.16	0.16	0.08	0.51	0.51	0.22	1.00	1.00
Sat Flow, veh/h	1781	3554	1585	1781	1870	1585	1781	5106	1585	3456	3554	1585
Grp Volume(v), veh/h	197	544	119	60	243	225	121	1584	114	353	1671	59
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1702	1585	1728	1777	1585
Q Serve(g_s), s	17.5	28.6	12.8	5.6	25.1	27.8	13.4	44.2	7.6	20.0	0.0	0.0
Cycle Q Clear(g_c), s	17.5	28.6	12.8	5.6	25.1	27.8	13.4	44.2	7.6	20.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	223	744	332	153	297	252	138	2596	806	381	1922	857
V/C Ratio(X)	0.89	0.73	0.36	0.39	0.82	0.89	0.88	0.61	0.14	0.93	0.87	0.07
Avail Cap(c_a), veh/h	223	1023	456	181	473	401	155	2596	806	389	1922	857
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.72	0.72
Uniform Delay (d), s/veh	65.9	73.8	67.6	67.9	81.3	82.5	91.3	35.0	26.0	77.1	0.0	0.0
Incr Delay (d2), s/veh	31.7	1.7	0.7	1.6	6.0	14.4	36.9	1.1	0.4	21.8	4.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	13.1	5.2	2.6	12.6	12.3	7.6	18.3	3.0	9.1	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	97.6	75.5	68.2	69.5	87.4	96.9	128.2	36.1	26.4	99.0	4.2	0.1
LnGrp LOS	F	E	E	E	F	F	F	D	C	F	A	A
Approach Vol, veh/h		860			528			1819			2083	
Approach Delay, s/veh		79.5			89.4			41.6			20.1	
Approach LOS		E			F			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.1	114.8	13.9	49.3	28.6	108.3	24.0	39.2				
Change Period (Y+Rc), s	* 6.6	* 6.6	6.5	7.4	6.5	* 6.6	6.5	7.4				
Max Green Setting (Gmax), s	* 17	* 87	10.5	57.6	22.5	* 82	17.5	50.6				
Max Q Clear Time (g_c+I1), s	15.4	2.0	7.6	30.6	22.0	46.2	19.5	29.8				
Green Ext Time (p_c), s	0.0	20.5	0.0	3.8	0.1	14.6	0.0	1.9				

Intersection Summary

HCM 6th Ctrl Delay	44.1
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queuing and Blocking Report
Background PM Improved

09/17/2018

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	T	R	L	T	T	R	L
Maximum Queue (ft)	46	45	82	126	82	56	134	250	431	438	225	325
Average Queue (ft)	12	16	22	41	29	23	34	66	364	366	32	194
95th Queue (ft)	34	42	64	102	71	59	100	211	536	542	161	342
Link Distance (ft)	2600	2600	2600			2240			412	412		
Upstream Blk Time (%)									8	10		
Queuing Penalty (veh)									82	95		
Storage Bay Dist (ft)				150	200		200	175			125	225
Storage Blk Time (%)									25	26		5
Queuing Penalty (veh)									16	15		49

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	853	832	175
Average Queue (ft)	356	395	56
95th Queue (ft)	736	775	191
Link Distance (ft)	1184	1184	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			75
Storage Blk Time (%)	12	19	
Queuing Penalty (veh)	25	49	

Queuing and Blocking Report
Background PM Improved

09/17/2018

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	R	L	T	T	T	R
Maximum Queue (ft)	353	345	327	157	274	411	260	575	908	897	884	450
Average Queue (ft)	168	211	197	56	80	231	139	438	813	802	767	308
95th Queue (ft)	281	340	323	121	235	353	235	795	1002	1003	1074	648
Link Distance (ft)	2069	2069	2069			2732			845	845	845	
Upstream Blk Time (%)									43	35	44	
Queuing Penalty (veh)									0	0	0	
Storage Bay Dist (ft)				300	225		400	375				375
Storage Blk Time (%)			1			13			77		83	
Queuing Penalty (veh)			1			36			88		89	

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	349	675	925	936	135
Average Queue (ft)	182	269	571	606	18
95th Queue (ft)	290	560	837	811	86
Link Distance (ft)			1552	1552	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	375	375			110
Storage Blk Time (%)		0	31	44	
Queuing Penalty (veh)		3	98	23	

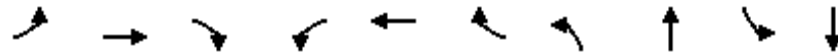
Zone Summary

Zone wide Queuing Penalty: 671

Timings

1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

09/15/2018



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	8	5	2	48	4	35	8	1683	86	1515
Future Volume (vph)	8	5	2	48	4	35	8	1683	86	1515
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		1	6	5	2
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	1	6	5	2
Switch Phase										
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	12.0	4.0	12.0
Minimum Split (s)	10.9	13.4	13.4	10.5	13.4	13.4	11.3	25.3	11.3	19.3
Total Split (s)	20.0	24.0	24.0	20.0	24.0	24.0	17.0	76.0	20.0	79.0
Total Split (%)	14.3%	17.1%	17.1%	14.3%	17.1%	17.1%	12.1%	54.3%	14.3%	56.4%
Yellow Time (s)	3.9	4.4	4.4	3.5	4.4	4.4	4.6	4.6	4.6	4.6
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.7	2.7	2.7	2.7
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)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3	7.3	7.3
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 74 (53%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Splits and Phases: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

Ø2 (R)			Ø1			Ø4		Ø3
79 s			17 s			24 s		20 s
Ø5			Ø6 (R)			Ø8		Ø7
20 s			76 s			24 s		20 s

HCM Signalized Intersection Capacity Analysis

1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	5	2	48	4	35	8	1683	57	86	1515	18
Future Volume (vph)	8	5	2	48	4	35	8	1683	57	86	1515	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3		7.3	7.3	
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91		0.97	0.91	
Frt	1.00	1.00	0.85	1.00	0.88	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1555	1504	1770	5060		3433	5076	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1555	1504	1770	5060		3433	5076	
Peak-hour factor, PHF	0.42	0.42	0.42	0.93	0.93	0.93	0.96	0.96	0.96	0.90	0.90	0.90
Adj. Flow (vph)	19	12	5	52	4	38	8	1753	59	96	1683	20
RTOR Reduction (vph)	0	0	5	0	16	20	0	2	0	0	1	0
Lane Group Flow (vph)	19	12	0	52	5	1	8	1810	0	96	1702	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8						
Actuated Green, G (s)	6.3	3.0	3.0	9.2	5.5	5.5	1.9	90.0		9.3	97.4	
Effective Green, g (s)	6.3	3.0	3.0	9.2	5.5	5.5	1.9	90.0		9.3	97.4	
Actuated g/C Ratio	0.04	0.02	0.02	0.07	0.04	0.04	0.01	0.64		0.07	0.70	
Clearance Time (s)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3		7.3	7.3	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	79	39	33	225	61	59	24	3252		228	3531	
v/s Ratio Prot	0.01	c0.01		c0.02	0.00		0.00	c0.36		0.03	c0.34	
v/s Ratio Perm			0.00			0.00						
v/c Ratio	0.24	0.31	0.00	0.23	0.08	0.01	0.33	0.56		0.42	0.48	
Uniform Delay, d1	64.5	67.5	67.0	62.0	64.8	64.6	68.4	13.9		62.8	9.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.74	0.67		1.00	1.00	
Incremental Delay, d2	1.6	4.4	0.0	0.5	0.5	0.1	5.7	0.5		1.3	0.5	
Delay (s)	66.1	71.9	67.1	62.6	65.3	64.7	56.4	9.8		64.0	10.2	
Level of Service	E	E	E	E	E	E	E	A		E	B	
Approach Delay (s)		68.2			63.7			10.0			13.1	
Approach LOS		E			E			A			B	
Intersection Summary												
HCM 2000 Control Delay			13.4									
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			140.0									
Intersection Capacity Utilization			60.1%									
Analysis Period (min)			15									
c Critical Lane Group												

Timings

2: Buford Dr NE & Mall of Georgia Blvd

09/17/2018



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↑	↗	↔↔	↑	↗	↔↔	↑↑↑	↗	↔	↑↑↑
Traffic Volume (vph)	52	30	133	516	21	18	132	1727	257	18	1487
Future Volume (vph)	52	30	133	516	21	18	132	1727	257	18	1487
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	7	4		3	8		1	6		5	2
Permitted Phases			4			8			6		
Detector Phase	7	4	4	3	8	8	1	6	6	5	2
Switch Phase											
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0
Minimum Split (s)	10.6	13.1	13.1	10.6	13.1	13.1	10.9	19.3	19.3	10.9	19.3
Total Split (s)	17.0	21.0	21.0	32.0	36.0	36.0	18.0	70.0	70.0	17.0	69.0
Total Split (%)	12.1%	15.0%	15.0%	22.9%	25.7%	25.7%	12.9%	50.0%	50.0%	12.1%	49.3%
Yellow Time (s)	4.1	5.1	5.1	4.1	5.1	5.1	4.4	5.3	5.3	4.4	5.3
All-Red Time (s)	2.5	2.0	2.0	2.5	2.0	2.0	2.5	2.0	2.0	2.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	7.1	7.1	6.6	7.1	7.1	6.9	7.3	7.3	6.9	7.3
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 140

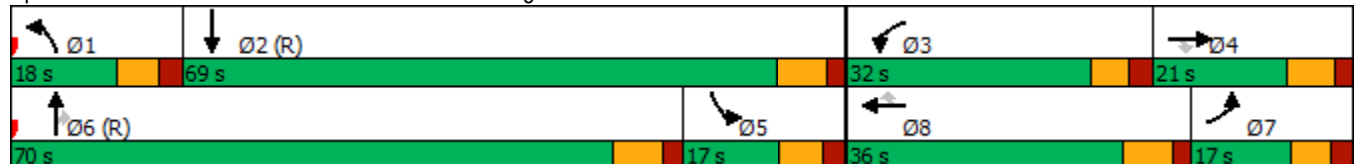
Actuated Cycle Length: 140

Offset: 73 (52%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Splits and Phases: 2: Buford Dr NE & Mall of Georgia Blvd



HCM 6th Signalized Intersection Summary

2: Buford Dr NE & Mall of Georgia Blvd

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	30	133	516	21	18	132	1727	257	18	1487	19
Future Volume (veh/h)	52	30	133	516	21	18	132	1727	257	18	1487	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	62	36	0	573	23	20	140	1837	0	21	1709	22
Peak Hour Factor	0.84	0.84	0.84	0.90	0.90	0.90	0.94	0.94	0.94	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	604	80		617	80	68	192	2513		229	2730	35
Arrive On Green	0.17	0.04	0.00	0.18	0.04	0.04	0.02	0.15	0.00	0.17	0.70	0.70
Sat Flow, veh/h	3456	1870	1585	3456	1870	1585	3563	5611	1585	1781	5196	67
Grp Volume(v), veh/h	62	36	0	573	23	20	140	1837	0	21	1120	611
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1728	1870	1585	1781	1870	1585	1781	1702	1858
Q Serve(g_s), s	2.1	2.6	0.0	22.9	1.7	1.4	5.5	43.8	0.0	1.4	24.7	24.7
Cycle Q Clear(g_c), s	2.1	2.6	0.0	22.9	1.7	1.4	5.5	43.8	0.0	1.4	24.7	24.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	604	80		617	80	68	192	2513		229	1789	976
V/C Ratio(X)	0.10	0.45		0.93	0.29	0.29	0.73	0.73		0.09	0.63	0.63
Avail Cap(c_a), veh/h	604	186		627	386	327	282	2513		229	1789	976
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.83	0.83	0.00	0.91	0.91	0.91
Uniform Delay (d), s/veh	48.5	65.4	0.0	56.6	64.9	45.7	67.7	51.6	0.0	51.1	13.7	13.7
Incr Delay (d2), s/veh	0.1	3.9	0.0	20.1	1.9	2.4	4.3	1.6	0.0	0.2	1.5	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.3	0.0	11.5	0.8	0.7	2.6	22.3	0.0	0.6	7.3	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.6	69.4	0.0	76.7	66.9	48.1	72.1	53.2	0.0	51.3	15.2	16.5
LnGrp LOS	D	E		E	E	D	E	D		D	B	B
Approach Vol, veh/h	98			A			616			1977		
Approach Delay, s/veh	56.2			75.5			54.5			16.1		
Approach LOS	E			E			D			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.5	80.9	31.6	13.1	25.3	70.0	31.6	13.1				
Change Period (Y+Rc), s	6.9	7.3	6.6	7.1	7.3	* 7.3	7.1	* 7.1				
Max Green Setting (Gmax), s	11.1	61.7	25.4	13.9	10.1	* 63	10.4	* 29				
Max Q Clear Time (g_c+I1), s	7.5	26.7	24.9	4.6	3.4	45.8	4.1	3.7				
Green Ext Time (p_c), s	0.1	15.1	0.1	0.1	0.0	11.3	0.1	0.1				

Intersection Summary

HCM 6th Ctrl Delay 42.3

HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

3: Buford Dr NE & I-85 SB Ramp

09/15/2018



Lane Group	EBR	WBR	NBT	NBR	SBT	SBR
Lane Configurations	↰	↰↰	↰↰↰	↰	↰↰	↰
Traffic Volume (vph)	284	187	1918	565	1608	560
Future Volume (vph)	284	187	1918	565	1608	560
Turn Type	Perm	Prot	NA	Perm	NA	Free
Protected Phases		4	2		6	
Permitted Phases	2			2	4	Free
Detector Phase	2	4	2	2	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	23.5	22.5	22.5	22.5	
Total Split (s)	115.0	25.0	115.0	115.0	115.0	
Total Split (%)	82.1%	17.9%	82.1%	82.1%	82.1%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	None	C-Max	C-Max	C-Max	

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Buford Dr NE & I-85 SB Ramp

 02 (R) 115 s	 04 25 s
 06 (R) 115 s	

HCM Signalized Intersection Capacity Analysis

3: Buford Dr NE & I-85 SB Ramp

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗↗		↗↗↗	↗		↗↗	↗
Traffic Volume (vph)	0	0	284	0	0	187	0	1918	565	0	1608	560
Future Volume (vph)	0	0	284	0	0	187	0	1918	565	0	1608	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.5			5.5		5.5	5.5		5.5	4.0
Lane Util. Factor			1.00			0.88		0.91	1.00		0.95	1.00
Frt			0.86			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			1611			2787		5085	1583		3539	1583
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			1611			2787		5085	1583		3539	1583
Peak-hour factor, PHF	0.82	0.82	0.82	0.77	0.77	0.77	0.90	0.90	0.90	0.85	0.85	0.85
Adj. Flow (vph)	0	0	346	0	0	243	0	2131	628	0	1892	659
RTOR Reduction (vph)	0	0	16	0	0	43	0	0	117	0	0	0
Lane Group Flow (vph)	0	0	330	0	0	200	0	2131	511	0	1892	659
Turn Type			Perm			Prot		NA	Perm		NA	Free
Protected Phases						4		2			6	
Permitted Phases			2						2		4	Free
Actuated Green, G (s)			113.9			15.1		113.9	113.9		129.0	140.0
Effective Green, g (s)			113.9			15.1		113.9	113.9		129.0	140.0
Actuated g/C Ratio			0.81			0.11		0.81	0.81		0.92	1.00
Clearance Time (s)			5.5			5.5		5.5	5.5		5.5	
Vehicle Extension (s)			3.0			3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)			1310			300		4137	1287		3539	1583
v/s Ratio Prot						0.07		0.42			c0.43	
v/s Ratio Perm			0.20						0.32		0.10	0.42
v/c Ratio			0.25			0.67		0.52	0.40		0.53	0.42
Uniform Delay, d1			3.1			60.0		4.2	3.6		0.9	0.0
Progression Factor			1.00			1.00		1.10	3.33		1.00	1.00
Incremental Delay, d2			0.5			5.5		0.0	0.1		0.1	0.6
Delay (s)			3.5			65.6		4.6	12.1		1.0	0.6
Level of Service			A			E		A	B		A	A
Approach Delay (s)		3.5			65.6			6.3			0.9	
Approach LOS		A			E			A			A	
Intersection Summary												
HCM 2000 Control Delay			6.2			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			11.0			
Intersection Capacity Utilization			71.2%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

Timings

5: Buford Dr NE & Brand Smart Way/Driveway 2

09/15/2018

										
Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	171	67	226	122	102	2230	109	318	1491	80
Future Volume (vph)	171	67	226	122	102	2230	109	318	1491	80
Turn Type	pm+pt	Perm	Prot	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7		3		1	6		5	2	
Permitted Phases	4	4		8	6		6			2
Detector Phase	7	4	3	8	1	6	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	5.0	5.0	4.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	9.5	12.2	9.5	22.5	9.7	18.1	18.1	9.5	18.1	18.1
Total Split (s)	11.5	15.0	19.0	22.5	14.0	88.0	88.0	18.0	92.0	92.0
Total Split (%)	8.2%	10.7%	13.6%	16.1%	10.0%	62.9%	62.9%	12.9%	65.7%	65.7%
Yellow Time (s)	3.5	3.2	3.5	3.5	3.2	4.7	4.7	3.5	4.7	4.7
All-Red Time (s)	1.0	3.0	1.0	1.0	2.5	1.4	1.4	1.0	1.4	1.4
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)	4.5	6.2	4.5	4.5	5.7	6.1	6.1	4.5	6.1	6.1
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 140

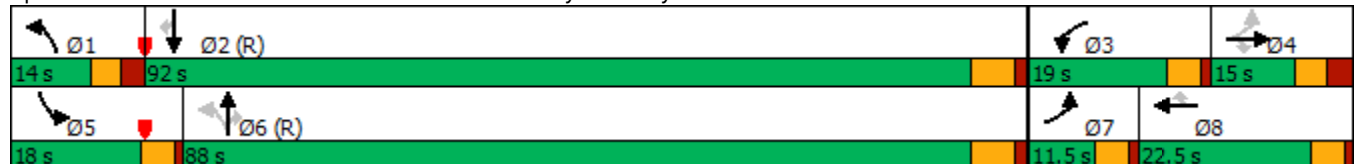
Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of 1st Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Splits and Phases: 5: Buford Dr NE & Brand Smart Way/Driveway 2



HCM 6th Signalized Intersection Summary

5: Buford Dr NE & Brand Smart Way/Driveway 2

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	0	67	226	0	122	102	2230	109	318	1491	80
Future Volume (veh/h)	171	0	67	226	0	122	102	2230	109	318	1491	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	190	0	0	246	0	0	113	2478	0	379	1775	0
Peak Hour Factor	0.90	0.92	0.90	0.92	0.92	0.92	0.90	0.90	0.90	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	1		297	1		252	2522		333	2719	
Arrive On Green	0.05	0.00	0.00	0.09	0.00	0.00	0.07	1.00	0.00	0.10	0.77	0.00
Sat Flow, veh/h	1781	1870	1585	3456	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	190	0	0	246	0	0	113	2478	0	379	1775	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	7.0	0.0	0.0	9.8	0.0	0.0	2.5	0.0	0.0	13.5	32.8	0.0
Cycle Q Clear(g_c), s	7.0	0.0	0.0	9.8	0.0	0.0	2.5	0.0	0.0	13.5	32.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	140	1		297	1		252	2522		333	2719	
V/C Ratio(X)	1.35	0.00		0.83	0.00		0.45	0.98		1.14	0.65	
Avail Cap(c_a), veh/h	140	118		358	240		299	2522		333	2719	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	67.7	0.0	0.0	63.0	0.0	0.0	8.5	0.0	0.0	63.3	7.7	0.0
Incr Delay (d2), s/veh	198.0	0.0	0.0	12.8	0.0	0.0	1.3	14.2	0.0	91.9	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.8	0.0	0.0	4.9	0.0	0.0	0.8	5.0	0.0	10.0	9.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	265.7	0.0	0.0	75.8	0.0	0.0	9.7	14.2	0.0	155.1	8.9	0.0
LnGrp LOS	F	A		E	A		A	B		F	A	
Approach Vol, veh/h	190		A	246		A	2591		A	2154		A
Approach Delay, s/veh	265.7			75.8			14.0			34.7		
Approach LOS	F			E			B			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.3	113.2	16.5	0.0	18.0	105.5	11.5	5.0				
Change Period (Y+Rc), s	* 5.7	* 6.1	4.5	* 6.2	4.5	* 6.1	4.5	* 6.2				
Max Green Setting (Gmax), s	* 8.3	* 86	14.5	* 8.8	13.5	* 82	7.0	* 18				
Max Q Clear Time (g_c+I1), s	4.5	34.8	11.8	0.0	15.5	2.0	9.0	0.0				
Green Ext Time (p_c), s	0.1	20.3	0.2	0.0	0.0	48.4	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	34.8											
HCM 6th LOS	C											
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

HCM 6th TWSC
6: Buford Dr NE & Laurel Crossing Pkwy NE

09/15/2018

Intersection						
Int Delay, s/veh	141.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	52	88	2293	35	41	1806
Future Vol, veh/h	52	88	2293	35	41	1806
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	0	0	-	175	325	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	93	93	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	104	2466	38	48	2100
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	3612	1233	0	0	2466	0
Stage 1	2466	-	-	-	-	-
Stage 2	1146	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 4	169	-	-	185	-
Stage 1	~ 50	-	-	-	-	-
Stage 2	265	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 3	169	-	-	185	-
Mov Cap-2 Maneuver	~ 3	-	-	-	-	-
Stage 1	~ 37	-	-	-	-	-
Stage 2	265	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s \$	4139	0		0.7		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	3	169	185	-
HCM Lane V/C Ratio	-	-	20.392	0.613	0.258	-
HCM Control Delay (s)	-	\$	11050	55.2	31.1	-
HCM Lane LOS	-	-	F	F	D	-
HCM 95th %tile Q(veh)	-	-	9.7	3.4	1	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Timings

7: Buford Dr NE & Rock Springs Rd

09/15/2018

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 						 			 	
Traffic Volume (vph)	277	20	91	77	41	81	1797	10	40	1599	207
Future Volume (vph)	277	20	91	77	41	81	1797	10	40	1599	207
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8	1	6		5	2	
Permitted Phases	4		4	8		6		6	2		2
Detector Phase	7	4	4	8	8	1	6	6	5	2	2
Switch Phase											
Minimum Initial (s)	4.0	6.0	6.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0	12.0
Minimum Split (s)	11.0	12.5	12.5	14.0	14.0	10.8	19.3	19.3	12.0	19.3	19.3
Total Split (s)	23.0	46.0	46.0	23.0	23.0	17.0	77.0	77.0	17.0	77.0	77.0
Total Split (%)	16.4%	32.9%	32.9%	16.4%	16.4%	12.1%	55.0%	55.0%	12.1%	55.0%	55.0%
Yellow Time (s)	4.0	3.5	3.5	5.0	5.0	3.8	4.7	4.7	5.0	4.7	4.7
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.6	2.6	3.0	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	6.5	6.5	8.0	8.0	6.8	7.3	7.3	8.0	7.3	7.3
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 140

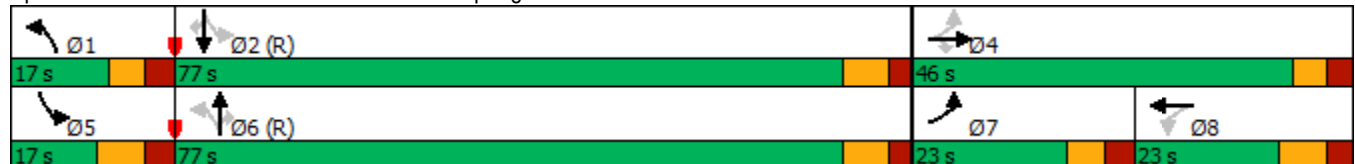
Actuated Cycle Length: 140

Offset: 110 (79%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Splits and Phases: 7: Buford Dr NE & Rock Springs Rd



HCM 6th Signalized Intersection Summary

7: Buford Dr NE & Rock Springs Rd

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	277	20	91	77	41	264	81	1797	10	40	1599	207
Future Volume (veh/h)	277	20	91	77	41	264	81	1797	10	40	1599	207
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	322	23	0	97	52	334	85	1892	0	43	1701	0
Peak Hour Factor	0.86	0.86	0.86	0.79	0.79	0.79	0.95	0.95	0.95	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	438	475		200	23	150	138	1977		225	1968	
Arrive On Green	0.10	0.25	0.00	0.11	0.11	0.11	0.07	1.00	0.00	0.01	0.18	0.00
Sat Flow, veh/h	3456	1870	1585	1388	218	1400	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	322	23	0	97	0	386	85	1892	0	43	1701	0
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1388	0	1618	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	11.2	1.3	0.0	9.4	0.0	15.0	2.9	0.0	0.0	1.5	65.0	0.0
Cycle Q Clear(g_c), s	11.2	1.3	0.0	9.4	0.0	15.0	2.9	0.0	0.0	1.5	65.0	0.0
Prop In Lane	1.00		1.00	1.00		0.87	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	438	475		200	0	173	138	1977		225	1968	
V/C Ratio(X)	0.74	0.05		0.48	0.00	2.23	0.61	0.96		0.19	0.86	
Avail Cap(c_a), veh/h	498	528		200	0	173	207	1977		298	1968	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	0.76	0.76	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.2	39.4	0.0	60.0	0.0	62.5	30.8	0.0	0.0	13.0	52.1	0.0
Incr Delay (d2), s/veh	4.9	0.0	0.0	1.8	0.0	570.0	3.3	10.1	0.0	0.4	5.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.6	0.0	3.4	0.0	33.6	1.6	2.8	0.0	0.6	32.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.1	39.5	0.0	61.8	0.0	632.5	34.2	10.1	0.0	13.4	57.5	0.0
LnGrp LOS	D	D		E	A	F	C	B		B	E	
Approach Vol, veh/h		345	A		483			1977	A		1744	A
Approach Delay, s/veh		52.2			517.9			11.1			56.4	
Approach LOS		D			F			B			E	
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.6	84.8		43.6	11.2	85.2	20.6	23.0				
Change Period (Y+Rc), s	* 6.8	* 7.3		* 8	8.0	* 7.3	7.0	8.0				
Max Green Setting (Gmax), s	* 10	* 70		* 40	9.0	* 70	16.0	15.0				
Max Q Clear Time (g_c+I1), s	4.9	67.0		3.3	3.5	2.0	13.2	17.0				
Green Ext Time (p_c), s	0.1	2.2		0.1	0.0	25.2	0.3	0.0				

Intersection Summary

HCM 6th Ctrl Delay 85.4

HCM 6th LOS F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

8: Buford Dr NE & Tech Center Pkwy NE

09/15/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰↰	↰	↰	↰↰	↰↰	↰
Traffic Volume (vph)	131	40	48	1729	1631	150
Future Volume (vph)	131	40	48	1729	1631	150
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	8		1	6	2	
Permitted Phases		8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	6.0	6.0	4.0	20.0	20.0	20.0
Minimum Split (s)	12.4	12.4	10.0	26.6	26.6	26.6
Total Split (s)	30.0	30.0	19.0	110.0	91.0	91.0
Total Split (%)	21.4%	21.4%	13.6%	78.6%	65.0%	65.0%
Yellow Time (s)	3.5	3.5	3.3	5.0	5.0	5.0
All-Red Time (s)	2.9	2.9	2.7	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.0	6.6	6.6	6.6
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 140

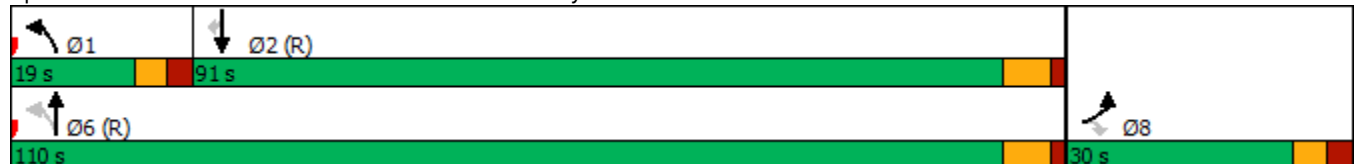
Actuated Cycle Length: 140

Offset: 74 (53%), Referenced to phase 2:SBT and 6:NBTL, Start of 1st Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Splits and Phases: 8: Buford Dr NE & Tech Center Pkwy NE



HCM 6th Signalized Intersection Summary

8: Buford Dr NE & Tech Center Pkwy NE

09/15/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←←	→	←	↑↑	↑↑	↔
Traffic Volume (veh/h)	131	40	48	1729	1631	150
Future Volume (veh/h)	131	40	48	1729	1631	150
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	166	0	49	1782	1853	0
Peak Hour Factor	0.79	0.79	0.97	0.97	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	223		288	2995	2756	
Arrive On Green	0.06	0.00	0.05	1.00	1.00	0.00
Sat Flow, veh/h	3456	1585	1781	3647	3647	1585
Grp Volume(v), veh/h	166	0	49	1782	1853	0
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777	1777	1585
Q Serve(g_s), s	6.6	0.0	0.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.6	0.0	0.7	0.0	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	223		288	2995	2756	
V/C Ratio(X)	0.75		0.17	0.60	0.67	
Avail Cap(c_a), veh/h	583		410	2995	2756	
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.80	0.80	0.35	0.00
Uniform Delay (d), s/veh	64.4	0.0	2.4	0.0	0.0	0.0
Incr Delay (d2), s/veh	4.9	0.0	0.2	0.7	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	0.2	0.3	0.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	69.3	0.0	2.7	0.7	0.5	0.0
LnGrp LOS	E		A	A	A	
Approach Vol, veh/h	166	A		1831	1853	A
Approach Delay, s/veh	69.3			0.8	0.5	
Approach LOS	E			A	A	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.4	115.2			124.6	15.4
Change Period (Y+Rc), s	6.0	* 6.6			* 6.6	6.4
Max Green Setting (Gmax), s	13.0	* 84			* 1E2	23.6
Max Q Clear Time (g_c+I1), s	2.7	2.0			2.0	8.6
Green Ext Time (p_c), s	0.0	25.2			23.6	0.4

Intersection Summary

HCM 6th Ctrl Delay	3.6
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

9: Buford Dr NE & Braves Ave

09/15/2018



Lane Group	EBL	NBL	NBT	SBT	SBR	Ø3	Ø5
Lane Configurations							
Traffic Volume (vph)	21	12	1771	1652	4		
Future Volume (vph)	21	12	1771	1652	4		
Turn Type	Prot	Prot	NA	NA	Perm		
Protected Phases	4	1	6	2		3	5
Permitted Phases					2		
Detector Phase	4	1	6	2	2		
Switch Phase							
Minimum Initial (s)	6.0	4.0	12.0	12.0	12.0	1.0	4.0
Minimum Split (s)	12.4	10.3	18.9	18.9	18.9	5.5	9.6
Total Split (s)	28.0	15.0	86.0	88.0	88.0	9.0	17.0
Total Split (%)	20.0%	10.7%	61.4%	62.9%	62.9%	6%	12%
Yellow Time (s)	3.4	3.7	5.4	5.4	5.4	2.0	3.0
All-Red Time (s)	3.0	2.6	1.5	1.5	1.5	0.0	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.4	6.3	6.9	6.9	6.9		
Lead/Lag	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	C-Max	C-Max	C-Max	None	None

Intersection Summary

Cycle Length: 140

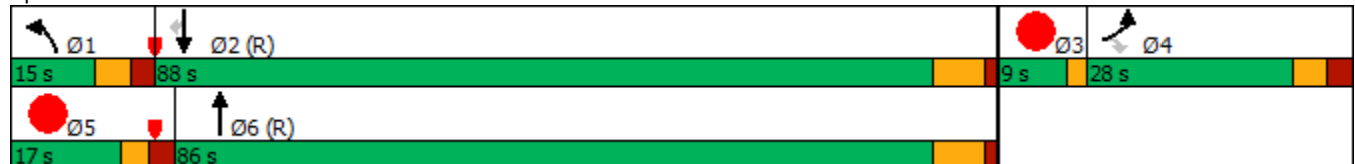
Actuated Cycle Length: 140

Offset: 89 (64%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Splits and Phases: 9: Buford Dr NE & Braves Ave



HCM Signalized Intersection Capacity Analysis

9: Buford Dr NE & Braves Ave

09/15/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	0	12	1771	1652	4
Future Volume (vph)	21	0	12	1771	1652	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4		6.3	6.9	6.9	6.9
Lane Util. Factor	1.00		0.97	0.95	0.95	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770		3433	3539	3539	1583
Flt Permitted	0.95		0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770		3433	3539	3539	1583
Peak-hour factor, PHF	0.77	0.77	0.96	0.96	0.86	0.86
Adj. Flow (vph)	27	0	12	1845	1921	5
RTOR Reduction (vph)	0	0	0	0	0	1
Lane Group Flow (vph)	27	0	13	1845	1921	4
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		1	6	2	
Permitted Phases		4				2
Actuated Green, G (s)	5.3		2.7	121.4	112.4	112.4
Effective Green, g (s)	5.3		2.7	121.4	112.4	112.4
Actuated g/C Ratio	0.04		0.02	0.87	0.80	0.80
Clearance Time (s)	6.4		6.3	6.9	6.9	6.9
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	67		66	3068	2841	1270
v/s Ratio Prot	c0.02		0.00	c0.52	c0.54	
v/s Ratio Perm						0.00
v/c Ratio	0.40		0.20	0.60	0.68	0.00
Uniform Delay, d1	65.8		67.6	2.6	6.0	2.7
Progression Factor	1.00		1.34	0.56	1.26	2.07
Incremental Delay, d2	3.9		0.7	0.4	1.0	0.0
Delay (s)	69.7		91.3	1.9	8.5	5.7
Level of Service	E		F	A	A	A
Approach Delay (s)	69.7			2.5	8.5	
Approach LOS	E			A	A	

Intersection Summary

HCM 2000 Control Delay	6.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.6
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Timings

10: Buford Dr NE & Old Peachtree Rd NE

09/15/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	161	109	153	417	405	116	1243	68	153	1416	61
Future Volume (vph)	118	161	109	153	417	405	116	1243	68	153	1416	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8			6			2
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	15.0	15.0	4.0	15.0	15.0
Minimum Split (s)	10.5	13.4	13.4	10.5	13.4	13.4	10.6	21.6	21.6	10.5	21.6	21.6
Total Split (s)	17.0	42.0	42.0	15.0	40.0	40.0	22.0	66.0	66.0	17.0	61.0	61.0
Total Split (%)	12.1%	30.0%	30.0%	10.7%	28.6%	28.6%	15.7%	47.1%	47.1%	12.1%	43.6%	43.6%
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	4.7	4.7	4.7	3.5	4.7	4.7
All-Red Time (s)	3.0	2.9	2.9	3.0	2.9	2.9	1.9	1.9	1.9	3.0	1.9	1.9
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)	6.5	7.4	7.4	6.5	7.4	7.4	6.6	6.6	6.6	6.5	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 140

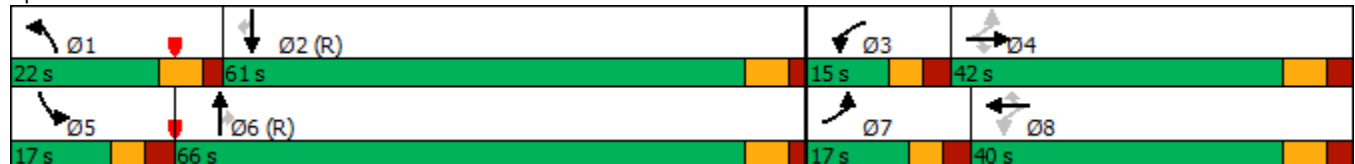
Actuated Cycle Length: 140

Offset: 43 (31%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Splits and Phases: 10: Buford Dr NE & Old Peachtree Rd NE



HCM 6th Signalized Intersection Summary 10: Buford Dr NE & Old Peachtree Rd NE

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	161	109	153	417	405	116	1243	68	153	1416	61
Future Volume (veh/h)	118	161	109	153	417	405	116	1243	68	153	1416	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	127	173	117	161	439	426	122	1308	72	170	1573	68
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	172	449	380	336	436	369	146	1574	702	220	1507	672
Arrive On Green	0.07	0.24	0.24	0.06	0.23	0.23	0.08	0.44	0.44	0.02	0.14	0.14
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	127	173	117	161	439	426	122	1308	72	170	1573	68
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	7.5	10.8	8.5	8.5	32.6	32.6	9.5	45.4	3.7	6.9	59.4	5.2
Cycle Q Clear(g_c), s	7.5	10.8	8.5	8.5	32.6	32.6	9.5	45.4	3.7	6.9	59.4	5.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	172	449	380	336	436	369	146	1574	702	220	1507	672
V/C Ratio(X)	0.74	0.39	0.31	0.48	1.01	1.15	0.84	0.83	0.10	0.77	1.04	0.10
Avail Cap(c_a), veh/h	185	462	392	336	436	369	196	1574	702	259	1507	672
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.74	0.74	0.74
Uniform Delay (d), s/veh	40.7	44.6	43.7	40.0	53.7	53.7	63.4	34.4	22.8	67.5	60.2	36.9
Incr Delay (d2), s/veh	13.5	0.5	0.5	1.1	45.1	95.8	20.4	5.3	0.3	8.7	32.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	5.0	3.3	0.6	20.4	22.5	5.0	19.7	1.4	3.3	35.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.1	45.1	44.1	41.0	98.8	149.5	83.8	39.6	23.1	76.2	92.6	37.1
LnGrp LOS	D	D	D	D	F	F	F	D	C	E	F	D
Approach Vol, veh/h	417		1026				1502		1811			
Approach Delay, s/veh	47.6		110.8				42.4		89.0			
Approach LOS	D		F				D		F			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	66.0	15.0	41.0	15.4	68.6	16.0	40.0				
Change Period (Y+Rc), s	* 6.6	* 6.6	6.5	7.4	6.5	* 6.6	6.5	7.4				
Max Green Setting (Gmax), s	* 15	* 54	8.5	34.6	10.5	* 59	10.5	32.6				
Max Q Clear Time (g_c+I1), s	11.5	61.4	10.5	12.8	8.9	47.4	9.5	34.6				
Green Ext Time (p_c), s	0.1	0.0	0.0	1.2	0.1	6.6	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			75.4									
HCM 6th LOS			E									
Notes												

Intersection						
Int Delay, s/veh	2.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	110	2460	76	0	1868
Future Vol, veh/h	0	110	2460	76	0	1868
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	175	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	90	90	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	120	2733	84	0	2224
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	1367	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	137	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	137	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	108.2	0	0			
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT			
Capacity (veh/h)	-	-	137	-		
HCM Lane V/C Ratio	-	-	0.873	-		
HCM Control Delay (s)	-	-	108.2	-		
HCM Lane LOS	-	-	F	-		
HCM 95th %tile Q(veh)	-	-	5.7	-		

Intersection						
Int Delay, s/veh	2.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗		↗↗
Traffic Vol, veh/h	0	116	2284	101	0	1792
Future Vol, veh/h	0	116	2284	101	0	1792
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	175	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	90	90	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	126	2538	112	0	2133
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	1269	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	159	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	159	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	82.3	0		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBT		
Capacity (veh/h)	-	- 159		-		
HCM Lane V/C Ratio	-	- 0.793		-		
HCM Control Delay (s)	-	- 82.3		-		
HCM Lane LOS	-	- F		-		
HCM 95th %tile Q(veh)	-	- 5.1		-		

HCM 6th TWSC
102: Laurel Crossing Pkwy NE & Driveway 4

09/15/2018

Intersection

Int Delay, s/veh 2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	40	36	102	0	0	38
Future Vol, veh/h	40	36	102	0	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	89	85	85	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	40	120	0	0	41

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	120	0	0 246 120
Stage 1	-	-	- 120 -
Stage 2	-	-	- 126 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1468	-	- 742 931
Stage 1	-	-	- 905 -
Stage 2	-	-	- 900 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1468	-	- 720 931
Mov Cap-2 Maneuver	-	-	- 720 -
Stage 1	-	-	- 878 -
Stage 2	-	-	- 900 -

Approach	EB	WB	SB
HCM Control Delay, s	3.9	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1468	-	-	-	931
HCM Lane V/C Ratio	0.03	-	-	-	0.044
HCM Control Delay (s)	7.5	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	L	TR	R	L	T	T	TR	L
Maximum Queue (ft)	48	28	27	48	110	73	30	26	180	225	227	109
Average Queue (ft)	9	7	1	7	35	23	7	3	110	122	149	19
95th Queue (ft)	32	25	9	26	80	51	26	17	172	193	208	61
Link Distance (ft)	330	330	330			1590	1590		3054	3054	3054	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				250	250	300			500			
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

Movement	SB	SB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	130	198	171	136
Average Queue (ft)	56	70	57	33
95th Queue (ft)	103	147	140	88
Link Distance (ft)		1465	1465	1465
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	500			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Buford Dr NE & Mall of Georgia Blvd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	115	28	78	101	325	375	630	450	132	137	244	269
Average Queue (ft)	37	3	31	4	228	270	65	22	45	72	131	141
95th Queue (ft)	81	17	68	34	335	360	320	158	98	119	207	235
Link Distance (ft)	1056	1056	1056	1056			1308				974	974
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)					275	275		400	375	375		
Storage Blk Time (%)					2	12						
Queuing Penalty (veh)					1	5						

Intersection: 2: Buford Dr NE & Mall of Georgia Blvd

Movement	NB	NB	SB	SB	SB	SB
Directions Served	TR	R	L	T	T	TR
Maximum Queue (ft)	287	200	72	291	291	301
Average Queue (ft)	162	57	26	190	201	171
95th Queue (ft)	251	206	57	278	288	255
Link Distance (ft)	974			3054	3054	3054
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		175	300			
Storage Blk Time (%)	6	0		0		
Queuing Penalty (veh)	7	1		0		

Intersection: 3: Buford Dr NE & I-85 SB Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 4: Buford Dr NE & I-85 NB Ramp

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 5: Buford Dr NE & Brand Smart Way/Driveway 2

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	R	L	L	T	R	L	T	T	R	L	L
Maximum Queue (ft)	349	56	162	174	553	175	107	396	420	275	199	197
Average Queue (ft)	213	4	125	153	163	51	46	283	331	98	107	120
95th Queue (ft)	305	27	205	199	436	168	88	391	415	315	162	177
Link Distance (ft)	866	866			795			386	386			
Upstream Blk Time (%)								1	2			
Queuing Penalty (veh)								7	24			
Storage Bay Dist (ft)			150	150		150	300			175	300	300
Storage Blk Time (%)			5	22		6		7	24			
Queuing Penalty (veh)			6	27		14		7	27			

Intersection: 5: Buford Dr NE & Brand Smart Way/Driveway 2

Movement	SB	SB
Directions Served	T	T
Maximum Queue (ft)	294	279
Average Queue (ft)	110	116
95th Queue (ft)	208	215
Link Distance (ft)	591	591
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 6: Buford Dr NE & Laurel Crossing Pkwy NE

Movement	WB	WB	B14	B14	NB	SB
Directions Served	L	R	T	T	T	L
Maximum Queue (ft)	917	917	167	156	22	137
Average Queue (ft)	512	230	10	15	1	47
95th Queue (ft)	946	824	73	84	7	108
Link Distance (ft)	846	846	546	546	1185	
Upstream Blk Time (%)	14	15				
Queuing Penalty (veh)	10	11				
Storage Bay Dist (ft)						325
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	EB	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	TR	L	T	T	R	L	T
Maximum Queue (ft)	205	163	40	117	300	2257	249	426	442	225	324	623
Average Queue (ft)	83	94	10	28	234	1423	88	292	317	8	49	428
95th Queue (ft)	145	142	33	79	422	2442	221	472	480	77	179	611
Link Distance (ft)	2600	2600	2600			2242		412	412			1185
Upstream Blk Time (%)						2		4	5			
Queuing Penalty (veh)						0		33	44			
Storage Bay Dist (ft)				150	200		175			125	225	
Storage Blk Time (%)						93		22	33			27
Queuing Penalty (veh)						72		18	3			11

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	629	175
Average Queue (ft)	459	118
95th Queue (ft)	609	253
Link Distance (ft)	1185	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		75
Storage Blk Time (%)	39	
Queuing Penalty (veh)	80	

Intersection: 8: Buford Dr NE & Tech Center Pkwy NE

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	114	114	55	76	290	258	228	250	200
Average Queue (ft)	51	52	2	39	87	103	118	126	14
95th Queue (ft)	97	96	19	79	199	228	211	224	97
Link Distance (ft)	2083	2083	2083		1479	1479	412	412	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)				250					150
Storage Blk Time (%)							6		
Queuing Penalty (veh)							9		

Intersection: 9: Buford Dr NE & Braves Ave

Movement	EB	NB	NB	NB	NB	SB	SB
Directions Served	L	L	L	T	T	T	T
Maximum Queue (ft)	52	26	52	51	75	266	286
Average Queue (ft)	16	1	9	10	17	76	85
95th Queue (ft)	43	10	32	37	59	215	231
Link Distance (ft)	766			1552	1552	1479	1479
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		850	850				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	L
Maximum Queue (ft)	174	215	127	275	1220	500	244	432	391	46	108	675
Average Queue (ft)	73	87	41	207	455	254	116	326	305	15	44	372
95th Queue (ft)	128	167	89	348	866	495	197	415	402	32	87	870
Link Distance (ft)	2063	2063			2738			1230	1230			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			300	225		400	375			375	375	375
Storage Blk Time (%)					41			3	0			
Queuing Penalty (veh)					227			3	0			

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	1080	1104	135
Average Queue (ft)	725	731	28
95th Queue (ft)	1118	1108	110
Link Distance (ft)	1552	1552	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			110
Storage Blk Time (%)	48	56	0
Queuing Penalty (veh)	73	34	0

Intersection: 100: Buford Dr NE & Driveway 1

Movement	WB
Directions Served	R
Maximum Queue (ft)	179
Average Queue (ft)	83
95th Queue (ft)	145
Link Distance (ft)	1223
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 101: Buford Dr NE & Driveway 3

Movement	WB	NB	NB
Directions Served	R	T	T
Maximum Queue (ft)	893	175	194
Average Queue (ft)	708	10	19
95th Queue (ft)	1108	69	93
Link Distance (ft)	878	696	696
Upstream Blk Time (%)	58		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 102: Laurel Crossing Pkwy NE & Driveway 4

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	29	55
Average Queue (ft)	3	22
95th Queue (ft)	18	51
Link Distance (ft)	546	536
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

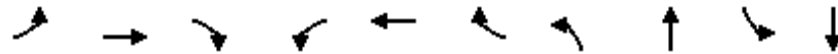
Network Summary

Network wide Queuing Penalty: 752

Timings

1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

09/15/2018



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	46	32	16	232	17	206	37	1926	366	2092
Future Volume (vph)	46	32	16	232	17	206	37	1926	366	2092
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		1	6	5	2
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	1	6	5	2
Switch Phase										
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	12.0	4.0	12.0
Minimum Split (s)	10.9	13.4	13.4	10.5	13.4	13.4	11.3	25.3	11.3	19.3
Total Split (s)	23.0	25.0	25.0	27.0	29.0	29.0	18.0	105.0	43.0	130.0
Total Split (%)	11.5%	12.5%	12.5%	13.5%	14.5%	14.5%	9.0%	52.5%	21.5%	65.0%
Yellow Time (s)	3.9	4.4	4.4	3.5	4.4	4.4	4.6	4.6	4.6	4.6
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.7	2.7	2.7	2.7
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)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3	7.3	7.3
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary

Cycle Length: 200

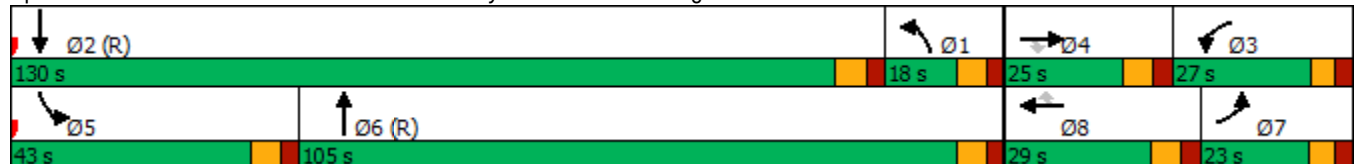
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Splits and Phases: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd



HCM Signalized Intersection Capacity Analysis

1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	32	16	232	17	206	37	1926	169	366	2092	44
Future Volume (vph)	46	32	16	232	17	206	37	1926	169	366	2092	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3		7.3	7.3	
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91		0.97	0.91	
Frt	1.00	1.00	0.85	1.00	0.87	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1543	1504	1770	5024		3433	5070	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1543	1504	1770	5024		3433	5070	
Peak-hour factor, PHF	0.42	0.42	0.42	0.93	0.93	0.93	0.96	0.96	0.96	0.90	0.90	0.90
Adj. Flow (vph)	110	76	38	249	18	222	39	2006	176	407	2324	49
RTOR Reduction (vph)	0	0	35	0	99	112	0	4	0	0	1	0
Lane Group Flow (vph)	110	76	3	249	23	6	39	2178	0	407	2372	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8						
Actuated Green, G (s)	22.3	13.3	13.3	18.9	9.5	9.5	8.6	110.4		28.9	130.7	
Effective Green, g (s)	22.3	13.3	13.3	18.9	9.5	9.5	8.6	110.4		28.9	130.7	
Actuated g/C Ratio	0.11	0.07	0.07	0.09	0.05	0.05	0.04	0.55		0.14	0.65	
Clearance Time (s)	6.9	7.4	7.4	6.5	7.4	7.4	7.3	7.3		7.3	7.3	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	197	123	105	324	73	71	76	2773		496	3313	
v/s Ratio Prot	c0.06	c0.04		c0.07	0.01		0.02	c0.43		0.12	c0.47	
v/s Ratio Perm			0.00			0.00						
v/c Ratio	0.56	0.62	0.02	0.77	0.31	0.08	0.51	0.79		0.82	0.72	
Uniform Delay, d1	84.2	90.9	87.3	88.4	92.1	91.1	93.7	35.4		83.0	22.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.69	0.35		1.00	1.00	
Incremental Delay, d2	3.4	8.9	0.1	10.5	2.5	0.5	3.1	1.2		10.5	1.4	
Delay (s)	87.6	99.8	87.4	98.9	94.6	91.5	67.5	13.7		93.5	23.9	
Level of Service	F	F	F	F	F	F	E	B		F	C	
Approach Delay (s)		91.7			96.0			14.6			34.1	
Approach LOS		F			F			B			C	
Intersection Summary												
HCM 2000 Control Delay			34.1									
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			200.0									
Intersection Capacity Utilization			83.0%									
Analysis Period (min)			15									
c Critical Lane Group												

Timings

2: Buford Dr NE & Mall of Georgia Blvd

09/17/2018

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	171	170	419	459	116	90	391	1957	857	54	2124
Future Volume (vph)	171	170	419	459	116	90	391	1957	857	54	2124
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	7	4		3	8		1	6		5	2
Permitted Phases			4			8			6		
Detector Phase	7	4	4	3	8	8	1	6	6	5	2
Switch Phase											
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0
Minimum Split (s)	10.6	13.1	13.1	10.6	13.1	13.1	10.9	19.3	19.3	10.9	19.3
Total Split (s)	27.0	30.0	30.0	35.0	38.0	38.0	32.0	116.0	116.0	19.0	103.0
Total Split (%)	13.5%	15.0%	15.0%	17.5%	19.0%	19.0%	16.0%	58.0%	58.0%	9.5%	51.5%
Yellow Time (s)	4.1	5.1	5.1	4.1	5.1	5.1	4.4	5.3	5.3	4.4	5.3
All-Red Time (s)	2.5	2.0	2.0	2.5	2.0	2.0	2.5	2.0	2.0	2.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	7.1	7.1	6.6	7.1	7.1	6.9	7.3	7.3	6.9	7.3
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 200

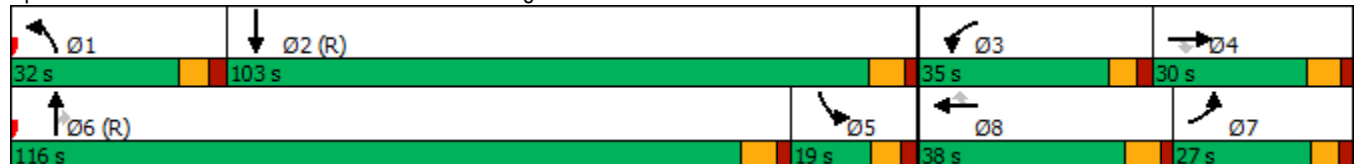
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Splits and Phases: 2: Buford Dr NE & Mall of Georgia Blvd



HCM 6th Signalized Intersection Summary

2: Buford Dr NE & Mall of Georgia Blvd

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 			 	  			  	
Traffic Volume (veh/h)	171	170	419	459	116	90	391	1957	857	54	2124	173
Future Volume (veh/h)	171	170	419	459	116	90	391	1957	857	54	2124	173
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	204	202	0	510	129	100	416	2327	0	62	2441	199
Peak Hour Factor	0.84	0.84	0.84	0.90	0.90	0.90	0.94	0.94	0.94	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	595	214		491	153	130	444	3050		104	2310	185
Arrive On Green	0.17	0.11	0.00	0.14	0.08	0.08	0.25	1.00	0.00	0.08	0.64	0.64
Sat Flow, veh/h	3456	1870	1585	3456	1870	1585	3563	5611	1585	1781	4819	386
Grp Volume(v), veh/h	204	202	0	510	129	100	416	2327	0	62	1712	928
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1728	1870	1585	1781	1870	1585	1781	1702	1801
Q Serve(g_s), s	10.4	21.4	0.0	28.4	13.6	9.7	22.9	0.0	0.0	6.7	95.9	95.9
Cycle Q Clear(g_c), s	10.4	21.4	0.0	28.4	13.6	9.7	22.9	0.0	0.0	6.7	95.9	95.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	595	214		491	153	130	444	3050		104	1632	863
V/C Ratio(X)	0.34	0.94		1.04	0.84	0.77	0.94	0.76		0.59	1.05	1.08
Avail Cap(c_a), veh/h	595	214		491	289	245	447	3050		108	1632	863
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.52	0.52	0.00	0.64	0.64	0.64
Uniform Delay (d), s/veh	72.8	87.9	0.0	85.8	90.5	55.9	74.3	0.0	0.0	89.9	36.2	36.2
Incr Delay (d2), s/veh	0.3	45.7	0.0	51.2	11.7	9.3	17.4	1.0	0.0	5.3	32.3	47.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	13.1	0.0	16.1	7.1	4.2	10.4	0.3	0.0	3.2	42.0	48.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.2	133.6	0.0	137.0	102.2	65.1	91.7	1.0	0.0	95.2	68.6	83.6
LnGrp LOS	E	F		F	F	E	F	A		F	F	F
Approach Vol, veh/h	406		A	739			2743		A	2702		
Approach Delay, s/veh	103.2			121.2			14.7			74.4		
Approach LOS	F			F			B			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	31.8	103.2	35.0	30.0	19.0	116.0	41.5	23.5				
Change Period (Y+Rc), s	6.9	7.3	6.6	7.1	7.3	* 7.3	7.1	* 7.1				
Max Green Setting (Gmax), s	25.1	95.7	28.4	22.9	12.1	* 1.1E2	20.4	* 31				
Max Q Clear Time (g_c+I1), s	24.9	97.9	30.4	23.4	8.7	2.0	12.4	15.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	42.5	0.4	0.8				

Intersection Summary

HCM 6th Ctrl Delay 56.6

HCM 6th LOS E

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

3: Buford Dr NE & I-85 SB Ramp

09/15/2018



Lane Group	EBR	WBR	NBT	NBR	SBT	SBR
Lane Configurations	↰ ↱	↰ ↱	↰ ↱ ↲	↰ ↱	↰ ↱	↰ ↱
Traffic Volume (vph)	316	299	2831	213	2565	473
Future Volume (vph)	316	299	2831	213	2565	473
Turn Type	Perm	Prot	NA	Perm	NA	Free
Protected Phases		4	2		6	
Permitted Phases	2 4			2	4	Free
Detector Phase	2 4	4	2	2	6	
Switch Phase						
Minimum Initial (s)		5.0	5.0	5.0	5.0	
Minimum Split (s)		22.5	22.5	22.5	22.5	
Total Split (s)		70.0	130.0	130.0	130.0	
Total Split (%)		35.0%	65.0%	65.0%	65.0%	
Yellow Time (s)		3.5	3.5	3.5	3.5	
All-Red Time (s)		1.0	1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	
Total Lost Time (s)		4.5	4.5	4.5	4.5	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode		None	C-Max	C-Max	C-Max	

Intersection Summary

Cycle Length: 200
 Actuated Cycle Length: 200
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Buford Dr NE & I-85 SB Ramp

 02 (R) 130 s	 04 70 s
 06 (R) 130 s	

HCM Signalized Intersection Capacity Analysis

3: Buford Dr NE & I-85 SB Ramp

09/15/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↶			↶↶		↶↶↶	↶		↶↶	↶
Traffic Volume (vph)	0	0	316	0	0	299	0	2831	213	0	2565	473
Future Volume (vph)	0	0	316	0	0	299	0	2831	213	0	2565	473
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.5			4.5		4.5	4.5		4.5	4.0
Lane Util. Factor			1.00			0.88		0.91	1.00		0.95	1.00
Frt			0.86			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			1611			2787		5085	1583		3539	1583
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			1611			2787		5085	1583		3539	1583
Peak-hour factor, PHF	0.82	0.82	0.82	0.77	0.77	0.77	0.90	0.90	0.90	0.85	0.85	0.85
Adj. Flow (vph)	0	0	385	0	0	388	0	3146	237	0	3018	556
RTOR Reduction (vph)	0	0	0	0	0	7	0	0	23	0	0	0
Lane Group Flow (vph)	0	0	385	0	0	381	0	3146	214	0	3018	556
Turn Type			Perm			Prot		NA	Perm		NA	Free
Protected Phases						4		2			6	
Permitted Phases			2 4						2		4	Free
Actuated Green, G (s)			200.0			33.7		157.3	157.3		191.0	200.0
Effective Green, g (s)			200.0			33.7		157.3	157.3		191.0	200.0
Actuated g/C Ratio			1.00			0.17		0.79	0.79		0.96	1.00
Clearance Time (s)						4.5		4.5	4.5		4.5	
Vehicle Extension (s)						3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)			1611			469		3999	1245		3539	1583
v/s Ratio Prot						0.14		0.62			c0.67	
v/s Ratio Perm			0.24						0.13		0.18	0.35
v/c Ratio			0.24			0.81		0.79	0.17		0.85	0.35
Uniform Delay, d1			0.0			80.1		12.0	5.3		1.1	0.0
Progression Factor			1.00			1.00		1.12	1.60		1.00	1.00
Incremental Delay, d2			0.1			10.3		1.1	0.2		0.2	0.1
Delay (s)			0.1			90.5		14.5	8.6		1.3	0.1
Level of Service			A			F		B	A		A	A
Approach Delay (s)		0.1			90.5			14.1			1.1	
Approach LOS		A			F			B			A	
Intersection Summary												
HCM 2000 Control Delay			11.2			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			200.0			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			98.0%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

Timings

5: Buford Dr NE & Brand Smart Way/Driveway 2

09/15/2018

										
Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	148	79	307	157	110	2353	139	474	2283	168
Future Volume (vph)	148	79	307	157	110	2353	139	474	2283	168
Turn Type	pm+pt	Perm	Prot	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7		3		1	6		5	2	
Permitted Phases	4	4		8	6		6			2
Detector Phase	7	4	3	8	1	6	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	5.0	5.0	4.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	11.5	12.2	9.5	15.0	9.7	18.1	18.1	11.0	18.1	18.1
Total Split (s)	24.0	23.0	24.0	23.0	15.0	130.0	130.0	23.0	138.0	138.0
Total Split (%)	12.0%	11.5%	12.0%	11.5%	7.5%	65.0%	65.0%	11.5%	69.0%	69.0%
Yellow Time (s)	3.2	3.2	3.5	3.5	3.2	4.7	4.7	3.2	4.7	4.7
All-Red Time (s)	3.0	3.0	1.0	3.0	2.5	1.4	1.4	2.5	1.4	1.4
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)	6.2	6.2	4.5	6.5	5.7	6.1	6.1	5.7	6.1	6.1
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 200

Actuated Cycle Length: 200

Offset: 15 (8%), Referenced to phase 2:SBT and 6:NBTL, Start of 1st Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Splits and Phases: 5: Buford Dr NE & Brand Smart Way/Driveway 2

							
Ø1	Ø2 (R)			Ø3	Ø4		
15 s	138 s			24 s	23 s		
							
Ø6 (R)				Ø5	Ø7	Ø8	
130 s				23 s	24 s	23 s	

HCM 6th Signalized Intersection Summary

5: Buford Dr NE & Brand Smart Way/Driveway 2

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	0	79	307	0	157	110	2353	139	474	2283	168
Future Volume (veh/h)	148	0	79	307	0	157	110	2353	139	474	2283	168
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	164	0	0	334	0	0	122	2614	0	564	2718	0
Peak Hour Factor	0.90	0.92	0.90	0.92	0.92	0.92	0.90	0.90	0.90	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	1		337	1		119	2202		689	2752	
Arrive On Green	0.09	0.00	0.00	0.10	0.00	0.00	0.09	1.00	0.00	0.20	0.77	0.00
Sat Flow, veh/h	1781	1870	1585	3456	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	164	0	0	334	0	0	122	2614	0	564	2718	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	17.8	0.0	0.0	19.3	0.0	0.0	9.3	0.0	0.0	31.2	146.7	0.0
Cycle Q Clear(g_c), s	17.8	0.0	0.0	19.3	0.0	0.0	9.3	0.0	0.0	31.2	146.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	195	1		337	1		119	2202		689	2752	
V/C Ratio(X)	0.84	0.00		0.99	0.00		1.03	1.19		0.82	0.99	
Avail Cap(c_a), veh/h	195	157		337	154		119	2202		689	2752	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	91.3	0.0	0.0	90.2	0.0	0.0	65.1	0.0	0.0	76.6	21.6	0.0
Incr Delay (d2), s/veh	27.1	0.0	0.0	46.6	0.0	0.0	89.9	89.2	0.0	7.7	14.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	0.0	0.0	11.0	0.0	0.0	6.0	27.3	0.0	14.4	56.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	118.4	0.0	0.0	136.7	0.0	0.0	155.0	89.2	0.0	84.3	36.1	0.0
LnGrp LOS	F	A		F	A		F	F		F	D	
Approach Vol, veh/h		164	A		334	A		2736	A		3282	A
Approach Delay, s/veh		118.4			136.7			92.1			44.4	
Approach LOS		F			F			F			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	161.0	24.0	0.0	46.0	130.0	24.0	0.0				
Change Period (Y+Rc), s	* 5.7	* 6.1	4.5	* 6.5	* 6.1	* 6.1	* 6.2	6.5				
Max Green Setting (Gmax), s	* 9.3	* 1.3E2	19.5	* 17	* 17	* 1.2E2	* 18	16.5				
Max Q Clear Time (g_c+I1), s	11.3	148.7	21.3	0.0	33.2	2.0	19.8	0.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	68.6	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			71.0									
HCM 6th LOS			E									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

HCM 6th TWSC
6: Buford Dr NE & Laurel Crossing Pkwy NE

09/15/2018

Intersection						
Int Delay, s/veh	2.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	46	71	2496	76	119	2591
Future Vol, veh/h	46	71	2496	76	119	2591
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	0	0	-	175	325	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	93	93	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	84	2684	82	138	3013
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	4467	1342	0	0	2684	0
Stage 1	2684	-	-	-	-	-
Stage 2	1783	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 1	142	-	-	151	-
Stage 1	~ 37	-	-	-	-	-
Stage 2	120	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	0	142	-	-	151	-
Mov Cap-2 Maneuver	0	-	-	-	-	-
Stage 1	~ 3	-	-	-	-	-
Stage 2	120	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s		0		4.9		
HCM LOS	-					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	142	151	-
HCM Lane V/C Ratio	-	-	-	0.588	0.916	-
HCM Control Delay (s)	-	-	-	61.4	110.9	-
HCM Lane LOS	-	-	-	F	F	-
HCM 95th %tile Q(veh)	-	-	-	3	6.5	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Timings

7: Buford Dr NE & Rock Springs Rd

09/15/2018

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 						 			 	
Traffic Volume (vph)	60	24	112	35	24	64	2032	58	223	2140	282
Future Volume (vph)	60	24	112	35	24	64	2032	58	223	2140	282
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8	1	6		5	2	
Permitted Phases	4		4	8		6		6	2		2
Detector Phase	7	4	4	8	8	1	6	6	5	2	2
Switch Phase											
Minimum Initial (s)	4.0	6.0	6.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0	12.0
Minimum Split (s)	11.0	12.5	12.5	14.0	14.0	10.8	19.3	19.3	12.0	19.3	19.3
Total Split (s)	28.0	48.0	48.0	20.0	20.0	17.0	117.0	117.0	35.0	135.0	135.0
Total Split (%)	14.0%	24.0%	24.0%	10.0%	10.0%	8.5%	58.5%	58.5%	17.5%	67.5%	67.5%
Yellow Time (s)	4.0	3.5	3.5	5.0	5.0	3.8	4.7	4.7	5.0	4.7	4.7
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.6	2.6	3.0	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	6.5	6.5	8.0	8.0	6.8	7.3	7.3	8.0	7.3	7.3
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 200

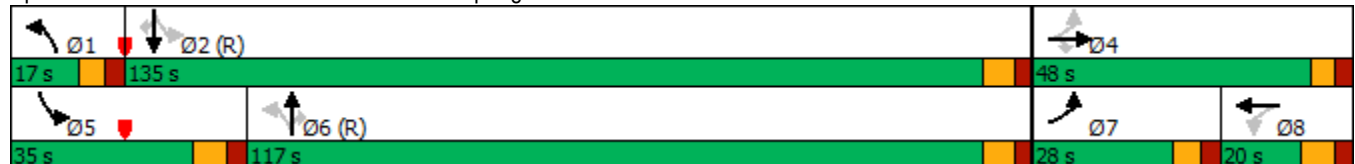
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Splits and Phases: 7: Buford Dr NE & Rock Springs Rd



HCM 6th Signalized Intersection Summary

7: Buford Dr NE & Rock Springs Rd

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	24	112	35	24	131	64	2032	58	223	2140	282
Future Volume (veh/h)	60	24	112	35	24	131	64	2032	58	223	2140	282
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	70	28	0	44	30	166	67	2139	0	237	2277	0
Peak Hour Factor	0.86	0.86	0.86	0.79	0.79	0.79	0.95	0.95	0.95	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	171	231		119	15	82	189	2513		262	2648	
Arrive On Green	0.03	0.12	0.00	0.06	0.06	0.06	0.04	1.00	0.00	0.11	1.00	0.00
Sat Flow, veh/h	3456	1870	1585	1382	248	1375	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	70	28	0	44	0	196	67	2139	0	237	2277	0
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1382	0	1623	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.7	2.7	0.0	6.2	0.0	12.0	2.2	0.0	0.0	8.0	0.0	0.0
Cycle Q Clear(g_c), s	3.7	2.7	0.0	6.2	0.0	12.0	2.2	0.0	0.0	8.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.85	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	171	231		119	0	97	189	2513		262	2648	
V/C Ratio(X)	0.41	0.12		0.37	0.00	2.01	0.36	0.85		0.90	0.86	
Avail Cap(c_a), veh/h	435	388		119	0	97	243	2513		409	2648	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	0.66	0.66	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	83.4	78.0	0.0	91.3	0.0	94.0	7.5	0.0	0.0	14.6	0.0	0.0
Incr Delay (d2), s/veh	1.6	0.2	0.0	1.9	0.0	489.9	0.7	2.6	0.0	15.9	3.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	1.3	0.0	2.3	0.0	18.3	0.8	0.9	0.0	5.3	1.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	85.0	78.2	0.0	93.2	0.0	583.9	8.3	2.6	0.0	30.6	3.9	0.0
LnGrp LOS	F	E		F	A	F	A	A		C	A	
Approach Vol, veh/h	98			A			240			2206		
Approach Delay, s/veh	83.0			494.0			2.8			6.4		
Approach LOS	F			F			A			A		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.9	156.3		32.7	18.5	148.7	12.7	20.0				
Change Period (Y+Rc), s	* 6.8	* 7.3		* 8	8.0	* 7.3	7.0	8.0				
Max Green Setting (Gmax), s	* 10	* 1.3E2		* 42	27.0	* 1.1E2	21.0	12.0				
Max Q Clear Time (g_c+I1), s	4.2	2.0		4.7	10.0	2.0	5.7	14.0				
Green Ext Time (p_c), s	0.0	47.3		0.1	0.6	38.2	0.1	0.0				

Intersection Summary

HCM 6th Ctrl Delay 29.5

HCM 6th LOS C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

8: Buford Dr NE & Tech Center Pkwy NE

09/15/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗	↖	↖	↑↑	↑↑	↖
Traffic Volume (vph)	220	97	56	1945	2063	183
Future Volume (vph)	220	97	56	1945	2063	183
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	8		1	6	2	
Permitted Phases		8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	6.0	6.0	4.0	20.0	20.0	20.0
Minimum Split (s)	12.4	12.4	10.0	26.6	26.6	26.6
Total Split (s)	30.0	30.0	17.0	170.0	153.0	153.0
Total Split (%)	15.0%	15.0%	8.5%	85.0%	76.5%	76.5%
Yellow Time (s)	3.5	3.5	3.3	5.0	5.0	5.0
All-Red Time (s)	2.9	2.9	2.7	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.0	6.6	6.6	6.6
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 200

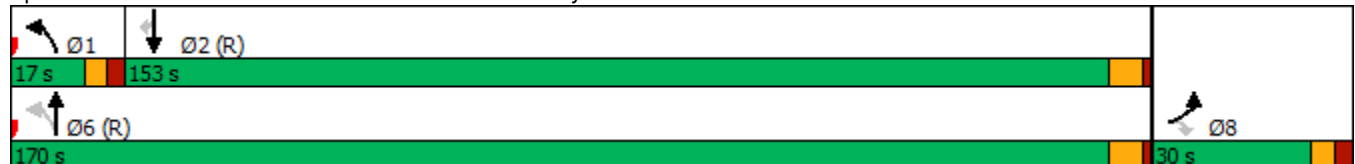
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of 1st Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Splits and Phases: 8: Buford Dr NE & Tech Center Pkwy NE



HCM 6th Signalized Intersection Summary

8: Buford Dr NE & Tech Center Pkwy NE

09/15/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←←	→	←	↑↑	↑↑	↖
Traffic Volume (veh/h)	220	97	56	1945	2063	183
Future Volume (veh/h)	220	97	56	1945	2063	183
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	278	0	58	2005	2344	0
Peak Hour Factor	0.79	0.79	0.97	0.97	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	317		192	2997	2822	
Arrive On Green	0.09	0.00	0.04	1.00	1.00	0.00
Sat Flow, veh/h	3456	1585	1781	3647	3647	1585
Grp Volume(v), veh/h	278	0	58	2005	2344	0
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777	1777	1585
Q Serve(g_s), s	15.9	0.0	1.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	15.9	0.0	1.2	0.0	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	317		192	2997	2822	
V/C Ratio(X)	0.88		0.30	0.67	0.83	
Avail Cap(c_a), veh/h	408		256	2997	2822	
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.74	0.74	0.26	0.00
Uniform Delay (d), s/veh	89.7	0.0	3.2	0.0	0.0	0.0
Incr Delay (d2), s/veh	15.7	0.0	0.6	0.9	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	0.0	0.4	0.4	0.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	105.4	0.0	3.8	0.9	0.8	0.0
LnGrp LOS	F		A	A	A	
Approach Vol, veh/h	278	A		2063	2344	A
Approach Delay, s/veh	105.4			1.0	0.8	
Approach LOS	F			A	A	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.8	165.4			175.2	24.8
Change Period (Y+Rc), s	6.0	* 6.6			* 6.6	6.4
Max Green Setting (Gmax), s	11.0	* 1.5E2			* 1.6E2	23.6
Max Q Clear Time (g_c+I1), s	3.2	2.0			2.0	17.9
Green Ext Time (p_c), s	0.0	53.5			33.4	0.5

Intersection Summary

HCM 6th Ctrl Delay	7.1
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

9: Buford Dr NE & Braves Ave

09/15/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3	Ø5
Lane Configurations								
Traffic Volume (vph)	5	9	41	1993	2105	51		
Future Volume (vph)	5	9	41	1993	2105	51		
Turn Type	Prot	Perm	Prot	NA	NA	Perm		
Protected Phases	4		1	6	2		3	5
Permitted Phases		4				2		
Detector Phase	4	4	1	6	2	2		
Switch Phase								
Minimum Initial (s)	6.0	6.0	4.0	12.0	12.0	12.0	5.0	5.0
Minimum Split (s)	12.4	12.4	10.3	18.9	18.9	18.9	9.5	9.5
Total Split (s)	28.0	28.0	18.0	146.0	145.0	145.0	9.0	17.0
Total Split (%)	14.0%	14.0%	9.0%	73.0%	72.5%	72.5%	5%	9%
Yellow Time (s)	3.4	3.4	3.7	5.4	5.4	5.4	3.0	3.0
All-Red Time (s)	3.0	3.0	2.6	1.5	1.5	1.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.4	6.4	6.3	6.9	6.9	6.9		
Lead/Lag	Lag	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max	None	None

Intersection Summary

Cycle Length: 200

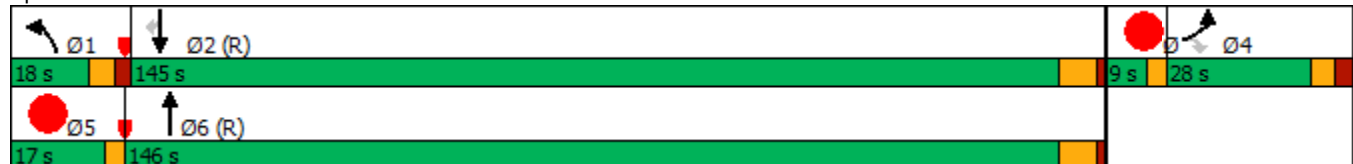
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Splits and Phases: 9: Buford Dr NE & Braves Ave



HCM Signalized Intersection Capacity Analysis

9: Buford Dr NE & Braves Ave

09/15/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	9	41	1993	2105	51
Future Volume (vph)	5	9	41	1993	2105	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4	6.3	6.9	6.9	6.9
Lane Util. Factor	1.00	1.00	0.97	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	3433	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	3433	3539	3539	1583
Peak-hour factor, PHF	0.77	0.77	0.96	0.96	0.86	0.86
Adj. Flow (vph)	6	12	43	2076	2448	59
RTOR Reduction (vph)	0	12	0	0	0	9
Lane Group Flow (vph)	6	0	43	2076	2448	50
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		1	6	2	
Permitted Phases		4				2
Actuated Green, G (s)	4.1	4.1	6.8	182.6	169.5	169.5
Effective Green, g (s)	4.1	4.1	6.8	182.6	169.5	169.5
Actuated g/C Ratio	0.02	0.02	0.03	0.91	0.85	0.85
Clearance Time (s)	6.4	6.4	6.3	6.9	6.9	6.9
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	36	32	116	3231	2999	1341
v/s Ratio Prot	c0.00		0.01	c0.59	c0.69	
v/s Ratio Perm		0.00				0.03
v/c Ratio	0.17	0.01	0.37	0.64	0.82	0.04
Uniform Delay, d1	96.3	96.0	94.5	1.8	7.5	2.4
Progression Factor	1.00	1.00	0.91	3.88	0.89	2.35
Incremental Delay, d2	2.2	0.1	0.2	0.1	1.4	0.0
Delay (s)	98.5	96.1	86.0	7.2	8.1	5.7
Level of Service	F	F	F	A	A	A
Approach Delay (s)	96.9			8.8	8.0	
Approach LOS	F			A	A	
Intersection Summary						
HCM 2000 Control Delay			8.7	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.82			
Actuated Cycle Length (s)			200.0	Sum of lost time (s)		22.6
Intersection Capacity Utilization			74.3%	ICU Level of Service		D
Analysis Period (min)			15			

c Critical Lane Group

Timings

10: Buford Dr NE & Old Peachtree Rd NE

09/15/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	506	111	57	231	246	115	1620	108	346	1606	81
Future Volume (vph)	215	506	111	57	231	246	115	1620	108	346	1606	81
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8			6			2
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	15.0	15.0	4.0	15.0	15.0
Minimum Split (s)	10.5	13.4	13.4	10.5	13.4	13.4	10.6	21.6	21.6	10.5	21.6	21.6
Total Split (s)	24.0	65.0	65.0	17.0	58.0	58.0	24.0	89.0	89.0	29.0	94.0	94.0
Total Split (%)	12.0%	32.5%	32.5%	8.5%	29.0%	29.0%	12.0%	44.5%	44.5%	14.5%	47.0%	47.0%
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	4.7	4.7	4.7	3.5	4.7	4.7
All-Red Time (s)	3.0	2.9	2.9	3.0	2.9	2.9	1.9	1.9	1.9	3.0	1.9	1.9
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)	6.5	7.4	7.4	6.5	7.4	7.4	6.6	6.6	6.6	6.5	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 200

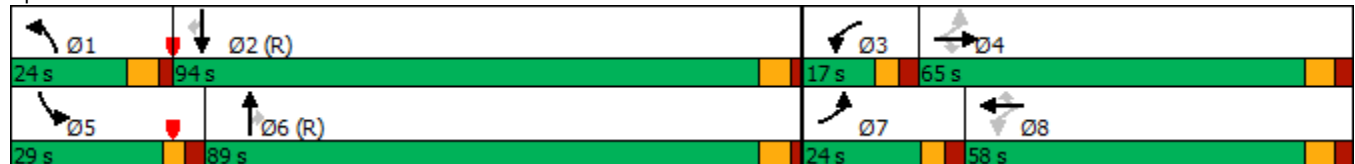
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Splits and Phases: 10: Buford Dr NE & Old Peachtree Rd NE



HCM 6th Signalized Intersection Summary

10: Buford Dr NE & Old Peachtree Rd NE

09/15/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	506	111	57	231	246	115	1620	108	346	1606	81
Future Volume (veh/h)	215	506	111	57	231	246	115	1620	108	346	1606	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	231	544	119	60	243	259	121	1705	114	384	1784	90
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	300	539	456	97	439	372	138	1529	682	389	1652	737
Arrive On Green	0.09	0.29	0.29	0.03	0.23	0.23	0.08	0.43	0.43	0.22	0.93	0.93
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	231	544	119	60	243	259	121	1705	114	384	1784	90
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	17.5	57.6	11.6	5.1	22.9	29.9	13.4	86.0	8.8	22.1	93.0	0.9
Cycle Q Clear(g_c), s	17.5	57.6	11.6	5.1	22.9	29.9	13.4	86.0	8.8	22.1	93.0	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	300	539	456	97	439	372	138	1529	682	389	1652	737
V/C Ratio(X)	0.77	1.01	0.26	0.62	0.55	0.70	0.88	1.12	0.17	0.99	1.08	0.12
Avail Cap(c_a), veh/h	300	539	456	130	473	401	155	1529	682	389	1652	737
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.52	0.52	0.52
Uniform Delay (d), s/veh	56.1	71.2	54.8	60.8	67.3	70.0	91.3	57.0	35.0	77.4	7.0	3.8
Incr Delay (d2), s/veh	11.6	41.3	0.3	6.2	1.2	4.8	36.9	61.5	0.5	29.8	42.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	33.4	4.7	2.5	11.0	12.5	7.6	50.4	3.6	10.4	12.8	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.7	112.5	55.1	67.0	68.5	74.7	128.2	118.5	35.5	107.1	49.6	4.0
LnGrp LOS	E	F	E	E	E	E	F	F	D	F	F	A
Approach Vol, veh/h	894			562			1940			2258		
Approach Delay, s/veh	93.3			71.2			114.2			57.5		
Approach LOS	F			E			F			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.1	99.6	13.4	65.0	29.0	92.6	24.0	54.4				
Change Period (Y+Rc), s	* 6.6	* 6.6	6.5	7.4	6.5	* 6.6	6.5	7.4				
Max Green Setting (Gmax), s	* 17	* 87	10.5	57.6	22.5	* 82	17.5	50.6				
Max Q Clear Time (g_c+I1), s	15.4	95.0	7.1	59.6	24.1	88.0	19.5	31.9				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0				
Intersection Summary												
HCM 6th Ctrl Delay			84.0									
HCM 6th LOS			F									
Notes												

Intersection						
Int Delay, s/veh	4.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗		↗↗↗
Traffic Vol, veh/h	0	135	2580	86	0	2966
Future Vol, veh/h	0	135	2580	86	0	2966
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	175	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	90	90	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	147	2867	96	0	3531
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1434	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0 ~ 123	-	-	0	-	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	- ~ 123	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	210.4		0		0	
HCM LOS	F					
Minor Lane/Major Mvmt	NBT		NBRWBLn1		SBT	
Capacity (veh/h)	-		123		-	
HCM Lane V/C Ratio	-		1.193		-	
HCM Control Delay (s)	-		210.4		-	
HCM Lane LOS	-		F		-	
HCM 95th %tile Q(veh)	-		9		-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection						
Int Delay, s/veh	3.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗		↗↗
Traffic Vol, veh/h	0	129	2463	107	0	2672
Future Vol, veh/h	0	129	2463	107	0	2672
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	175	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	90	90	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	140	2737	119	0	3181
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1369	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	~ 136	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	~ 136	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	149.5		0		0	
HCM LOS	F					
Minor Lane/Major Mvmt	NBT		NBRWBLn1		SBT	
Capacity (veh/h)	-		136		-	
HCM Lane V/C Ratio	-		1.031		-	
HCM Control Delay (s)	-		149.5		-	
HCM Lane LOS	-		F		-	
HCM 95th %tile Q(veh)	-		7.5		-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC
102: Laurel Crossing Pkwy NE & Driveway 4

09/15/2018

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	64	131	61	0	0	56
Future Vol, veh/h	64	131	61	0	0	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	89	85	85	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	70	147	72	0	0	61
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	72	0	-	0	359	72
Stage 1	-	-	-	-	72	-
Stage 2	-	-	-	-	287	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1528	-	-	-	640	990
Stage 1	-	-	-	-	951	-
Stage 2	-	-	-	-	762	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1528	-	-	-	608	990
Mov Cap-2 Maneuver	-	-	-	-	608	-
Stage 1	-	-	-	-	903	-
Stage 2	-	-	-	-	762	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.4	0		8.9		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1528	-	-	-	990	
HCM Lane V/C Ratio	0.046	-	-	-	0.061	
HCM Control Delay (s)	7.5	0	-	-	8.9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	

Intersection: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	L	TR	R	L	T	T	TR	L
Maximum Queue (ft)	224	115	70	200	239	177	142	113	219	246	264	268
Average Queue (ft)	66	50	12	115	148	72	44	40	107	119	134	114
95th Queue (ft)	135	106	40	192	214	130	95	96	197	211	216	238
Link Distance (ft)	330	330	330			1590	1590		3054	3054	3054	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				250	250			300				500
Storage Blk Time (%)					0							
Queuing Penalty (veh)					0							

Intersection: 1: Buford Dr NE & Mall Drwy/Woodward Crossing Blvd

Movement	SB	SB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	725	1500	1504	1517
Average Queue (ft)	458	850	849	822
95th Queue (ft)	902	1889	1876	1863
Link Distance (ft)		1465	1465	1465
Upstream Blk Time (%)		42	41	40
Queuing Penalty (veh)		0	0	0
Storage Bay Dist (ft)	500			
Storage Blk Time (%)		48		
Queuing Penalty (veh)		174		

Intersection: 2: Buford Dr NE & Mall of Georgia Blvd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	215	201	687	1069	325	375	1342	450	268	282	442	716
Average Queue (ft)	111	74	215	567	291	359	955	158	188	214	266	324
95th Queue (ft)	177	165	449	959	369	409	1715	488	273	290	450	567
Link Distance (ft)	1056	1056	1056	1056			1308				974	974
Upstream Blk Time (%)				0			43					
Queuing Penalty (veh)				0			0					
Storage Bay Dist (ft)					275	275		400	375	375		
Storage Blk Time (%)					28	70						2
Queuing Penalty (veh)					57	144						8

Intersection: 2: Buford Dr NE & Mall of Georgia Blvd

Movement	NB	NB	SB	SB	SB	SB
Directions Served	TR	R	L	T	T	TR
Maximum Queue (ft)	781	200	400	3082	3104	3082
Average Queue (ft)	405	149	127	2296	2321	2308
95th Queue (ft)	668	292	413	3818	3817	3829
Link Distance (ft)	974			3054	3054	3054
Upstream Blk Time (%)				18	23	24
Queuing Penalty (veh)				144	180	184
Storage Bay Dist (ft)		175	300			
Storage Blk Time (%)	21	0		80		
Queuing Penalty (veh)	90	3		43		

Intersection: 3: Buford Dr NE & I-85 SB Ramp

Movement	EB	WB	WB	SB	SB	SB
Directions Served	R	R	R	T	T	R
Maximum Queue (ft)	343	901	882	1034	1014	1056
Average Queue (ft)	46	810	801	687	691	581
95th Queue (ft)	202	1047	1047	1414	1422	1416
Link Distance (ft)	753	867	867	974	974	974
Upstream Blk Time (%)		73	69	10	17	36
Queuing Penalty (veh)		0	0	103	169	357
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Buford Dr NE & I-85 NB Ramp

Movement	EB	SB	SB	SB
Directions Served	R	T	T	R
Maximum Queue (ft)	203	1510	1524	1524
Average Queue (ft)	51	1192	1194	1103
95th Queue (ft)	170	2098	2088	2156
Link Distance (ft)	983	1474	1474	1474
Upstream Blk Time (%)		24	30	12
Queuing Penalty (veh)		229	288	118
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Buford Dr NE & Brand Smart Way/Driveway 2

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	R	L	L	T	R	L	T	T	R	L	L
Maximum Queue (ft)	271	56	162	174	810	175	385	453	423	225	312	325
Average Queue (ft)	169	16	148	164	505	127	91	312	316	42	305	322
95th Queue (ft)	253	57	187	190	890	223	246	555	560	183	321	327
Link Distance (ft)	866	866			795			386	386			
Upstream Blk Time (%)					13		0	5	9			
Queuing Penalty (veh)					0		0	60	121			
Storage Bay Dist (ft)			150	150		150	300			175	300	300
Storage Blk Time (%)			14	43		27		14	20		9	60
Queuing Penalty (veh)			22	67		84		16	28		100	684

Intersection: 5: Buford Dr NE & Brand Smart Way/Driveway 2

Movement	SB	SB
Directions Served	T	T
Maximum Queue (ft)	614	654
Average Queue (ft)	596	589
95th Queue (ft)	617	718
Link Distance (ft)	591	591
Upstream Blk Time (%)	30	13
Queuing Penalty (veh)	297	129
Storage Bay Dist (ft)		
Storage Blk Time (%)	7	
Queuing Penalty (veh)	35	

Intersection: 6: Buford Dr NE & Laurel Crossing Pkwy NE

Movement	WB	WB	NB	SB
Directions Served	L	R	T	L
Maximum Queue (ft)	797	683	626	223
Average Queue (ft)	523	65	22	106
95th Queue (ft)	835	374	214	206
Link Distance (ft)	846	846	1185	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			325	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	EB	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	TR	L	T	T	R	L	T
Maximum Queue (ft)	69	66	60	148	115	297	249	452	445	225	324	661
Average Queue (ft)	27	31	18	33	34	144	55	392	393	32	156	257
95th Queue (ft)	61	67	45	98	88	248	160	504	497	161	284	558
Link Distance (ft)	2600	2600	2600			2242		412	412			1185
Upstream Blk Time (%)								15	16			
Queuing Penalty (veh)								163	179			
Storage Bay Dist (ft)				150	200		175			125	225	
Storage Blk Time (%)				1		6		31	34		8	14
Queuing Penalty (veh)				0		2		20	20		86	31

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	667	175
Average Queue (ft)	265	37
95th Queue (ft)	585	155
Link Distance (ft)	1185	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		75
Storage Blk Time (%)	21	
Queuing Penalty (veh)	58	

Intersection: 8: Buford Dr NE & Tech Center Pkwy NE

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	990	996	100	97	311	342	254	279	200
Average Queue (ft)	621	620	13	50	188	213	42	44	7
95th Queue (ft)	979	986	58	94	321	357	136	149	68
Link Distance (ft)	2083	2083	2083		1479	1479	412	412	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)				250					150
Storage Blk Time (%)					2			1	
Queuing Penalty (veh)					1			1	

Intersection: 9: Buford Dr NE & Braves Ave

Movement	EB	NB	NB	NB	NB	SB	SB
Directions Served	L	L	L	T	T	T	T
Maximum Queue (ft)	47	51	94	129	155	230	228
Average Queue (ft)	7	11	31	14	16	62	63
95th Queue (ft)	29	34	57	70	81	178	182
Link Distance (ft)	766			1552	1552	1479	1479
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		850	850				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	L
Maximum Queue (ft)	933	1354	400	274	436	280	575	1282	1282	450	200	216
Average Queue (ft)	209	816	185	57	216	153	285	1141	1132	224	126	134
95th Queue (ft)	541	1461	470	162	342	238	670	1463	1477	573	206	202
Link Distance (ft)	2063	2063			2738			1230	1230			
Upstream Blk Time (%)								41	38			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (ft)			300	225		400	375			375	375	375
Storage Blk Time (%)		50			12			54	55			
Queuing Penalty (veh)		55			38			62	59			

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	660	645	135
Average Queue (ft)	424	444	26
95th Queue (ft)	626	627	101
Link Distance (ft)	1552	1552	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			110
Storage Blk Time (%)	19	43	
Queuing Penalty (veh)	67	35	

Intersection: 100: Buford Dr NE & Driveway 1

Movement	WB	NB	SB	SB	SB
Directions Served	R	T	T	T	T
Maximum Queue (ft)	393	18	470	464	469
Average Queue (ft)	162	1	411	413	387
95th Queue (ft)	317	6	544	561	619
Link Distance (ft)	1223	591	405	405	405
Upstream Blk Time (%)			29	44	19
Queuing Penalty (veh)			285	437	190
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 101: Buford Dr NE & Driveway 3

Movement	WB	NB	NB	NB
Directions Served	R	T	T	R
Maximum Queue (ft)	912	310	316	200
Average Queue (ft)	731	99	151	7
95th Queue (ft)	1109	249	312	68
Link Distance (ft)	878	696	696	
Upstream Blk Time (%)	60			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				175
Storage Blk Time (%)			7	0
Queuing Penalty (veh)			7	1

Intersection: 102: Laurel Crossing Pkwy NE & Driveway 4

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	52	54
Average Queue (ft)	4	25
95th Queue (ft)	24	53
Link Distance (ft)	546	536
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 5734

Timings

2: Buford Dr NE & Mall of Georgia Blvd

09/17/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	30	133	516	21	18	132	1727	257	18	1487	19
Future Volume (vph)	52	30	133	516	21	18	132	1727	257	18	1487	19
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8			6			2
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0	12.0
Minimum Split (s)	10.6	13.1	13.1	10.6	13.1	13.1	10.9	19.3	19.3	10.9	19.3	19.3
Total Split (s)	17.0	21.0	21.0	32.0	36.0	36.0	18.0	70.0	70.0	17.0	69.0	69.0
Total Split (%)	12.1%	15.0%	15.0%	22.9%	25.7%	25.7%	12.9%	50.0%	50.0%	12.1%	49.3%	49.3%
Yellow Time (s)	4.1	5.1	5.1	4.1	5.1	5.1	4.4	5.3	5.3	4.4	5.3	5.3
All-Red Time (s)	2.5	2.0	2.0	2.5	2.0	2.0	2.5	2.0	2.0	2.5	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)	6.6	7.1	7.1	6.6	7.1	7.1	6.9	7.3	7.3	6.9	7.3	7.3
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 140

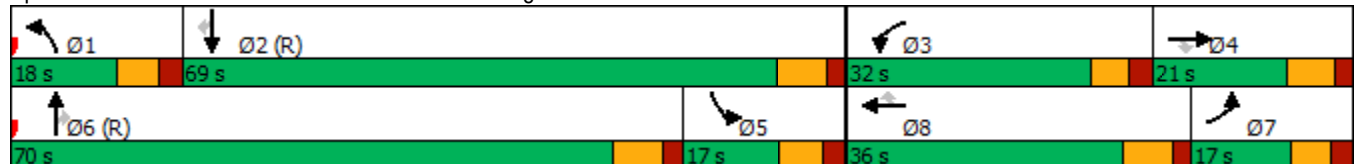
Actuated Cycle Length: 140

Offset: 73 (52%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Splits and Phases: 2: Buford Dr NE & Mall of Georgia Blvd



HCM 6th Signalized Intersection Summary

2: Buford Dr NE & Mall of Georgia Blvd

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	30	133	516	21	18	132	1727	257	18	1487	19
Future Volume (veh/h)	52	30	133	516	21	18	132	1727	257	18	1487	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	62	36	0	573	23	20	140	1837	0	21	1709	22
Peak Hour Factor	0.84	0.84	0.84	0.90	0.90	0.90	0.94	0.94	0.94	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	604	80		617	80	68	192	2513		229	2683	833
Arrive On Green	0.17	0.04	0.00	0.18	0.04	0.04	0.02	0.15	0.00	0.17	0.70	0.70
Sat Flow, veh/h	3456	1870	1585	3456	1870	1585	3563	5611	1585	1781	5106	1585
Grp Volume(v), veh/h	62	36	0	573	23	20	140	1837	0	21	1709	22
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1728	1870	1585	1781	1870	1585	1781	1702	1585
Q Serve(g_s), s	2.1	2.6	0.0	22.9	1.7	1.4	5.5	43.8	0.0	1.4	25.4	0.6
Cycle Q Clear(g_c), s	2.1	2.6	0.0	22.9	1.7	1.4	5.5	43.8	0.0	1.4	25.4	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	604	80		617	80	68	192	2513		229	2683	833
V/C Ratio(X)	0.10	0.45		0.93	0.29	0.29	0.73	0.73		0.09	0.64	0.03
Avail Cap(c_a), veh/h	604	186		627	386	327	282	2513		229	2683	833
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.83	0.83	0.00	0.91	0.91	0.91
Uniform Delay (d), s/veh	48.5	65.4	0.0	56.6	64.9	45.7	67.7	51.6	0.0	51.1	13.8	10.1
Incr Delay (d2), s/veh	0.1	3.9	0.0	20.1	1.9	2.4	4.3	1.6	0.0	0.2	1.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.3	0.0	11.5	0.8	0.7	2.6	22.3	0.0	0.6	7.4	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.6	69.4	0.0	76.7	66.9	48.1	72.1	53.2	0.0	51.3	14.9	10.1
LnGrp LOS	D	E		E	E	D	E	D		D	B	B
Approach Vol, veh/h	98			A			616			1977		
Approach Delay, s/veh	56.2						75.5			54.5		
Approach LOS	E						E			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.5	80.9	31.6	13.1	25.3	70.0	31.6	13.1				
Change Period (Y+Rc), s	6.9	7.3	6.6	7.1	7.3	* 7.3	7.1	* 7.1				
Max Green Setting (Gmax), s	11.1	61.7	25.4	13.9	10.1	* 63	10.4	* 29				
Max Q Clear Time (g_c+I1), s	7.5	27.4	24.9	4.6	3.4	45.8	4.1	3.7				
Green Ext Time (p_c), s	0.1	15.9	0.1	0.1	0.0	11.3	0.1	0.1				

Intersection Summary

HCM 6th Ctrl Delay	42.0
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

7: Buford Dr NE & Rock Springs Rd

09/17/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	277	20	91	77	41	264	81	1797	10	40	1599	207
Future Volume (vph)	277	20	91	77	41	264	81	1797	10	40	1599	207
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Detector Phase	7	4	4	8	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	6.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0	12.0
Minimum Split (s)	11.0	12.5	12.5	14.0	14.0	14.0	10.8	19.3	19.3	12.0	19.3	19.3
Total Split (s)	23.0	46.0	46.0	23.0	23.0	23.0	17.0	77.0	77.0	17.0	77.0	77.0
Total Split (%)	16.4%	32.9%	32.9%	16.4%	16.4%	16.4%	12.1%	55.0%	55.0%	12.1%	55.0%	55.0%
Yellow Time (s)	4.0	3.5	3.5	5.0	5.0	5.0	3.8	4.7	4.7	5.0	4.7	4.7
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.6	2.6	3.0	2.6	2.6
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)	7.0	6.5	6.5	8.0	8.0	8.0	6.8	7.3	7.3	8.0	7.3	7.3
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 140

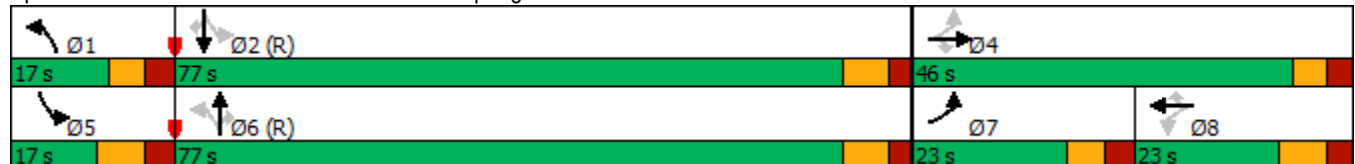
Actuated Cycle Length: 140

Offset: 110 (79%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Splits and Phases: 7: Buford Dr NE & Rock Springs Rd



HCM 6th Signalized Intersection Summary

7: Buford Dr NE & Rock Springs Rd

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	277	20	91	77	41	264	81	1797	10	40	1599	207
Future Volume (veh/h)	277	20	91	77	41	264	81	1797	10	40	1599	207
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	322	23	0	97	52	0	85	1892	0	43	1701	0
Peak Hour Factor	0.86	0.86	0.86	0.79	0.79	0.79	0.95	0.95	0.95	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	596	435		168	157		144	2053		231	2047	
Arrive On Green	0.10	0.23	0.00	0.08	0.08	0.00	0.07	1.00	0.00	0.01	0.19	0.00
Sat Flow, veh/h	3456	1870	1585	1388	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	322	23	0	97	52	0	85	1892	0	43	1701	0
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1388	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	11.6	1.3	0.0	9.6	3.7	0.0	2.8	0.0	0.0	1.4	64.5	0.0
Cycle Q Clear(g_c), s	11.6	1.3	0.0	9.6	3.7	0.0	2.8	0.0	0.0	1.4	64.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	596	435		168	157		144	2053		231	2047	
V/C Ratio(X)	0.54	0.05		0.58	0.33		0.59	0.92		0.19	0.83	
Avail Cap(c_a), veh/h	649	528		200	200		215	2053		304	2047	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.76	0.76	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.9	41.7	0.0	63.2	60.4	0.0	30.1	0.0	0.0	11.7	50.1	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.0	3.1	1.2	0.0	2.9	6.6	0.0	0.4	4.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.6	0.0	3.5	1.8	0.0	1.6	1.9	0.0	0.6	31.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.7	41.8	0.0	66.3	61.6	0.0	33.0	6.6	0.0	12.1	54.2	0.0
LnGrp LOS	D	D		E	E		C	A		B	D	
Approach Vol, veh/h	345		A	149		A	1977		A	1744		A
Approach Delay, s/veh	50.1			64.7			7.7			53.2		
Approach LOS	D			E			A			D		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.5	87.9		40.6	11.2	88.2	20.8	19.8				
Change Period (Y+Rc), s	* 6.8	* 7.3		* 8	8.0	* 7.3	7.0	8.0				
Max Green Setting (Gmax), s	* 10	* 70		* 40	9.0	* 70	16.0	15.0				
Max Q Clear Time (g_c+I1), s	4.8	66.5		3.3	3.4	2.0	13.6	11.6				
Green Ext Time (p_c), s	0.1	2.7		0.1	0.0	25.2	0.3	0.1				
Intersection Summary												
HCM 6th Ctrl Delay	32.0											
HCM 6th LOS	C											
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

10: Buford Dr NE & Old Peachtree Rd NE

09/17/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	161	109	153	417	405	116	1243	68	153	1416	61
Future Volume (vph)	118	161	109	153	417	405	116	1243	68	153	1416	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8			6			2
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	15.0	15.0	4.0	15.0	15.0
Minimum Split (s)	10.5	13.4	13.4	10.5	13.4	13.4	10.6	21.6	21.6	10.5	21.6	21.6
Total Split (s)	17.0	42.0	42.0	15.0	40.0	40.0	22.0	66.0	66.0	17.0	61.0	61.0
Total Split (%)	12.1%	30.0%	30.0%	10.7%	28.6%	28.6%	15.7%	47.1%	47.1%	12.1%	43.6%	43.6%
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	4.7	4.7	4.7	3.5	4.7	4.7
All-Red Time (s)	3.0	2.9	2.9	3.0	2.9	2.9	1.9	1.9	1.9	3.0	1.9	1.9
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)	6.5	7.4	7.4	6.5	7.4	7.4	6.6	6.6	6.6	6.5	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 140

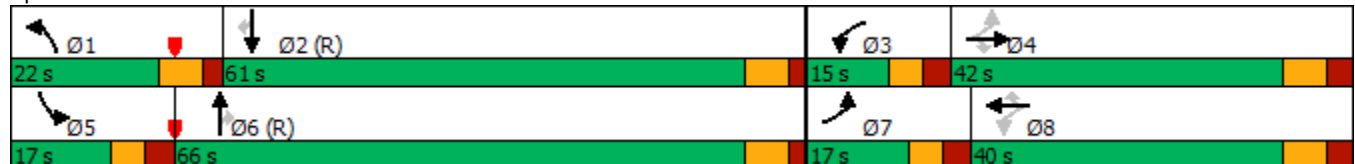
Actuated Cycle Length: 140

Offset: 43 (31%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Splits and Phases: 10: Buford Dr NE & Old Peachtree Rd NE



HCM 6th Signalized Intersection Summary

10: Buford Dr NE & Old Peachtree Rd NE

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	161	109	153	417	405	116	1243	68	153	1416	61
Future Volume (veh/h)	118	161	109	153	417	405	116	1243	68	153	1416	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	127	173	117	161	439	426	122	1308	72	170	1573	68
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	172	852	380	378	436	369	146	2261	702	220	1507	672
Arrive On Green	0.07	0.24	0.24	0.06	0.23	0.23	0.08	0.44	0.44	0.02	0.14	0.14
Sat Flow, veh/h	1781	3554	1585	1781	1870	1585	1781	5106	1585	3456	3554	1585
Grp Volume(v), veh/h	127	173	117	161	439	426	122	1308	72	170	1573	68
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1702	1585	1728	1777	1585
Q Serve(g_s), s	7.5	5.4	8.5	8.5	32.6	32.6	9.5	26.9	3.7	6.9	59.4	5.2
Cycle Q Clear(g_c), s	7.5	5.4	8.5	8.5	32.6	32.6	9.5	26.9	3.7	6.9	59.4	5.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	172	852	380	378	436	369	146	2261	702	220	1507	672
V/C Ratio(X)	0.74	0.20	0.31	0.43	1.01	1.15	0.84	0.58	0.10	0.77	1.04	0.10
Avail Cap(c_a), veh/h	185	878	392	378	436	369	196	2261	702	259	1507	672
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.74	0.74	0.74
Uniform Delay (d), s/veh	40.7	42.5	43.7	39.0	53.7	53.7	63.4	29.2	22.8	67.5	60.2	36.9
Incr Delay (d2), s/veh	13.5	0.1	0.5	0.8	45.1	95.8	20.4	1.1	0.3	8.7	32.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	2.4	3.3	4.5	20.4	22.5	5.0	10.7	1.4	3.3	35.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.1	42.6	44.1	39.8	98.8	149.5	83.8	30.3	23.1	76.2	92.6	37.1
LnGrp LOS	D	D	D	D	F	F	F	C	C	E	F	D
Approach Vol, veh/h	417			1026			1502			1811		
Approach Delay, s/veh	46.6			110.6			34.3			89.0		
Approach LOS	D			F			C			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	66.0	15.0	41.0	15.4	68.6	16.0	40.0				
Change Period (Y+Rc), s	* 6.6	* 6.6	6.5	7.4	6.5	* 6.6	6.5	7.4				
Max Green Setting (Gmax), s	* 15	* 54	8.5	34.6	10.5	* 59	10.5	32.6				
Max Q Clear Time (g_c+I1), s	11.5	61.4	10.5	10.5	8.9	28.9	9.5	34.6				
Green Ext Time (p_c), s	0.1	0.0	0.0	1.3	0.1	10.4	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay 72.7

HCM 6th LOS E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 2: Buford Dr NE & Mall of Georgia Blvd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	L	L	T	R	L	L	T	T	TR
Maximum Queue (ft)	74	31	93	325	372	64	40	120	154	222	204	268
Average Queue (ft)	41	6	31	230	273	17	8	48	82	131	139	162
95th Queue (ft)	77	25	65	324	377	47	24	99	129	215	212	249
Link Distance (ft)	1056	1056	1056			1308				974	974	974
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				275	275		400	375	375			
Storage Blk Time (%)				0	12							5
Queuing Penalty (veh)				0	5							6

Intersection: 2: Buford Dr NE & Mall of Georgia Blvd

Movement	NB	SB	SB	SB	SB	SB
Directions Served	R	L	T	T	T	R
Maximum Queue (ft)	200	92	336	330	343	31
Average Queue (ft)	63	28	215	225	213	8
95th Queue (ft)	215	70	306	301	314	31
Link Distance (ft)			3055	3055	3055	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	175	300			300	
Storage Blk Time (%)	0		2		1	
Queuing Penalty (veh)	1		0		0	

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	T	R	L	T	T	L	T
Maximum Queue (ft)	133	148	60	86	300	618	225	250	448	433	324	651
Average Queue (ft)	84	85	13	25	74	111	160	104	345	352	89	449
95th Queue (ft)	131	132	37	76	208	428	253	265	486	484	295	622
Link Distance (ft)	2600	2600	2600			2240			412	412		1185
Upstream Blk Time (%)									3	3		
Queuing Penalty (veh)									30	31		
Storage Bay Dist (ft)				150	200		200	175			225	
Storage Blk Time (%)							18		27	30		27
Queuing Penalty (veh)							21		22	3		11

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	717	175
Average Queue (ft)	462	87
95th Queue (ft)	656	231
Link Distance (ft)	1185	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		75
Storage Blk Time (%)	38	
Queuing Penalty (veh)	78	

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	R	L	T	T	T	R
Maximum Queue (ft)	158	112	85	148	275	1684	500	193	415	344	286	54
Average Queue (ft)	83	69	35	53	199	1087	458	84	280	233	181	8
95th Queue (ft)	147	113	77	120	352	1780	604	154	382	325	277	27
Link Distance (ft)	2063	2063	2063			2732			1217	1217	1217	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				300	225		400	375				375
Storage Blk Time (%)					1	63	14		1			
Queuing Penalty (veh)					10	350	77		1			

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	100	674	841	833	135
Average Queue (ft)	55	116	529	540	34
95th Queue (ft)	91	375	762	784	121
Link Distance (ft)			1552	1552	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	375	375			110
Storage Blk Time (%)			27	54	0
Queuing Penalty (veh)			42	33	0

Zone Summary

Zone wide Queuing Penalty: 721

Timings

2: Buford Dr NE & Mall of Georgia Blvd

09/17/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	170	419	459	116	90	391	1957	857	54	2124	173
Future Volume (vph)	171	170	419	459	116	90	391	1957	857	54	2124	173
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8			6			2
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0	12.0
Minimum Split (s)	10.6	13.1	13.1	10.6	13.1	13.1	10.9	19.3	19.3	10.9	19.3	19.3
Total Split (s)	27.0	30.0	30.0	35.0	38.0	38.0	32.0	116.0	116.0	19.0	103.0	103.0
Total Split (%)	13.5%	15.0%	15.0%	17.5%	19.0%	19.0%	16.0%	58.0%	58.0%	9.5%	51.5%	51.5%
Yellow Time (s)	4.1	5.1	5.1	4.1	5.1	5.1	4.4	5.3	5.3	4.4	5.3	5.3
All-Red Time (s)	2.5	2.0	2.0	2.5	2.0	2.0	2.5	2.0	2.0	2.5	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)	6.6	7.1	7.1	6.6	7.1	7.1	6.9	7.3	7.3	6.9	7.3	7.3
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 200

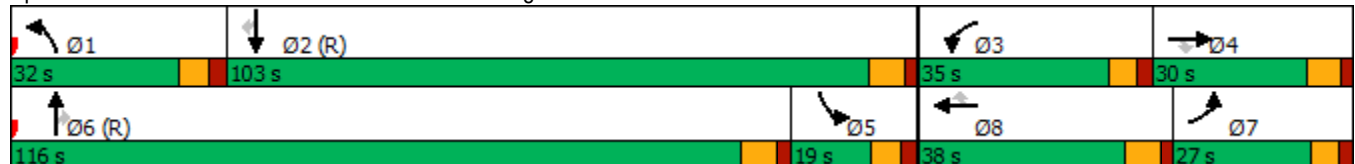
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Splits and Phases: 2: Buford Dr NE & Mall of Georgia Blvd



HCM 6th Signalized Intersection Summary

2: Buford Dr NE & Mall of Georgia Blvd

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	170	419	459	116	90	391	1957	857	54	2124	173
Future Volume (veh/h)	171	170	419	459	116	90	391	1957	857	54	2124	173
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	204	202	0	510	129	100	416	2327	0	62	2441	199
Peak Hour Factor	0.84	0.84	0.84	0.90	0.90	0.90	0.94	0.94	0.94	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	595	214		491	153	130	444	3050		104	2448	760
Arrive On Green	0.17	0.11	0.00	0.14	0.08	0.08	0.25	1.00	0.00	0.08	0.64	0.64
Sat Flow, veh/h	3456	1870	1585	3456	1870	1585	3563	5611	1585	1781	5106	1585
Grp Volume(v), veh/h	204	202	0	510	129	100	416	2327	0	62	2441	199
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1728	1870	1585	1781	1870	1585	1781	1702	1585
Q Serve(g_s), s	10.4	21.4	0.0	28.4	13.6	9.7	22.9	0.0	0.0	6.7	95.1	10.9
Cycle Q Clear(g_c), s	10.4	21.4	0.0	28.4	13.6	9.7	22.9	0.0	0.0	6.7	95.1	10.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	595	214		491	153	130	444	3050		104	2448	760
V/C Ratio(X)	0.34	0.94		1.04	0.84	0.77	0.94	0.76		0.59	1.00	0.26
Avail Cap(c_a), veh/h	595	214		491	289	245	447	3050		108	2448	760
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.52	0.52	0.00	0.64	0.64	0.64
Uniform Delay (d), s/veh	72.8	87.9	0.0	85.8	90.5	55.9	74.3	0.0	0.0	89.9	36.1	20.8
Incr Delay (d2), s/veh	0.3	45.7	0.0	51.2	11.7	9.3	17.4	1.0	0.0	5.3	13.9	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	13.1	0.0	16.1	7.1	4.2	10.4	0.3	0.0	3.2	37.6	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.2	133.6	0.0	137.0	102.2	65.1	91.7	1.0	0.0	95.2	50.0	21.4
LnGrp LOS	E	F		F	F	E	F	A		F	D	C
Approach Vol, veh/h	406			A			739			2743		
Approach Delay, s/veh	103.2			121.2			14.7			48.9		
Approach LOS	F			F			B			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	31.8	103.2	35.0	30.0	19.0	116.0	41.5	23.5				
Change Period (Y+Rc), s	6.9	7.3	6.6	7.1	7.3	* 7.3	7.1	* 7.1				
Max Green Setting (Gmax), s	25.1	95.7	28.4	22.9	12.1	* 1.1E2	20.4	* 31				
Max Q Clear Time (g_c+I1), s	24.9	97.1	30.4	23.4	8.7	2.0	12.4	15.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	42.5	0.4	0.8				
Intersection Summary												
HCM 6th Ctrl Delay	46.2											
HCM 6th LOS	D											
Notes												
User approved volume balancing among the lanes for turning movement.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

7: Buford Dr NE & Rock Springs Rd

09/17/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 		 	 	 	 	 	 	
Traffic Volume (vph)	60	24	112	35	24	131	64	2032	58	223	2140	282
Future Volume (vph)	60	24	112	35	24	131	64	2032	58	223	2140	282
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Detector Phase	7	4	4	8	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	6.0	6.0	6.0	4.0	12.0	12.0	4.0	12.0	12.0
Minimum Split (s)	11.0	12.5	12.5	14.0	14.0	14.0	10.8	19.3	19.3	12.0	19.3	19.3
Total Split (s)	28.0	48.0	48.0	20.0	20.0	20.0	17.0	117.0	117.0	35.0	135.0	135.0
Total Split (%)	14.0%	24.0%	24.0%	10.0%	10.0%	10.0%	8.5%	58.5%	58.5%	17.5%	67.5%	67.5%
Yellow Time (s)	4.0	3.5	3.5	5.0	5.0	5.0	3.8	4.7	4.7	5.0	4.7	4.7
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.6	2.6	3.0	2.6	2.6
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)	7.0	6.5	6.5	8.0	8.0	8.0	6.8	7.3	7.3	8.0	7.3	7.3
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 200

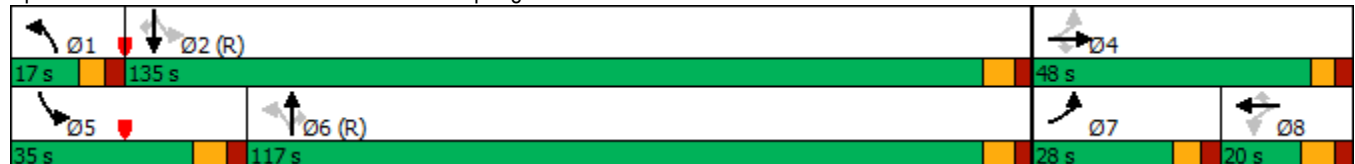
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Splits and Phases: 7: Buford Dr NE & Rock Springs Rd



HCM 6th Signalized Intersection Summary

7: Buford Dr NE & Rock Springs Rd

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	24	112	35	24	131	64	2032	58	223	2140	282
Future Volume (veh/h)	60	24	112	35	24	131	64	2032	58	223	2140	282
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	70	28	0	44	30	0	67	2139	0	237	2277	0
Peak Hour Factor	0.86	0.86	0.86	0.79	0.79	0.79	0.95	0.95	0.95	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	242	198		94	78		191	2587		262	2715	
Arrive On Green	0.03	0.11	0.00	0.04	0.04	0.00	0.04	1.00	0.00	0.10	1.00	0.00
Sat Flow, veh/h	3456	1870	1585	1382	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	70	28	0	44	30	0	67	2139	0	237	2277	0
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1382	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.8	2.7	0.0	6.3	3.1	0.0	2.0	0.0	0.0	7.4	0.0	0.0
Cycle Q Clear(g_c), s	3.8	2.7	0.0	6.3	3.1	0.0	2.0	0.0	0.0	7.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	242	198		94	78		191	2587		262	2715	
V/C Ratio(X)	0.29	0.14		0.47	0.39		0.35	0.83		0.91	0.84	
Avail Cap(c_a), veh/h	504	388		119	112		246	2587		413	2715	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.66	0.66	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	86.3	81.2	0.0	94.9	93.3	0.0	6.5	0.0	0.0	14.2	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.3	0.0	3.6	3.1	0.0	0.7	2.1	0.0	15.9	3.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	1.3	0.0	2.4	1.6	0.0	0.7	0.8	0.0	5.5	1.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.0	81.5	0.0	98.5	96.4	0.0	7.2	2.1	0.0	30.2	3.3	0.0
LnGrp LOS	F	F		F	F		A	A		C	A	
Approach Vol, veh/h	98		A	74		A	2206		A	2514		A
Approach Delay, s/veh	85.4			97.7			2.3			5.8		
Approach LOS	F			F			A			A		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.8	160.1		29.1	18.0	152.9	12.8	16.3				
Change Period (Y+Rc), s	* 6.8	* 7.3		* 8	8.0	* 7.3	7.0	8.0				
Max Green Setting (Gmax), s	* 10	* 1.3E2		* 42	27.0	* 1.1E2	21.0	12.0				
Max Q Clear Time (g_c+I1), s	4.0	2.0		4.7	9.4	2.0	5.8	8.3				
Green Ext Time (p_c), s	0.1	47.3		0.1	0.6	38.2	0.1	0.1				

Intersection Summary

HCM 6th Ctrl Delay 7.2

HCM 6th LOS A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Timings

10: Buford Dr NE & Old Peachtree Rd NE

09/17/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 						  		 	 	
Traffic Volume (vph)	215	506	111	57	231	246	115	1620	108	346	1606	81
Future Volume (vph)	215	506	111	57	231	246	115	1620	108	346	1606	81
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8			6			2
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	15.0	15.0	4.0	15.0	15.0
Minimum Split (s)	10.5	13.4	13.4	10.5	13.4	13.4	10.6	21.6	21.6	10.5	21.6	21.6
Total Split (s)	24.0	65.0	65.0	17.0	58.0	58.0	24.0	89.0	89.0	29.0	94.0	94.0
Total Split (%)	12.0%	32.5%	32.5%	8.5%	29.0%	29.0%	12.0%	44.5%	44.5%	14.5%	47.0%	47.0%
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	4.7	4.7	4.7	3.5	4.7	4.7
All-Red Time (s)	3.0	2.9	2.9	3.0	2.9	2.9	1.9	1.9	1.9	3.0	1.9	1.9
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)	6.5	7.4	7.4	6.5	7.4	7.4	6.6	6.6	6.6	6.5	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 200

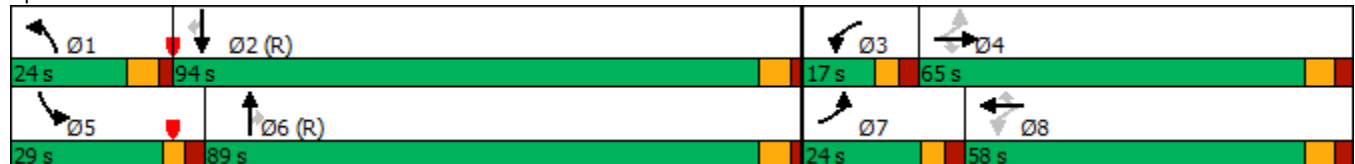
Actuated Cycle Length: 200

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Splits and Phases: 10: Buford Dr NE & Old Peachtree Rd NE



HCM 6th Signalized Intersection Summary 10: Buford Dr NE & Old Peachtree Rd NE

09/17/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	506	111	57	231	246	115	1620	108	346	1606	81
Future Volume (veh/h)	215	506	111	57	231	246	115	1620	108	346	1606	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	231	544	119	60	243	259	121	1705	114	384	1784	90
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	243	822	366	172	336	285	138	2477	769	389	1847	824
Arrive On Green	0.09	0.23	0.23	0.04	0.18	0.18	0.08	0.49	0.49	0.22	1.00	1.00
Sat Flow, veh/h	1781	3554	1585	1781	1870	1585	1781	5106	1585	3456	3554	1585
Grp Volume(v), veh/h	231	544	119	60	243	259	121	1705	114	384	1784	90
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1702	1585	1728	1777	1585
Q Serve(g_s), s	17.5	27.8	12.5	5.5	24.5	32.0	13.4	51.6	8.0	22.1	0.0	0.0
Cycle Q Clear(g_c), s	17.5	27.8	12.5	5.5	24.5	32.0	13.4	51.6	8.0	22.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	243	822	366	172	336	285	138	2477	769	389	1847	824
V/C Ratio(X)	0.95	0.66	0.32	0.35	0.72	0.91	0.88	0.69	0.15	0.99	0.97	0.11
Avail Cap(c_a), veh/h	243	1023	456	201	473	401	155	2477	769	389	1847	824
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.52	0.52	0.52
Uniform Delay (d), s/veh	67.2	69.8	63.9	64.5	77.3	80.4	91.3	39.8	28.6	77.4	0.0	0.0
Incr Delay (d2), s/veh	43.8	1.1	0.5	1.2	3.2	19.1	36.9	1.6	0.4	29.8	9.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	12.7	5.1	2.5	12.0	14.5	7.6	21.5	3.2	10.4	2.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	111.0	70.9	64.4	65.7	80.5	99.5	128.2	41.4	29.0	107.1	9.0	0.1
LnGrp LOS	F	E	E	E	F	F	F	D	C	F	A	A
Approach Vol, veh/h	894				562				1940			
Approach Delay, s/veh	80.4				87.7				46.1			
Approach LOS	F				F				D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.1	110.6	13.7	53.6	29.0	103.6	24.0	43.4				
Change Period (Y+Rc), s	* 6.6	* 6.6	6.5	7.4	6.5	* 6.6	6.5	7.4				
Max Green Setting (Gmax), s	* 17	* 87	10.5	57.6	22.5	* 82	17.5	50.6				
Max Q Clear Time (g_c+I1), s	15.4	2.0	7.5	29.8	24.1	53.6	19.5	34.0				
Green Ext Time (p_c), s	0.0	24.1	0.0	3.9	0.0	14.6	0.0	1.9				

Intersection Summary

HCM 6th Ctrl Delay 47.4

HCM 6th LOS D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 2: Buford Dr NE & Mall of Georgia Blvd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	200	992	1071	1071	325	375	1360	450	311	499	994	1038
Average Queue (ft)	101	100	616	753	311	372	1266	139	176	233	355	1033
95th Queue (ft)	178	395	1282	1339	343	379	1505	464	268	418	734	1043
Link Distance (ft)	1056	1056	1056	1056			1308				974	974
Upstream Blk Time (%)			13	41			65				1	97
Queuing Penalty (veh)			0	0			0				6	1013
Storage Bay Dist (ft)					275	275		400	375	375		
Storage Blk Time (%)					63	85					7	
Queuing Penalty (veh)					129	176					28	

Intersection: 2: Buford Dr NE & Mall of Georgia Blvd

Movement	NB	NB	SB	SB	SB	SB	SB
Directions Served	TR	R	L	T	T	T	R
Maximum Queue (ft)	1034	200	400	3079	3092	3091	325
Average Queue (ft)	1009	164	133	2249	2259	2231	120
95th Queue (ft)	1030	290	415	4107	4101	4130	354
Link Distance (ft)	974			3055	3055	3055	
Upstream Blk Time (%)	100			23	25	24	
Queuing Penalty (veh)	1039			181	192	184	
Storage Bay Dist (ft)		175	300				300
Storage Blk Time (%)	21	0		80		38	0
Queuing Penalty (veh)	92	4		43		65	0

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	T	R	L	T	T	L	T
Maximum Queue (ft)	69	68	82	134	82	79	142	249	432	455	281	644
Average Queue (ft)	27	26	28	29	18	25	58	57	387	396	147	175
95th Queue (ft)	60	58	63	94	52	65	120	180	501	480	250	444
Link Distance (ft)	2600	2600	2600			2240			412	412		1185
Upstream Blk Time (%)									10	12		
Queuing Penalty (veh)									113	132		
Storage Bay Dist (ft)				150	200		200	175			225	
Storage Blk Time (%)				0				3	27	30	5	5
Queuing Penalty (veh)				0				34	18	17	53	11

Intersection: 7: Buford Dr NE & Rock Springs Rd

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	616	175
Average Queue (ft)	177	44
95th Queue (ft)	440	168
Link Distance (ft)	1185	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		75
Storage Blk Time (%)	17	
Queuing Penalty (veh)	47	

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	R	L	T	T	T	R
Maximum Queue (ft)	303	373	398	102	274	350	467	575	1280	1269	1256	450
Average Queue (ft)	186	196	189	36	72	233	174	465	1099	1080	1021	342
95th Queue (ft)	286	311	324	78	195	355	320	778	1483	1456	1461	650
Link Distance (ft)	2063	2063	2063			2732			1217	1217	1217	
Upstream Blk Time (%)									46	36	32	
Queuing Penalty (veh)									0	0	0	
Storage Bay Dist (ft)				300	225		400	375				375
Storage Blk Time (%)			2			20	1		82		89	
Queuing Penalty (veh)			2			60	3		94		97	

Intersection: 10: Buford Dr NE & Old Peachtree Rd NE

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	198	674	734	711	135
Average Queue (ft)	97	134	416	433	14
95th Queue (ft)	174	323	688	685	70
Link Distance (ft)			1552	1552	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	375	375			110
Storage Blk Time (%)			20	41	0
Queuing Penalty (veh)			69	33	0

Zone Summary

Zone wide Queuing Penalty: 3937

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 1		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	10.0	Free-Flow Speed (FFS), mi/h	47.5

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1559	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.96	Flow Rate (Vp), pc/h/ln	566
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1950
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1950
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.29

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	47.5
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	11.9
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	2.5		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	541	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.54
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 1		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	20.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1343	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.87	Flow Rate (Vp), pc/h/ln	538
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.28

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	12.0
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	5.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	515	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.51
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 1		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	10.0	Free-Flow Speed (FFS), mi/h	47.5

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1878	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	728
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1950
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1950
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.37

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	47.5
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	15.3
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	2.5		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	696	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.67
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 1		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	20.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2076	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.87	Flow Rate (Vp), pc/h/ln	832
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.44

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	18.5
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	5.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	795	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.73
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 2		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	48.8

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1858	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	689
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1976
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1976
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.35

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	48.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	14.1
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	1.3		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	659	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.64
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 2		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1893	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.85	Flow Rate (Vp), pc/h/ln	777
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.39

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	15.5
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	0.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	742	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.70
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Lowe Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 2		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	48.8

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2829	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1038
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1976
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1976
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.53

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	48.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	21.3
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	1.3		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	993	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.85
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 2		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2623	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	963
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.48

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	19.3
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	920	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.81
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 3		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2162	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	838
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.42

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	16.8
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	801	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.74
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Lowe Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 3		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1577	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.82	Flow Rate (Vp), pc/h/ln	671
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.34

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	13.4
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	0.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	641	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.63
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 3		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2603	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.97	Flow Rate (Vp), pc/h/ln	936
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.47

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	18.7
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	895	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.79
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 3		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2436	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	904
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.45

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	18.1
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	864	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.78
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Lowe Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 4		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2176	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	1304
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.69

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	29.0
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1209	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.98
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 4		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	43.8

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1560	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.84	Flow Rate (Vp), pc/h/ln	668
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.35

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	15.3
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	1.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	619	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.64
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 4		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2254	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.96	Flow Rate (Vp), pc/h/ln	1266
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.67

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	28.1
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1174	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.97
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 4		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	43.8

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2406	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.93	Flow Rate (Vp), pc/h/ln	930
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.49

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	21.2
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	1.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	862	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.81
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 5		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	4.0	Free-Flow Speed (FFS), mi/h	44.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2141	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	1283
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.68

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	44.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	29.2
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	1.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1189	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.97
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 5		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	4.0	Free-Flow Speed (FFS), mi/h	44.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1598	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	917
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.48

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	44.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	20.8
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	1.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	850	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.80
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 5		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	4.0	Free-Flow Speed (FFS), mi/h	44.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2201	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.96	Flow Rate (Vp), pc/h/ln	1236
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.65

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	44.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	28.1
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	1.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1146	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.96
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 5		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	4.0	Free-Flow Speed (FFS), mi/h	44.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2279	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1308
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.69

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	44.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	29.7
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	1.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1212	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.98
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 6		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1655	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	940
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.49

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	20.9
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	871	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.82
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Lowe Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 6		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	43.8

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1562	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.88	Flow Rate (Vp), pc/h/ln	958
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.50

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	21.9
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	1.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	888	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.83
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 6		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	43.8

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1944	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.89	Flow Rate (Vp), pc/h/ln	1178
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.62

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	26.9
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	1.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1092	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.93
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 6		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1832	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.91	Flow Rate (Vp), pc/h/ln	1086
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.57

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	24.1
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1007	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.89
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 7		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1570	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.97	Flow Rate (Vp), pc/h/ln	873
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.46

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	19.4
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	809	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.78
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 7		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	3.3	Free-Flow Speed (FFS), mi/h	44.2

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1461	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.86	Flow Rate (Vp), pc/h/ln	916
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.48

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	44.2
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	20.7
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.8		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	849	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.80
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 7		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1718	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.96	Flow Rate (Vp), pc/h/ln	966
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.51

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	21.5
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	895	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.83
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 7		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	3.3	Free-Flow Speed (FFS), mi/h	44.2

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1891	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.97	Flow Rate (Vp), pc/h/ln	1052
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.55

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	44.2
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	23.8
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.8		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	975	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.87
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Lowe Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 8		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1576	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.96	Flow Rate (Vp), pc/h/ln	886
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.47

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	19.7
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	821	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.79
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 8		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	13.3	Free-Flow Speed (FFS), mi/h	41.7

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1436	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	860
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.45

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	41.7
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	20.6
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	3.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	798	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.77
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 8		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1751	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.91	Flow Rate (Vp), pc/h/ln	1038
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.55

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	23.1
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	962	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.87
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2018
Jurisdiction	Gwinnett County	Time Period Analyzed	Existing PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 8		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	13.3	Free-Flow Speed (FFS), mi/h	41.7

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1767	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	1059
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.56

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	41.7
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	25.4
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	3.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	982	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.88
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 1		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	10.0	Free-Flow Speed (FFS), mi/h	47.5

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1654	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.96	Flow Rate (Vp), pc/h/ln	601
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1950
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1950
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.31

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	47.5
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	12.7
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	2.5		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	574	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.57
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 1		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	20.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1424	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.87	Flow Rate (Vp), pc/h/ln	571
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.30

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	12.7
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	5.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	546	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.54
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 1		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	10.0	Free-Flow Speed (FFS), mi/h	47.5

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1991	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	771
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1950
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1950
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.40

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	47.5
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	16.2
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	2.5		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	737	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.70
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Lowe Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 1		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	20.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2192	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.87	Flow Rate (Vp), pc/h/ln	879
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.46

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	19.5
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	5.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	840	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.76
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 2		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	48.8

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1965	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	729
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1976
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1976
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.37

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	48.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	14.9
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	1.3		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	697	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.67
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 2		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2009	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.85	Flow Rate (Vp), pc/h/ln	824
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.41

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	16.5
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	0.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	788	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.73
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 2		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	48.8

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2980	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1094
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1976
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1976
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.55

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	48.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	22.4
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	1.3		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1046	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.87
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 2		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2783	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1021
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.51

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	20.4
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	976	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.84
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 3		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2294	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	889
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.44

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	17.8
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	850	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.77
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 3		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1674	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.82	Flow Rate (Vp), pc/h/ln	712
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.36

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	14.2
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	0.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	680	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.66
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 3		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2762	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.97	Flow Rate (Vp), pc/h/ln	993
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.50

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	19.9
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	949	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.82
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 3		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2585	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	959
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.48

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	19.2
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	917	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.81
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 4		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2309	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	1384
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.73

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	30.8
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1283	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	5.01
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 4		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	43.8

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1650	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.84	Flow Rate (Vp), pc/h/ln	706
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.37

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	16.1
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	1.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	655	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.67
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 4		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2392	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.96	Flow Rate (Vp), pc/h/ln	1344
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.71

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	29.9
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1246	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	5.00
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 4		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	43.8

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2543	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.93	Flow Rate (Vp), pc/h/ln	983
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.52

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	22.4
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	1.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	911	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.84
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 5		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	4.0	Free-Flow Speed (FFS), mi/h	44.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2266	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	1358
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.71

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	44.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	30.9
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	1.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1259	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	5.00
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 5		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	4.0	Free-Flow Speed (FFS), mi/h	44.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1696	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	973
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.51

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	44.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	22.1
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	1.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	902	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.83
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 5		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	4.0	Free-Flow Speed (FFS), mi/h	44.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2329	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.96	Flow Rate (Vp), pc/h/ln	1308
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.69

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	44.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	29.7
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	1.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1213	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.98
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 5		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	4.0	Free-Flow Speed (FFS), mi/h	44.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2419	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1388
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.73

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	44.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	31.5
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	1.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1287	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	5.01
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 6		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1757	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	998
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.53

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	22.2
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	925	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.85
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 6		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	43.8

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1658	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.88	Flow Rate (Vp), pc/h/ln	1016
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.53

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	23.2
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	1.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	942	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.86
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 6		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1944	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.91	Flow Rate (Vp), pc/h/ln	1152
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.61

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	25.6
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1068	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.92
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 6		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	43.8

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2063	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.89	Flow Rate (Vp), pc/h/ln	1250
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.66

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	28.5
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	1.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1159	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.96
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Lowe Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 7		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1666	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.97	Flow Rate (Vp), pc/h/ln	926
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.49

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	20.6
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	859	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.81
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 7		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	3.3	Free-Flow Speed (FFS), mi/h	44.2

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1550	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.86	Flow Rate (Vp), pc/h/ln	972
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.51

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	44.2
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	22.0
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.8		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	901	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.83
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 7		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1823	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.96	Flow Rate (Vp), pc/h/ln	1024
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.54

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	22.8
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	949	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.86
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 7		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	3.3	Free-Flow Speed (FFS), mi/h	44.2

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2003	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.97	Flow Rate (Vp), pc/h/ln	1114
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.59

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	44.2
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	25.2
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.8		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1032	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.90
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 8		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1672	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.96	Flow Rate (Vp), pc/h/ln	940
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.49

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	20.9
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	871	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.82
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 8		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	13.3	Free-Flow Speed (FFS), mi/h	41.7

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1524	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	914
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.48

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	41.7
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	21.9
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	3.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	847	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.80
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 8		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1856	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.91	Flow Rate (Vp), pc/h/ln	1100
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.58

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	24.4
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1020	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.90
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Background PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 8		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	13.3	Free-Flow Speed (FFS), mi/h	41.7

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1875	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	1124
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.59

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	41.7
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	27.0
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	3.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1042	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.91
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 1		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	10.0	Free-Flow Speed (FFS), mi/h	47.5

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1748	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.96	Flow Rate (Vp), pc/h/ln	635
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1950
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1950
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.33

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	47.5
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	13.4
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	2.5		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	607	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.60
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 1		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	20.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1524	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.87	Flow Rate (Vp), pc/h/ln	611
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.32

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	13.6
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	5.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	584	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.58
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 1		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	10.0	Free-Flow Speed (FFS), mi/h	47.5

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2132	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	826
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1950
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1950
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.42

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	47.5
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	17.4
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	2.5		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	790	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.73
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 1		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	20.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2351	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.87	Flow Rate (Vp), pc/h/ln	942
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.50

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	20.9
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	5.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	901	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.80
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 2		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Left-Side Lateral Clearance (LCR), ft	-
Median Type	-	Total Lateral Clearance (TLC), ft	-
Access Point Density, pts/mi	-	Free-Flow Speed (FFS), mi/h	50.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2116	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	785
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.39

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	-	Density (D), pc/mi/ln	15.7
Median Type Adjustment (fM)	-	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	-		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	750	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.71
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 2		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2168	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.85	Flow Rate (Vp), pc/h/ln	889
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.44

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	17.8
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	0.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	850	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.77
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 2		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	48.8

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	3205	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1176
Total Trucks, %	4.64	Capacity (c), pc/h/ln	1976
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1976
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.60

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	48.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	24.1
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	1.3		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1125	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.91
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 2		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	3038	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1115
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.56

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	22.3
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1066	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.88
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 3		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2483	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	962
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.48

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	19.2
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	920	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.81
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 3		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1873	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.82	Flow Rate (Vp), pc/h/ln	796
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.40

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	15.9
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (fA)	0.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	761	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.71
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 3		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	3044	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.97	Flow Rate (Vp), pc/h/ln	1094
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.55

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	21.9
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1046	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.87
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 3		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	50.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	50.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2904	Heavy Vehicle Adjustment Factor (fHV)	0.956
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1077
Total Trucks, %	4.64	Capacity (c), pc/h/ln	2000
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2000
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.54

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	50.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	21.5
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1030	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	3.87
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	D

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 4		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	43.8

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2536	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	1520
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.80

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.7
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	34.8
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	1.3		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1409	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	5.06
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 4		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	43.8

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1889	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.84	Flow Rate (Vp), pc/h/ln	809
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.43

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	18.5
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	1.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	750	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.74
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 4		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	43.8

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2730	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.96	Flow Rate (Vp), pc/h/ln	1534
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.7
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	35.1
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	E
Access Point Density Adjustment (fA)	1.3		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1422	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	5.07
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 4		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	43.8

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2925	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.93	Flow Rate (Vp), pc/h/ln	1131
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.60

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	25.8
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	1.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1048	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.91
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 5		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	6.0	Free-Flow Speed (FFS), mi/h	43.5

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2441	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	1463
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.77

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.5
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	33.6
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	1.5		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1356	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	5.04
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Lowe Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 5		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	4.0	Free-Flow Speed (FFS), mi/h	44.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1846	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1059
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.56

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	44.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	24.1
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	1.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	982	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.88
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 5		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	6.0	Free-Flow Speed (FFS), mi/h	43.5

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2602	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.96	Flow Rate (Vp), pc/h/ln	1462
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.77

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.5
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	33.6
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	1.5		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1355	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	5.04
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 5		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	4.0	Free-Flow Speed (FFS), mi/h	44.0

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2645	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1518
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.80

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.9
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	34.6
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	1.0		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1407	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	5.06
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 6		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1888	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1072
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.56

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	23.8
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	994	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.88
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 6		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	43.8

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1783	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.88	Flow Rate (Vp), pc/h/ln	1093
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.58

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	25.0
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	1.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1013	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.89
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 6		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2154	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.91	Flow Rate (Vp), pc/h/ln	1276
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.67

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	28.4
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1184	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.97
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Lowe Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 6		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	5.0	Free-Flow Speed (FFS), mi/h	43.8

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2249	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.89	Flow Rate (Vp), pc/h/ln	1363
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.72

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.8
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	31.1
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	1.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1263	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	5.00
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 7		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1777	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.97	Flow Rate (Vp), pc/h/ln	988
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.52

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	22.0
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	916	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.84
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 7		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	3.3	Free-Flow Speed (FFS), mi/h	44.2

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1656	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.86	Flow Rate (Vp), pc/h/ln	1038
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.55

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	44.2
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	23.5
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.8		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	963	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.87
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 7		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2001	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.96	Flow Rate (Vp), pc/h/ln	1124
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.59

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	25.0
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1042	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.91
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 7		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	3.3	Free-Flow Speed (FFS), mi/h	44.2

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2161	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.97	Flow Rate (Vp), pc/h/ln	1202
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.63

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	44.2
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	27.2
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	0.8		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1114	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.94
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 8		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1783	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.96	Flow Rate (Vp), pc/h/ln	1002
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.53

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	22.3
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	929	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.85
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build AM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 8		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	13.3	Free-Flow Speed (FFS), mi/h	41.7

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1630	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	977
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.51

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	41.7
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	23.4
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	C
Access Point Density Adjustment (fA)	3.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	906	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.84
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Lowe Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 8		

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	45.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	2034	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.91	Flow Rate (Vp), pc/h/ln	1206
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.63

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	45.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	26.8
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	0.0		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1118	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.94
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

HCS7 Multilane Highway Report

Project Information

Analyst	Low Engineers	Date	9/14/2018
Agency		Analysis Year	2021
Jurisdiction	Gwinnett County	Time Period Analyzed	Build PM
Project Description	DRI 2834 - The Exchange at Gwinnett - Segment 8		

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	13.3	Free-Flow Speed (FFS), mi/h	41.7

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	2033	Heavy Vehicle Adjustment Factor (fHV)	0.927
Peak Hour Factor	0.90	Flow Rate (Vp), pc/h/ln	1218
Total Trucks, %	7.91	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.64

Direction 2 Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	41.7
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D), pc/mi/ln	29.2
Median Type Adjustment (fM)	0.0	Level of Service (LOS)	D
Access Point Density Adjustment (fA)	3.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	1129	Effective Speed Factor (St)	4.62
Effective Width of Volume (Wv), ft	18	Bicycle LOS Score (BLOS)	4.95
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	E

Appendix E: Trip Generation and Internal Capture

Project Trip Generation
The Exchange at Gwinnett DRI 2834 - Buford, GA



Calculations based upon methodology from ITE's Trip Generation Manual, 10th Edition (2017)

Land Use Information	Reduction	Project Trips			Equation Used ¹	In / Out Distribution	
	%	Total	Inbound	Outbound			
960- Super Convenience Market / Gas Station						20	Pumps
Daily		4,610	2,305	2,305	T = 230.52(X)	50% / 50%	
AM Peak Hour		562	281	281	T = 28.08(X)	50% / 50%	
PM Peak Hour		459	230	229	T = 22.96(X)	50% / 50%	
Reductions for Internal Capture							
Daily	13%	615	298	317			
AM Peak Hour	1%	3	2	1			
PM Peak Hour	10%	46	23	23			
Reductions for Modal Split							
Daily	2%	80	40	40			
AM Peak Hour	2%	11	6	5			
PM Peak Hour	2%	8	4	4			
Reductions for Pass-By Trips							
Daily	59%	2,310	1,161	1,149			
AM Peak Hour	62%	340	169	171			
PM Peak Hour	56%	227	114	113			
Net New External Vehicle Trips							
Daily		1,605	806	799			
AM Peak Hour		208	104	104			
PM Peak Hour		178	89	89			
937- Coffee/Doughnut Shop with Drive-Through Window						2,500	1000 S.F.
Daily		2,051	1,026	1,025	T = 820.38(X)	50% / 50%	
AM Peak Hour		222	113	109	T = 88.99(X)	51% / 49%	
PM Peak Hour		108	54	54	T = 43.38(X)	50% / 50%	
Reductions for Internal Capture							
Daily	13%	274	133	141			
AM Peak Hour	0%	1	1	0			
PM Peak Hour	9%	10	5	5			
Reductions for Modal Split							
Daily	2%	36	18	18			
AM Peak Hour	2%	4	2	2			
PM Peak Hour	2%	2	1	1			
Reductions for Pass-By Trips							
Daily	50%	871	438	433			
AM Peak Hour	49%	106	54	52			
PM Peak Hour	50%	48	24	24			
Net New External Vehicle Trips							
Daily		870	437	433			
AM Peak Hour		111	56	55			
PM Peak Hour		48	24	24			
492- Health / Fitness Club						34,000	1000 S.F.
Daily		1,120	560	560	T = 32.93(X) (9th Ed.)	50% / 50%	
AM Peak Hour		45	23	22	T = 1.31(X)	51% / 49%	
PM Peak Hour		122	70	52	Ln(T) = 0.67Ln(X) + 2.44	57% / 43%	
Reductions for Internal Capture							
Daily	13%	149	72	77			
AM Peak Hour	0%	0	0	0			
PM Peak Hour	10%	12	7	5			
Reductions for Modal Split							
Daily	2%	19	10	9			
AM Peak Hour	2%	1	0	1			
PM Peak Hour	2%	2	1	1			
Reductions for Pass-By Trips							
Daily	0%	0	0	0			
AM Peak Hour	0%	0	0	0			
PM Peak Hour	0%	0	0	0			
Net New External Vehicle Trips							
Daily		952	478	474			
AM Peak Hour		44	23	21			
PM Peak Hour		108	62	46			

Project Trip Generation
The Exchange at Gwinnett DRI 2834 - Buford, GA



Calculations based upon methodology from ITE's Trip Generation Manual, 10th Edition (2017)

Land Use Information	Reduction %	Project Trips			Equation Used ¹	In / Out Distribution
		Total	Inbound	Outbound		
820- Shopping Center					87,200	1000 S.F.
Daily		5,477	2,739	2,738	$\ln(T) = 0.68\ln(X)+5.57$	50% / 50%
AM Peak Hour		195	121	74	$T = 0.5(X) + 151.78$	62% / 38%
PM Peak Hour		491	236	255	$\ln(T) = 0.74\ln(X)+2.89$	48% / 52%
Reductions for Internal Capture						
Daily	13%	731	354	377		
AM Peak Hour	1%	1	1	0		
PM Peak Hour	10%	50	24	26		
Reductions for Modal Split						
Daily	2%	95	48	47		
AM Peak Hour	2%	4	2	2		
PM Peak Hour	2%	9	4	5		
Reductions for Pass-By Trips						
Daily	26%	1,209	608	601		
AM Peak Hour	17%	32	20	12		
PM Peak Hour	34%	147	71	76		
Net New External Vehicle Trips						
Daily		3,442	1,729	1,713		
AM Peak Hour		158	98	60		
PM Peak Hour		285	137	148		
890- Furniture Store					56,000	1000 S.F.
Daily		336	168	168	$T = 5.17(X) + 46.56$	50% / 50%
AM Peak Hour		14	10	4	$T = 0.24(X) + 0.94$	71% / 29%
PM Peak Hour		26	12	14	$\ln(T) = 0.85 \ln(X) - 0.18$	47% / 53%
Reductions for Internal Capture						
Daily	13%	45	22	23		
AM Peak Hour	0%	0	0	0		
PM Peak Hour	8%	2	1	1		
Reductions for Modal Split						
Daily	2%	6	3	3		
AM Peak Hour	2%	0	0	0		
PM Peak Hour	2%	0	0	0		
Reductions for Pass-By Trips						
Daily	27%	77	39	38		
AM Peak Hour	0%	0	0	0		
PM Peak Hour	53%	13	6	7		
Net New External Vehicle Trips						
Daily		208	104	104		
AM Peak Hour		14	10	4		
PM Peak Hour		11	5	6		
310- Hotel					123	Rooms
Daily		962	481	481	$T = 11.29(X) - 426.97$	50% / 50%
AM Peak Hour		56	33	23	$T = 0.50(X) - 5.34$	59% / 41%
PM Peak Hour		66	34	32	$T = 0.75(X) - 26.02$	51% / 49%
Reductions for Internal Capture						
Daily	21%	202	125	77		
AM Peak Hour	5%	3	0	3		
PM Peak Hour	24%	16	8	8		
Reductions for Modal Split						
Daily	2%	15	7	8		
AM Peak Hour	2%	1	1	0		
PM Peak Hour	2%	1	1	0		
Reductions for Pass-By Trips						
Daily	0%	0	0	0		
AM Peak Hour	0%	0	0	0		
PM Peak Hour	0%	0	0	0		
Net New External Vehicle Trips						
Daily		745	349	396		
AM Peak Hour		52	32	20		
PM Peak Hour		49	25	24		

Project Trip Generation
The Exchange at Gwinnett DRI 2834 - Buford, GA



Calculations based upon methodology from ITE's Trip Generation Manual, 10th Edition (2017)

Land Use Information	Reduction %	Project Trips			Equation Used ¹	In / Out Distribution
		Total	Inbound	Outbound		
435- Multipurpose Recreational Facility					90,000	1000 S.F.
Daily		1,073	537	536	*T = PM / 30%	50% / 50%
AM Peak Hour		11	9	2	*T = Daily * 1%	80% / 20%
PM Peak Hour		322	177	145	T = 3.58(X)	55% / 45%
Reductions for Internal Capture						
Daily	17%	181	82	99		
AM Peak Hour	0%	0	0	0		
PM Peak Hour	10%	31	16	15		
Reductions for Modal Split						
Daily	2%	18	9	9		
AM Peak Hour	2%	0	0	0		
PM Peak Hour	2%	6	3	3		
Reductions for Pass-By Trips						
Daily	0%	0	0	0		
AM Peak Hour	0%	0	0	0		
PM Peak Hour	0%	0	0	0		
Net New External Vehicle Trips						
Daily		874	446	428		
AM Peak Hour		11	9	2		
PM Peak Hour		285	158	127		
N/A- Golf Driving Range (Non ITE Trip Generation)					1	Unit
Daily		2,495	1,248	1,247		50% / 50%
AM Peak Hour		32	28	4	Data sourced from other sites	88% / 22%
PM Peak Hour		183	91	92	See DRI report for data points	50% / 50%
Reductions for Internal Capture						
Daily	17%	419	190	229		
AM Peak Hour	0%	0	0	0		
PM Peak Hour	9%	17	8	9		
Reductions for Modal Split						
Daily	2%	42	21	21		
AM Peak Hour	2%	1	1	0		
PM Peak Hour	2%	3	2	1		
Reductions for Pass-By Trips						
Daily	0%	0	0	0		
AM Peak Hour	0%	0	0	0		
PM Peak Hour	0%	0	0	0		
Net New External Vehicle Trips						
Daily		2,034	1,037	997		
AM Peak Hour		31	27	4		
PM Peak Hour		163	81	82		
252- Senior Adult Housing - Attached					120	Dwelling Units
Daily		457	229	228	T = 4.02(X) - 25.37	50% / 50%
AM Peak Hour		24	8	16	T = 0.2(X) - 0.18	35% / 65%
PM Peak Hour		31	17	14	T = 0.24(X) + 2.26	55% / 45%
Reductions for Internal Capture						
Daily	48%	218	115	103		
AM Peak Hour	0%	0	0	0		
PM Peak Hour	65%	20	9	11		
Reductions for Modal Split						
Daily	2%	5	2	3		
AM Peak Hour	2%	0	0	0		
PM Peak Hour	2%	0	0	0		
Reductions for Pass-By Trips						
Daily	0%	0	0	0		
AM Peak Hour	0%	0	0	0		
PM Peak Hour	0%	0	0	0		
Net New External Vehicle Trips						
Daily		234	112	122		
AM Peak Hour		24	8	16		
PM Peak Hour		11	8	3		

Project Trip Generation
The Exchange at Gwinnett DRI 2834 - Buford, GA



Calculations based upon methodology from ITE's Trip Generation Manual, 10th Edition (2017)

Land Use Information	Reduction %	Project Trips			Equation Used ¹	In / Out Distribution
		Total	Inbound	Outbound		
221- Multifamily Housing (Mid-Rise)					380	Dwelling Units
Daily		2,069	1,035	1,034	$T = 5.45(X) - 1.75$	50% / 50%
AM Peak Hour		127	33	94	$\ln(T) = 0.98\ln(X) - 0.98$	26% / 74%
PM Peak Hour		160	98	62	$\ln(T) = 0.96\ln(X) - 0.63$	61% / 39%
Reductions for Internal Capture						
Daily	48%	983	518	465		
AM Peak Hour	2%	2	1	1		
PM Peak Hour	60%	96	49	47		
Reductions for Modal Split						
Daily	2%	22	10	12		
AM Peak Hour	2%	3	1	2		
PM Peak Hour	2%	1	1	0		
Reductions for Pass-By Trips						
Daily	0%	0	0	0		
AM Peak Hour	0%	0	0	0		
PM Peak Hour	0%	0	0	0		
Net New External Vehicle Trips						
Daily		1,064	507	557		
AM Peak Hour		122	31	91		
PM Peak Hour		63	48	15		

Total Trip Generation						
Daily		20,650	10,328	10,322	960-Super Convenience Market / Gas Station 937-Coffee/Doughnut Shop with Drive-Through Window 492-Health / Fitness Club 820-Shopping Center 890-Furniture Store 310-Hotel 435-Multipurpose Recreational Facility N/A-Golf Driving Range (Non ITE Trip Generation) 252-Senior Adult Housing - Attached 221-Multifamily Housing (Mid-Rise)	
AM Peak Hour		1,288	659	629		
PM Peak Hour		1,968	1,019	949		
Reductions for Internal Capture						
Daily	18%	3,817	1,909	1,908		
AM Peak Hour	1%	10	5	5		
PM Peak Hour	15%	300	150	150		
Reductions for Modal Split						
Daily	2%	338	168	170		
AM Peak Hour	2%	25	13	12		
PM Peak Hour	2%	32	17	15		
Reductions for Pass-By Trips						
Daily	22%	4,467	2,246	2,221		
AM Peak Hour	37%	478	243	235		
PM Peak Hour	22%	435	215	220		
Net New External Vehicle Trips						
Daily		12,028	6,005	6,023		
AM Peak Hour		775	398	377		
PM Peak Hour		1,201	637	564		

Note: ¹ Where: T = Trips; X = Density by Variable

* ITE only provide trip generation rates for PM peak periods, in order to estimate a daily trip rate for the presumptive impact table a daily rate was estimated, additional data is required to determine actual daily rate of traffic

TABLE 7 – [REDACTED] TRIP GENERATION

Weekday						Saturday						Sunday					
AM Peak Hour			PM Peak Hour			Before Service			After Service			Before Service			After Service		
7:30 AM to 8:30 AM			4:30 PM to 5:30 PM			5:15 PM to 6:15 PM			7:00 PM to 8:00 PM			10:15 AM to 11:15 AM			12:00 PM to 1:00 PM		
In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
28	4	32	91	92	183	153	109	262	161	151	312	65	33	98	107	77	184

Note: Trip generation reflects the Scottsdale [REDACTED] 15-minute counts for the specified analysis periods.

PARKING UTILIZATION

The [REDACTED] facility on Parcel 49 is planned to have 439 parking spaces. Parking supply for [REDACTED] is expected to be adequate under near-term conditions when [REDACTED] is the only facility on Parcel 49; however, the City requested we estimate [REDACTED] parking utilization for Saturday evening and Sunday morning church services. Therefore, we obtained parking utilization data from the [REDACTED] facility on Saturday evening at 7 PM and on Sunday morning at noon. The results showed that 397 parking spaces were occupied at 7 PM on Saturday evening and 234 parking spaces were occupied at noon on Sunday morning.

TRIP DISTRIBUTION

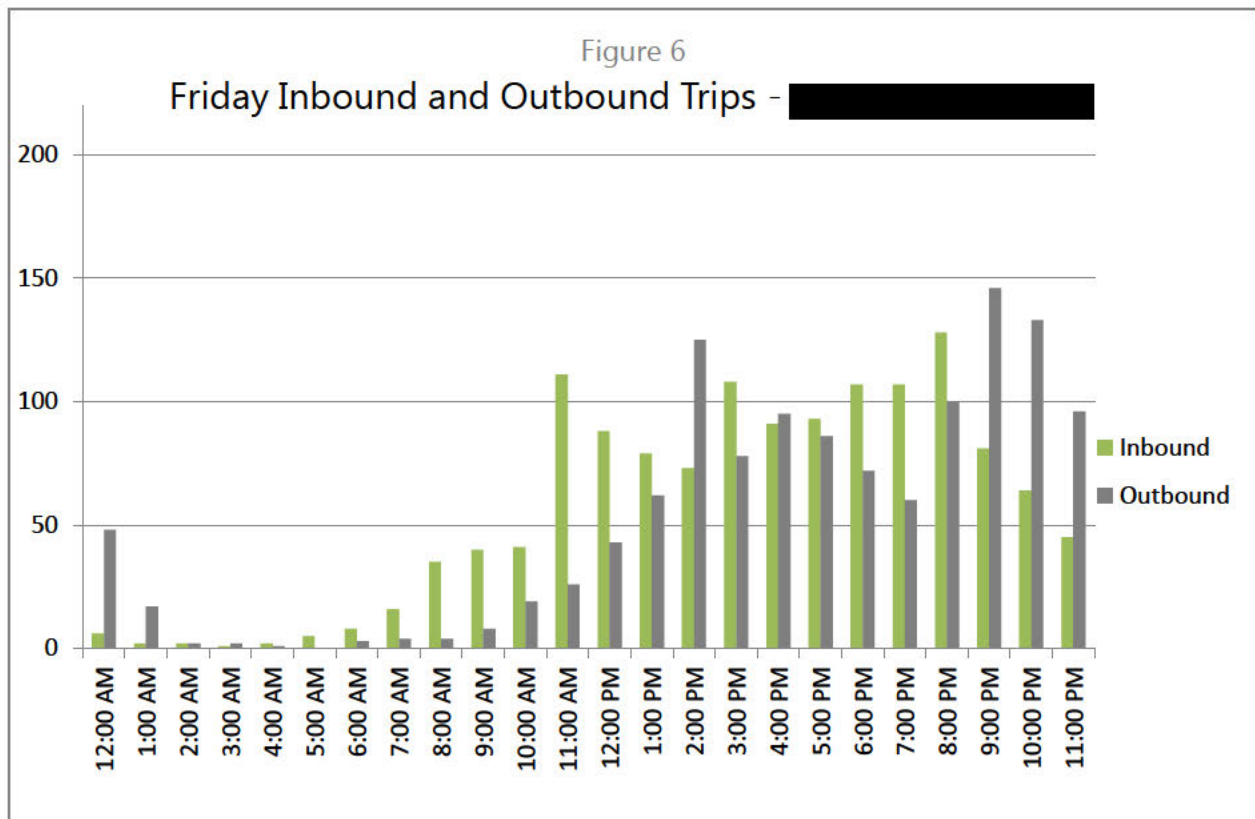
The expected distribution of project trips onto the adjacent roadway network was determined based on existing traffic volumes and travel patterns, the location of complementary uses, and output from the City of Roseville CIP traffic model. Figure 10 shows that 65 percent of project traffic is expected to travel to/from the north [REDACTED] with 35 percent travelling to/from the south.

TRAFFIC ASSIGNMENT

The trips expected to be generated by the [REDACTED] facility were assigned to the study intersections. Figure 11 shows the resulting weekday AM and PM peak hour traffic volumes under Baseline Plus Phase 1 [REDACTED] conditions.



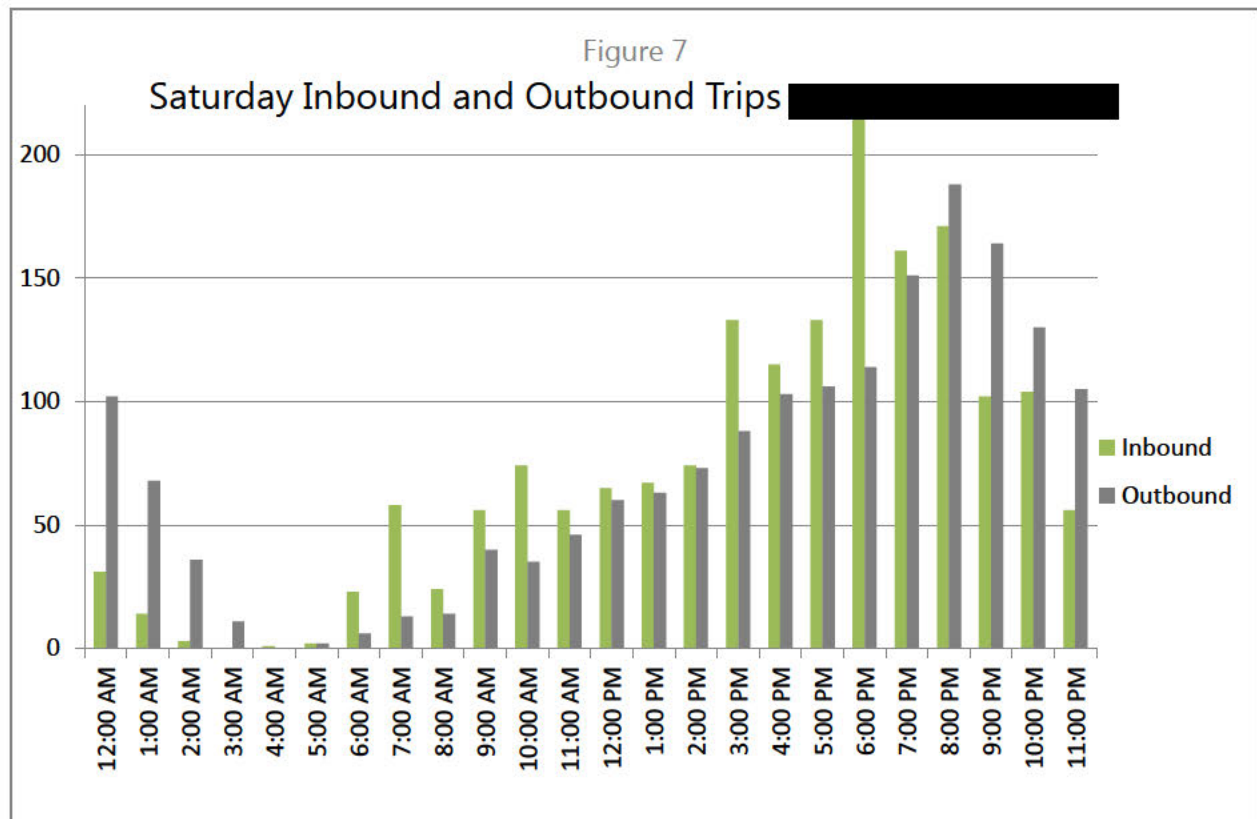
Figure 6 Friday Inbound and Outbound Trips – [REDACTED]



Note: Count data was collected by 15-minute increments. For illustrative purposes, the counts were aggregated into 1-hour periods



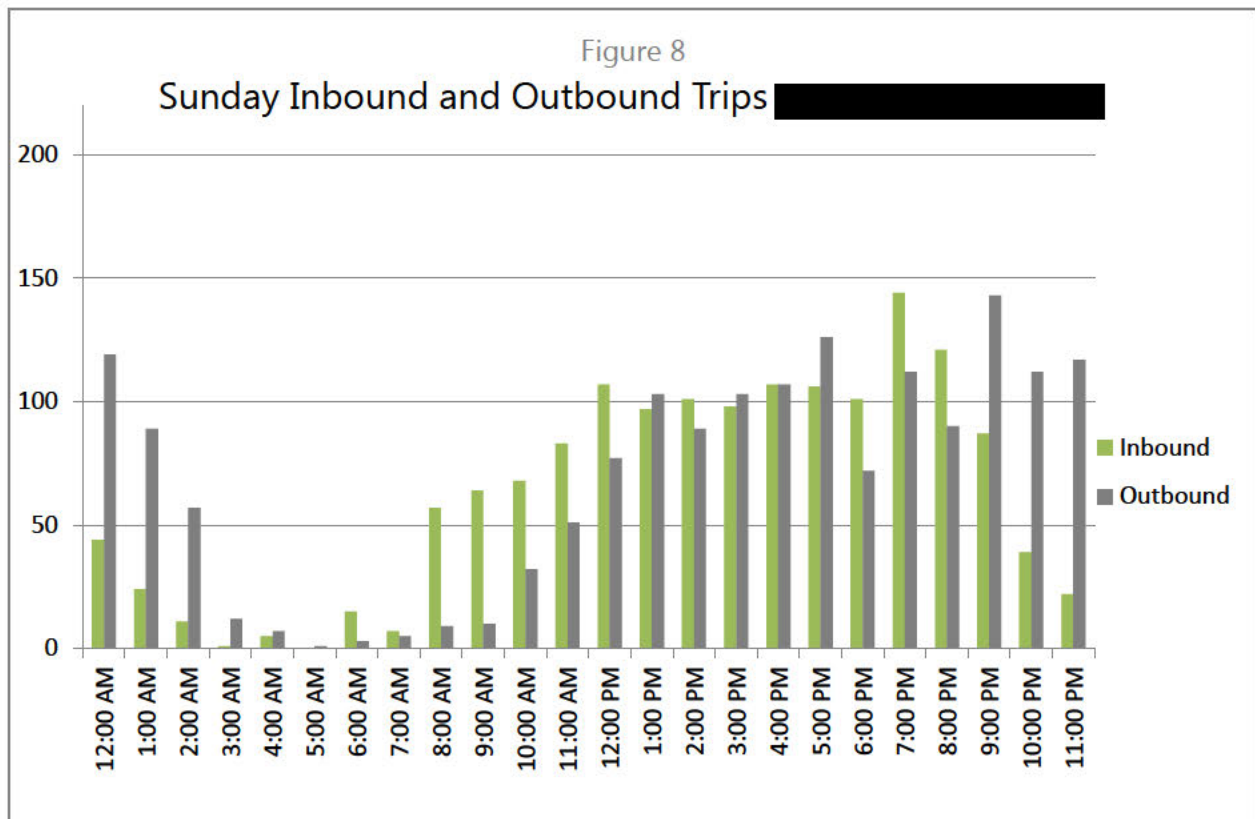
Figure 7 Saturday Inbound and Outbound Trips



Note: Count data was collected by 15-minute increments. For illustrative purposes, the counts were aggregated into 1-hour periods. Analysis period for Saturday before service is from 5:15 PM to 6:15 PM based on Church peak period, which differs from [REDACTED] peak period.



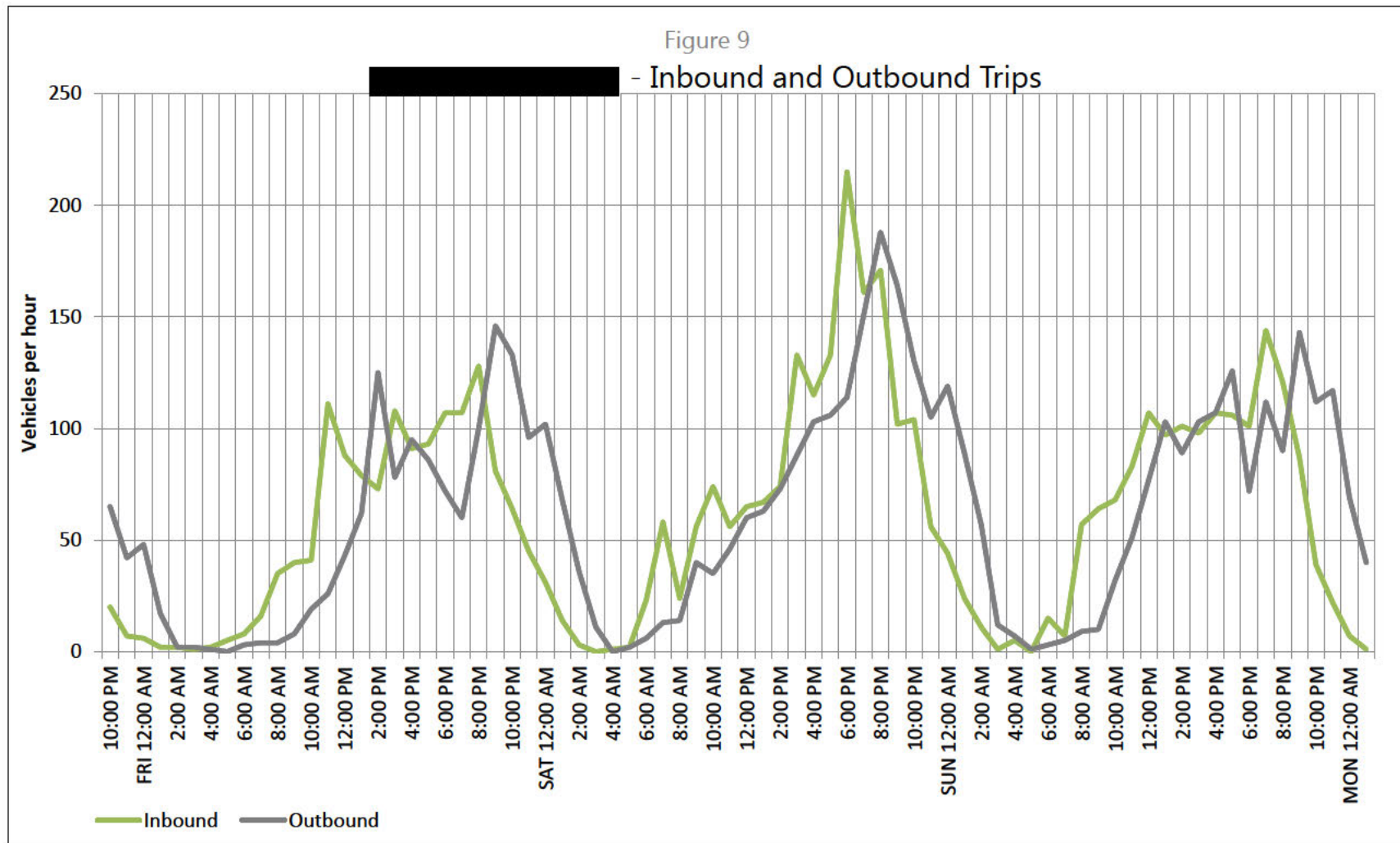
Figure 8 Sunday Inbound and Outbound Trips



Note: Count data was collected by 15-minute increments. For illustrative purposes, the counts were aggregated into 1-hour periods



Figure 9 Weekend Inbound and Outbound Trips



Note: Count data was collected by 15-minute increments. For illustrative purposes, the counts were aggregated into 1-hour periods

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	The Exchange at Gwinnett DRI 2834	Organization:	Foresite Group
Project Location:	Buford, GA		
Scenario Description:	Full Build		
Analysis Year:	2021		
Analysis Period:	Daily Peak Hour		

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	DeveloDailiyent Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office	0	-	See Trip Gen	0	0	0
Retail	0	179,720	See Trip Gen	13,594	6,798	6,796
Restaurant	0	-	See Trip Gen	0	0	0
Cinema/Entertainment	0	90,001	See Trip Gen	3,568	1,785	1,783
Residential	0	500	See Trip Gen	2,526	1,264	1,262
Hotel	0	123	See Trip Gen	962	481	481
All Other Land Uses ²	0	-	See Trip Gen	0	0	0
Total				20,650	10,328	10,322

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses ²						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	272	581	82
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	272	0		51	5
Residential	0	530	0	0		38
Hotel	0	77	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	20,650	10,328	10,322
Internal Capture Percentage	18%	18%	18%
External Vehicle-Trips ³	16,834	8,420	8,414
External Transit-Trips ⁴	0	0	0
External Non-Motorized Trips ⁴	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	13%	14%
Restaurant	N/A	N/A
Cinema/Entertainment	15%	18%
Residential	50%	45%
Hotel	26%	16%

¹Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use develoDailiyent site-not subject to internal trip capture computations in this estimator

³Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

⁴Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	The Exchange at Gwinnett DRI 2834
Analysis Period:	Daily Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	6,798	6798	1.00	6,796	6796
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	1,785	1785	1.00	1,783	1783
Residential	1.00	1,264	1264	1.00	1,262	1262
Hotel	1.00	481	481	1.00	481	481

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	136		1971	272	1767	340
Restaurant	0	0		0	0	0
Cinema/Entertainment	36	374	553		143	36
Residential	50	530	265	0		38
Hotel	0	77	327	0	10	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		544	0	18	51	0
Retail	0		0	464	581	82
Restaurant	0	3399		571	202	342
Cinema/Entertainment	0	272	0		51	5
Residential	0	680	0	0		58
Hotel	0	136	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	879	5919	6798	5919	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	272	1513	1785	1513	0	0
Residential	632	632	1264	632	0	0
Hotel	125	356	481	356	0	0
All Other Land Uses ³	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	935	5861	6796	5861	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	328	1455	1783	1455	0	0
Residential	568	694	1262	694	0	0
Hotel	77	404	481	404	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

²Person-Trips

³Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	The Exchange at Gwinnett DRI 2834	Organization:	Foresite Group
Project Location:	Buford, GA		
Scenario Description:	Full Build		
Analysis Year:	2021		
Analysis Period:	AM Peak Hour		

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office	0	-	See Trip Gen	0	0	0
Retail	0	179,720	See Trip Gen	1,038	548	490
Restaurant	0	-	See Trip Gen	0	0	0
Cinema/Entertainment	0	90,001	See Trip Gen	43	37	6
Residential	0	500	See Trip Gen	151	41	110
Hotel	0	123	See Trip Gen	56	33	23
All Other Land Uses ²	0	-	See Trip Gen	0	0	0
Total				1,288	659	629

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.00			1.00		
Retail	1.00			1.00		
Restaurant	1.00			1.00		
Cinema/Entertainment	1.00			1.00		
Residential	1.00			1.00		
Hotel	1.00			1.00		
All Other Land Uses ²	1.00			1.00		

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	3	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	1,288	659	629
Internal Capture Percentage	1%	1%	1%
External Vehicle-Trips ³	1,278	654	624
External Transit-Trips ⁴	0	0	0
External Non-Motorized Trips ⁴	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	1%	0%
Restaurant	N/A	N/A
Cinema/Entertainment	0%	0%
Residential	2%	1%
Hotel	0%	13%

¹Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

³Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

⁴Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	The Exchange at Gwinnett DRI 2834
Analysis Period:	AM Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	548	548	1.00	490	490
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	37	37	1.00	6	6
Residential	1.00	41	41	1.00	110	110
Hotel	1.00	33	33	1.00	23	23

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	142		64	0	69	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	1	22	0		0
Hotel	17	3	2	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		175	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	44		0	2	1
Cinema/Entertainment	0	0	0		0	0
Residential	0	93	0	0		0
Hotel	0	22	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	4	544	548	544	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	37	37	37	0	0
Residential	1	40	41	40	0	0
Hotel	0	33	33	33	0	0
All Other Land Uses ³	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	1	489	490	489	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	6	6	6	0	0
Residential	1	109	110	109	0	0
Hotel	3	20	23	20	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

²Person-Trips

³Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	The Exchange at Gwinnett DRI 2834	Organization:	Foresite Group
Project Location:	Buford, GA		
Scenario Description:	Full Build		
Analysis Year:	2021		
Analysis Period:	PM Peak Hour		

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office	0	-	See Trip Gen	0	0	0
Retail	0	179,720	See Trip Gen	1,206	602	604
Restaurant	0	-	See Trip Gen	0	0	0
Cinema/Entertainment	0	90,001	See Trip Gen	505	268	237
Residential	0	500	See Trip Gen	191	115	76
Hotel	0	123	See Trip Gen	66	34	32
All Other Land Uses ²	0	-	See Trip Gen	0	0	0
Total				1,968	1,019	949

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses ²						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	24	53	6
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	24	0		5	0
Residential	0	32	0	0		2
Hotel	0	5	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	1,968	1,019	949
Internal Capture Percentage	15%	15%	16%
External Vehicle-Trips ³	1,666	868	798
External Transit-Trips ⁴	0	0	0
External Non-Motorized Trips ⁴	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	10%	14%
Restaurant	N/A	N/A
Cinema/Entertainment	9%	12%
Residential	50%	45%
Hotel	24%	16%

¹Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

³Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

⁴Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	The Exchange at Gwinnett DRI 2834
Analysis Period:	PM Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	602	602	1.00	604	604
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	268	268	1.00	237	237
Residential	1.00	115	115	1.00	76	76
Hotel	1.00	34	34	1.00	32	32

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	12		175	24	157	30
Restaurant	0	0		0	0	0
Cinema/Entertainment	5	50	73		19	5
Residential	3	32	16	0		2
Hotel	0	5	22	0	1	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		48	0	3	5	0
Retail	0		0	70	53	6
Restaurant	0	301		86	18	24
Cinema/Entertainment	0	24	0		5	0
Residential	0	60	0	0		4
Hotel	0	12	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	61	541	602	541	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	24	244	268	244	0	0
Residential	58	57	115	57	0	0
Hotel	8	26	34	26	0	0
All Other Land Uses ³	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	83	521	604	521	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	29	208	237	208	0	0
Residential	34	42	76	42	0	0
Hotel	5	27	32	27	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

²Person-Trips

³Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Appendix F: NCHRP Turn Lane Warrants

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

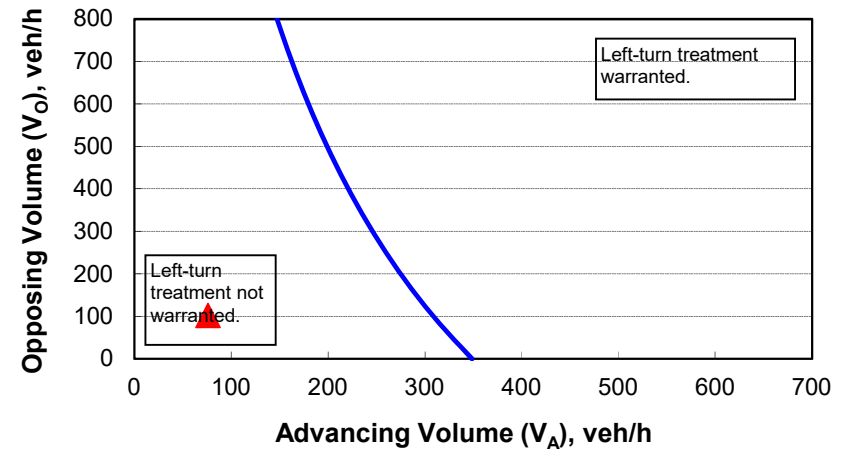
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	40
Percent of left-turns in advancing volume (V_A), %:	53%
Advancing volume (V_A), veh/h:	76
Opposing volume (V_O), veh/h:	102

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	308
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

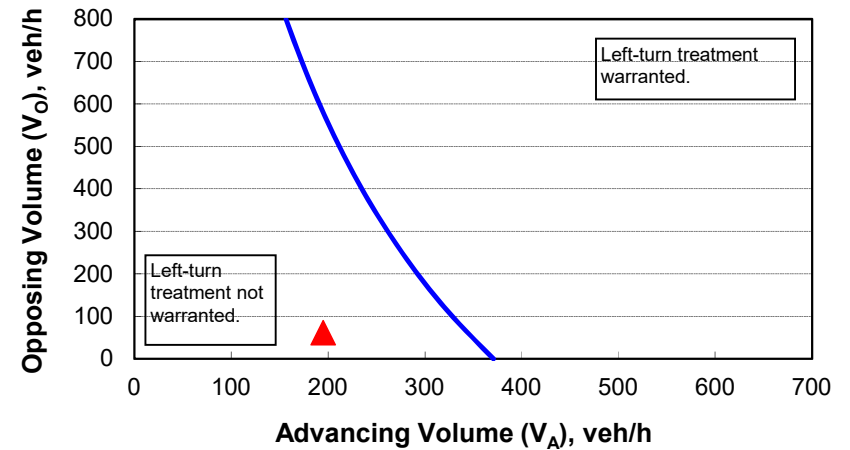
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	40
Percent of left-turns in advancing volume (V_A), %:	33%
Advancing volume (V_A), veh/h:	195
Opposing volume (V_O), veh/h:	61

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	344
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Appendix G: Signal Warrant Analysis

Warrant 1 - Eight-Hour Vehicular Volume

Based on Section 4C.02 of the Manual on Uniform Traffic Control Devices, 2009 Edition (rev. 2)



Name	Major Road	Minor Road
Number of Lanes by Approach	SR 20 2	Laurel Crossing Pkwy NE 2

% of Volume	100%	Data Year	2018
Right Turn Reduction?	Yes	Future Year	2021
15 Min Interval Start	0	Growth Rate	2.00%
Mainline Left as Minor?	No		

Time Of Day		SR 20 Laurel Crossing Pkwy NE		Warrant 1, Condition A		Warrant 1, Condition B		Warrant 1, Combination A&B			
		Major Road	Minor Road	Major Road	Minor Road	Major Road	Minor Road	Condition A		Condition B	
		Volume (vph)	Volume (vph)	Condition Met?	Condition Met?	Condition Met?	Condition Met?	Major Road	Minor Road	Major Road	Minor Road
		Both Approaches	Highest Approach	> 600 vph	> 200 vph	> 900 vph	> 100 vph	> 480 vph	> 160 vph	> 720 vph	> 80 vph
12:00 AM	to 1:00 AM	4	0	No	No	No	No	No	No	No	No
1:00 AM	to 2:00 AM	8	0	No	No	No	No	No	No	No	No
2:00 AM	to 3:00 AM	4	0	No	No	No	No	No	No	No	No
3:00 AM	to 4:00 AM	104	12	No	No	No	No	No	No	No	No
4:00 AM	to 5:00 AM	20	4	No	No	No	No	No	No	No	No
5:00 AM	to 6:00 AM	60	8	No	No	No	No	No	No	No	No
6:00 AM	to 7:00 AM	2952	46	Yes	No	Yes	No	Yes	No	Yes	No
7:00 AM	to 8:00 AM	4049	65	Yes	No	Yes	No	Yes	No	Yes	No
8:00 AM	to 9:00 AM	3701	52	Yes	No	Yes	No	Yes	No	Yes	No
9:00 AM	to 10:00 AM	3138	34	Yes	No	Yes	No	Yes	No	Yes	No
10:00 AM	to 11:00 AM	3019	31	Yes	No	Yes	No	Yes	No	Yes	No
11:00 AM	to 12:00 PM	3283	32	Yes	No	Yes	No	Yes	No	Yes	No
12:00 PM	to 1:00 PM	3440	32	Yes	No	Yes	No	Yes	No	Yes	No
1:00 PM	to 2:00 PM	3576	26	Yes	No	Yes	No	Yes	No	Yes	No
2:00 PM	to 3:00 PM	3883	45	Yes	No	Yes	No	Yes	No	Yes	No
3:00 PM	to 4:00 PM	4132	40	Yes	No	Yes	No	Yes	No	Yes	No
4:00 PM	to 5:00 PM	4656	43	Yes	No	Yes	No	Yes	No	Yes	No
5:00 PM	to 6:00 PM	5106	50	Yes	No	Yes	No	Yes	No	Yes	No
6:00 PM	to 7:00 PM	276	28	No	No	No	No	No	No	No	No
7:00 PM	to 8:00 PM	216	24	No	No	No	No	No	No	No	No
8:00 PM	to 9:00 PM	172	20	No	No	No	No	No	No	No	No
9:00 PM	to 10:00 PM	104	12	No	No	No	No	No	No	No	No
10:00 PM	to 11:00 PM	68	8	No	No	No	No	No	No	No	No
11:00 PM	to 12:00 AM	36	4	No	No	No	No	No	No	No	No
Total Hours Condition is Met		0		0		0		0			
Meets Warrant?		No - Warrant is Not Met		No - Warrant is Not Met		No - Warrant is Not Met		No - Warrant is Not Met			

Warrant 2 - Four-Hour Vehicular Volume

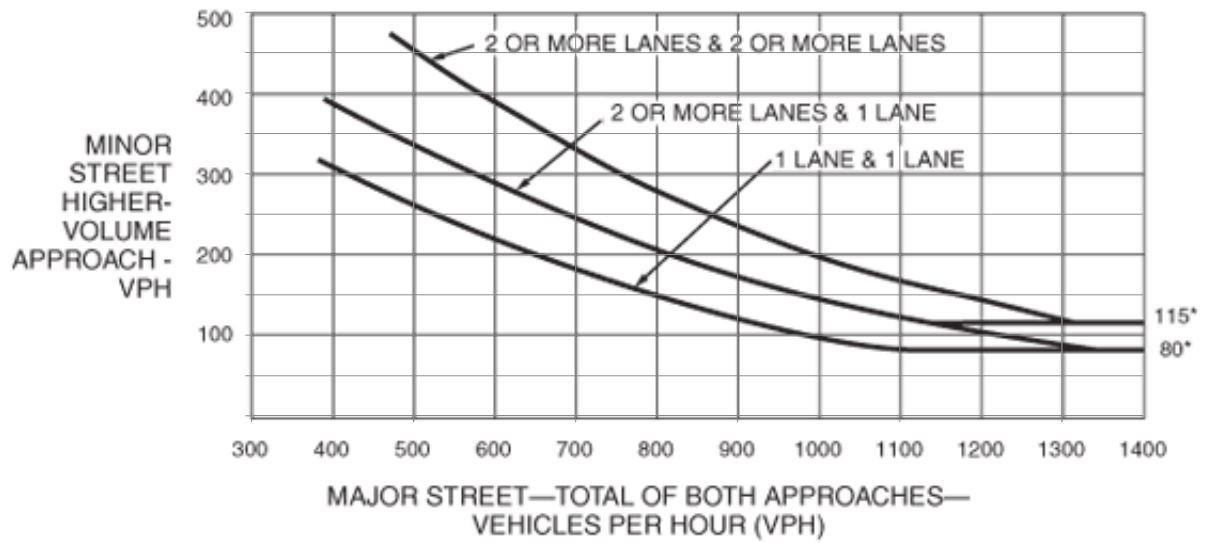
Based on Section 4C.02 of the Manual on Uniform Traffic Control Devices, 2009 Edition (rev. 2)

	Major Road	Minor Road
Name	SR 20	Laurel Crossing Pkwy NE
Number of Lanes by Approach	2	2

% of Volume	100%	Data Year	2018
Right Turn Reduction?	Yes	Future Year	2021
15 Min Interval Start	0	Growth Rate	2.00%
Mainline Left as Minor?	No		

			SR 20	Laurel Crossing Pkwy NE	Warrant 2
			Major Road Volume (vph)	Minor Road Volume (vph)	Four-Hour Vehicular Volume
			Both Approaches	Highest Approach	Condition Met?
Time Of Day					
12:00 AM	to	1:00 AM	4	0	No
1:00 AM	to	2:00 AM	8	0	No
2:00 AM	to	3:00 AM	4	0	No
3:00 AM	to	4:00 AM	104	12	No
4:00 AM	to	5:00 AM	20	4	No
5:00 AM	to	6:00 AM	60	8	No
6:00 AM	to	7:00 AM	2952	46	No
7:00 AM	to	8:00 AM	4049	65	No
8:00 AM	to	9:00 AM	3701	52	No
9:00 AM	to	10:00 AM	3138	34	No
10:00 AM	to	11:00 AM	3019	31	No
11:00 AM	to	12:00 PM	3283	32	No
12:00 PM	to	1:00 PM	3440	32	No
1:00 PM	to	2:00 PM	3576	26	No
2:00 PM	to	3:00 PM	3883	45	No
3:00 PM	to	4:00 PM	4132	40	No
4:00 PM	to	5:00 PM	4656	43	No
5:00 PM	to	6:00 PM	5106	50	No
6:00 PM	to	7:00 PM	276	28	No
7:00 PM	to	8:00 PM	216	24	No
8:00 PM	to	9:00 PM	172	20	No
9:00 PM	to	10:00 PM	104	12	No
10:00 PM	to	11:00 PM	68	8	No
11:00 PM	to	12:00 AM	36	4	No
Total Hours Condition is Met					0
Meets Warrant?					No - Warrant is Not Met

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 1 - Peak-Hour Vehicular Volume

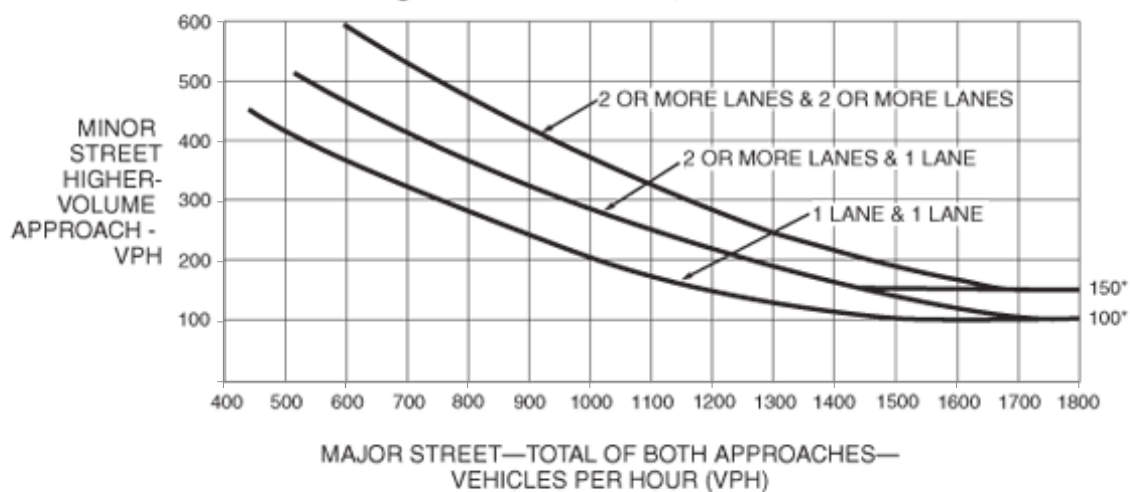
Based on Section 4C.02 of the Manual on Uniform Traffic Control Devices, 2009 Edition (rev. 2)

	Major Road	Minor Road
Name	SR 20	Laurel Crossing Pkwy NE
Number of Lanes by Approach	2	2

% of Volume	100%	Data Year	2018
Right Turn Reduction?	Yes	Future Year	2021
15 Min Interval Start	0	Growth Rate	2.00%
Mainline Left as Minor?	No		

			SR 20	Laurel Crossing Pkwy NE	Warrant 3
			Major Road Volume (vph)	Minor Road Volume (vph)	Peak-Hour Vehicular Volume
			Both Approaches	Highest Approach	Condition Met?
Time Of Day					
12:00 AM	to	1:00 AM	4	0	No
1:00 AM	to	2:00 AM	8	0	No
2:00 AM	to	3:00 AM	4	0	No
3:00 AM	to	4:00 AM	104	12	No
4:00 AM	to	5:00 AM	20	4	No
5:00 AM	to	6:00 AM	60	8	No
6:00 AM	to	7:00 AM	2952	46	No
7:00 AM	to	8:00 AM	4049	65	No
8:00 AM	to	9:00 AM	3701	52	No
9:00 AM	to	10:00 AM	3138	34	No
10:00 AM	to	11:00 AM	3019	31	No
11:00 AM	to	12:00 PM	3283	32	No
12:00 PM	to	1:00 PM	3440	32	No
1:00 PM	to	2:00 PM	3576	26	No
2:00 PM	to	3:00 PM	3883	45	No
3:00 PM	to	4:00 PM	4132	40	No
4:00 PM	to	5:00 PM	4656	43	No
5:00 PM	to	6:00 PM	5106	50	No
6:00 PM	to	7:00 PM	276	28	No
7:00 PM	to	8:00 PM	216	24	No
8:00 PM	to	9:00 PM	172	20	No
9:00 PM	to	10:00 PM	104	12	No
10:00 PM	to	11:00 PM	68	8	No
11:00 PM	to	12:00 AM	36	4	No
Total Hours Condition is Met					0
Meets Warrant?					No - Warrant is Not Met

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

	Group 1			Group 2			Group 3			Group 4			Group 5			Group 6		
Time	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Daily	7,471	7,444	14,915			0			0			0			0			0
AM	398	377	775			0			0			0			0			0
PM	637	564	1,201			0			0			0			0			0
ITE Codes	All- 221 (Distribution)																	

	Hourly Distribution						Project Volume						
	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Total
12:00 AM	0.20%						30	0	0	0	0	0	30
1:00 AM	0.30%						45	0	0	0	0	0	45
2:00 AM	0.20%						30	0	0	0	0	0	30
3:00 AM	3.00%						447	0	0	0	0	0	447
4:00 AM	0.50%						75	0	0	0	0	0	75
5:00 AM	1.70%						254	0	0	0	0	0	254
6:00 AM	4.00%						597	0	0	0	0	0	597
7:00 AM	7.50%						1119	0	0	0	0	0	1,119
8:00 AM	6.20%						925	0	0	0	0	0	925
9:00 AM	4.30%						641	0	0	0	0	0	641
10:00 AM	3.70%						552	0	0	0	0	0	552
11:00 AM	4.50%						671	0	0	0	0	0	671
12:00 PM	4.70%						701	0	0	0	0	0	701
1:00 PM	4.40%						656	0	0	0	0	0	656
2:00 PM	5.40%						805	0	0	0	0	0	805
3:00 PM	5.80%						865	0	0	0	0	0	865
4:00 PM	8.30%						1238	0	0	0	0	0	1,238
5:00 PM	10.10%						1506	0	0	0	0	0	1,506
6:00 PM	7.90%						1178	0	0	0	0	0	1,178
7:00 PM	6.30%						940	0	0	0	0	0	940
8:00 PM	5.00%						746	0	0	0	0	0	746
9:00 PM	3.00%						447	0	0	0	0	0	447
10:00 PM	2.00%						298	0	0	0	0	0	298
11:00 PM	1.00%						149	0	0	0	0	0	149
Total	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14,915	0	0	0	0	0	14,915

Hourly distribution percentages are from ITE Trip Generation Manual 10th Edition, 2017 unless otherwise noted

Due to rounding percentages may not exactly equal 100%, and volumes may not add up exactly to the total daily volume

Group Distribution	
Group 1	100%
Group 2	0%
Group 3	0%
Group 4	0%
Group 5	0%
Group 6	0%

% of total Daily Volume

			Weighted Distribution											
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
New Trips	In	AM	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
		MID	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
		PM	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
	Out	AM	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%
		MID	0%	0%	0%	0%	35%	0%	0%	0%	0%	5%	0%	5%
		PM	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%
Pass-By	In	AM	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		MID	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		PM	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Out	AM	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		MID	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		PM	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Total Volume		
In	Out	Total
7,471	7,444	14,915
398	377	775
637	564	1,201

In / Out Distribution		
	In	Out
AM	51%	49%
PM	53%	47%



		New Trips In												New Trips Out												
	In	Out	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
12:00 AM	50%	50%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%
1:00 AM	50%	50%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	
2:00 AM	50%	50%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	
3:00 AM	50%	50%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	
4:00 AM	50%	50%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	
5:00 AM	50%	50%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	
6:00 AM	51%	49%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	
7:00 AM	51%	49%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	
8:00 AM	51%	49%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	
9:00 AM	52%	48%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	0%	0%	0%	5%	0%	5%	
10:00 AM	52%	48%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	18%	0%	0%	0%	0%	5%	0%	5%	
11:00 AM	52%	48%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	26%	0%	0%	0%	0%	5%	0%	5%	
12:00 PM	52%	48%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	0%	0%	0%	0%	5%	0%	5%	
1:00 PM	52%	48%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	26%	0%	0%	0%	0%	5%	0%	5%	
2:00 PM	53%	47%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	18%	0%	0%	0%	0%	5%	0%	5%	
3:00 PM	53%	47%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	0%	0%	0%	0%	5%	0%	5%	
4:00 PM	53%	47%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	
5:00 PM	52%	48%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	
6:00 PM	52%	48%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	
7:00 PM	51%	49%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	
8:00 PM	50%	50%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	
9:00 PM	50%	50%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	
10:00 PM	50%	50%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	
11:00 PM	50%	50%	0%	35%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	

		Pass-By Trips In												Pass-By Trips Out												
	In	Out	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
12:00 AM	50%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1:00 AM	50%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2:00 AM	50%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3:00 AM	50%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4:00 AM	50%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
5:00 AM	50%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
6:00 AM	51%	49%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
7:00 AM	51%	49%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
8:00 AM	51%	49%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
9:00 AM	52%	48%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
10:00 AM	52%	48%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
11:00 AM	52%	48%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
12:00 PM	52%	48%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1:00 PM	52%	48%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2:00 PM	53%	47%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3:00 PM	53%	47%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4:00 PM	53%	47%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
5:00 PM	52%	48%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
6:00 PM	52%	48%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
7:00 PM	51%	49%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
8:00 PM	50%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
9:00 PM	50%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
10:00 PM	50%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
11:00 PM	50%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Inbound and outbound % are based around AM and PM percentages averaging to a 50-50 split overnight, due to rounding and averaging, the daily volume may not be a true 50-50 split
AM turning movement % is used 12:00AM-8:00AM, PM 4PM-11:00PM, MID 12:00PM, 9AM-3PM, is averaged around Mid day peak % and AM/PM peak hours.

	Hourly Project Trip Distribution											
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
12:00 AM	0	5	1	1	0	0	0	0	0	1	0	1
1:00 AM	0	8	1	1	0	0	0	0	0	1	1	1
2:00 AM	0	5	1	1	0	0	0	0	0	1	0	1
3:00 AM	0	78	11	11	0	0	0	0	0	11	0	11
4:00 AM	0	13	2	2	0	0	0	0	0	2	0	2
5:00 AM	0	45	6	6	0	0	0	0	0	6	0	6
6:00 AM	0	106	15	15	0	0	0	0	0	15	0	15
7:00 AM	0	200	29	29	0	0	0	0	0	27	0	27
8:00 AM	0	166	24	24	0	0	0	0	0	22	0	22
9:00 AM	0	116	17	17	27	0	0	0	0	16	0	16
10:00 AM	0	100	14	14	47	0	0	0	0	13	0	13
11:00 AM	0	122	17	17	85	0	0	0	0	16	0	16
12:00 PM	0	128	18	18	117	0	0	0	0	17	0	17
1:00 PM	0	120	17	17	82	0	0	0	0	16	0	16
2:00 PM	0	148	21	21	67	0	0	0	0	19	0	19
3:00 PM	0	160	23	23	36	0	0	0	0	20	0	20
4:00 PM	0	230	33	33	0	0	0	0	0	29	0	29
5:00 PM	0	276	39	39	0	0	0	0	0	36	0	36
6:00 PM	0	212	30	30	0	0	0	0	0	29	0	29
7:00 PM	0	167	24	24	0	0	0	0	0	23	0	23
8:00 PM	0	131	19	19	0	0	0	0	0	19	0	19
9:00 PM	0	78	11	11	0	0	0	0	0	11	0	11
10:00 PM	0	52	7	7	0	0	0	0	0	7	0	7
11:00 PM	0	26	4	4	0	0	0	0	0	4	0	4

	15 Min Project Trip Distribution											
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
12:00 AM	0	1	0	0	0	0	0	0	0	0	0	0
12:15 AM	0	1	0	0	0	0	0	0	0	0	0	0
12:30 AM	0	1	0	0	0	0	0	0	0	0	0	0
12:45 AM	0	1	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	2	0	0	0	0	0	0	0	0	0	0
1:15 AM	0	2	0	0	0	0	0	0	0	0	0	0
1:30 AM	0	2	0	0	0	0	0	0	0	0	0	0
1:45 AM	0	2	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	1	0	0	0	0	0	0	0	0	0	0
2:15 AM	0	1	0	0	0	0	0	0	0	0	0	0
2:30 AM	0	1	0	0	0	0	0	0	0	0	0	0
2:45 AM	0	1	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	20	3	3	0	0	0	0	0	3	0	3
3:15 AM	0	20	3	3	0	0	0	0	0	3	0	3
3:30 AM	0	20	3	3	0	0	0	0	0	3	0	3
3:45 AM	0	20	3	3	0	0	0	0	0	3	0	3
4:00 AM	0	3	1	1	0	0	0	0	0	1	0	1
4:15 AM	0	3	1	1	0	0	0	0	0	1	0	1
4:30 AM	0	3	1	1	0	0	0	0	0	1	0	1
4:45 AM	0	3	1	1	0	0	0	0	0	1	0	1
5:00 AM	0	11	2	2	0	0	0	0	0	2	0	2
5:15 AM	0	11	2	2	0	0	0	0	0	2	0	2
5:30 AM	0	11	2	2	0	0	0	0	0	2	0	2
5:45 AM	0	11	2	2	0	0	0	0	0	2	0	2
6:00 AM	0	27	4	4	0	0	0	0	0	4	0	4
6:15 AM	0	27	4	4	0	0	0	0	0	4	0	4
6:30 AM	0	27	4	4	0	0	0	0	0	4	0	4
6:45 AM	0	27	4	4	0	0	0	0	0	4	0	4
7:00 AM	0	50	7	7	0	0	0	0	0	7	0	7
7:15 AM	0	50	7	7	0	0	0	0	0	7	0	7
7:30 AM	0	50	7	7	0	0	0	0	0	7	0	7
7:45 AM	0	50	7	7	0	0	0	0	0	7	0	7
8:00 AM	0	42	6	6	0	0	0	0	0	6	0	6
8:15 AM	0	42	6	6	0	0	0	0	0	6	0	6
8:30 AM	0	42	6	6	0	0	0	0	0	6	0	6
8:45 AM	0	42	6	6	0	0	0	0	0	6	0	6
9:00 AM	0	29	4	4	7	0	0	0	0	4	0	4
9:15 AM	0	29	4	4	7	0	0	0	0	4	0	4
9:30 AM	0	29	4	4	7	0	0	0	0	4	0	4
9:45 AM	0	29	4	4	7	0	0	0	0	4	0	4
10:00 AM	0	25	4	4	12	0	0	0	0	3	0	3
10:15 AM	0	25	4	4	12	0	0	0	0	3	0	3
10:30 AM	0	25	4	4	12	0	0	0	0	3	0	3
10:45 AM	0	25	4	4	12	0	0	0	0	3	0	3
11:00 AM	0	31	4	4	21	0	0	0	0	4	0	4
11:15 AM	0	31	4	4	21	0	0	0	0	4	0	4
11:30 AM	0	31	4	4	21	0	0	0	0	4	0	4
11:45 AM	0	31	4	4	21	0	0	0	0	4	0	4
12:00 PM	0	32	5	5	29	0	0	0	0	4	0	4
12:15 PM	0	32	5	5	29	0	0	0	0	4	0	4
12:30 PM	0	32	5	5	29	0	0	0	0	4	0	4
12:45 PM	0	32	5	5	29	0	0	0	0	4	0	4
1:00 PM	0	30	4	4	21	0	0	0	0	4	0	4
1:15 PM	0	30	4	4	21	0	0	0	0	4	0	4
1:30 PM	0	30	4	4	21	0	0	0	0	4	0	4
1:45 PM	0	30	4	4	21	0	0	0	0	4	0	4
2:00 PM	0	37	5	5	17	0	0	0	0	5	0	5
2:15 PM	0	37	5	5	17	0	0	0	0	5	0	5
2:30 PM	0	37	5	5	17	0	0	0	0	5	0	5
2:45 PM	0	37	5	5	17	0	0	0	0	5	0	5
3:00 PM	0	40	6	6	9	0	0	0	0	5	0	5
3:15 PM	0	40	6	6	9	0	0	0	0	5	0	5
3:30 PM	0	40	6	6	9	0	0	0	0	5	0	5
3:45 PM	0	40	6	6	9	0	0	0	0	5	0	5
4:00 PM	0	58	8	8	0	0	0	0	0	7	0	7
4:15 PM	0	58	8	8	0	0	0	0	0	7	0	7
4:30 PM	0	58	8	8	0	0	0	0	0	7	0	7
4:45 PM	0	58	8	8	0	0	0	0	0	7	0	7
5:00 PM	0	69	10	10	0	0	0	0	0	9	0	9
5:15 PM	0	69	10	10	0	0	0	0	0	9	0	9
5:30 PM	0	69	10	10	0	0	0	0	0	9	0	9
5:45 PM	0	69	10	10	0	0	0	0	0	9	0	9
6:00 PM	0	53	8	8	0	0	0	0	0	7	0	7
6:15 PM	0	53	8	8	0	0	0	0	0	7	0	7
6:30 PM	0	53	8	8	0	0	0	0	0	7	0	7
6:45 PM	0	53	8	8	0	0	0	0	0	7	0	7
7:00 PM	0	42	6	6	0	0	0	0	0	6	0	6
7:15 PM	0	42	6	6	0	0	0	0	0	6	0	6
7:30 PM	0	42	6	6	0	0	0	0	0	6	0	6
7:45 PM	0	42	6	6	0	0	0	0	0	6	0	6
8:00 PM	0	33	5	5	0	0	0	0	0	5	0	5
8:15 PM	0	33	5	5	0	0	0	0	0	5	0	5
8:30 PM	0	33	5	5	0	0	0	0	0	5	0	5
8:45 PM	0	33	5	5	0	0	0	0	0	5	0	5
9:00 PM	0	20	3	3	0	0	0	0	0	3	0	3
9:15 PM	0	20	3	3	0	0	0	0	0	3	0	3
9:30 PM	0	20	3	3	0	0	0	0	0	3	0	3
9:45 PM	0	20	3	3	0	0	0	0	0	3	0	3
10:00 PM	0	13	2	2	0	0	0	0	0	2	0	2
10:15 PM	0	13	2	2	0	0	0	0	0	2	0	2
10:30 PM	0	13	2	2	0	0	0	0	0	2	0	2
10:45 PM	0	13	2	2	0	0	0	0	0	2	0	2
11:00 PM	0	7	1	1	0	0	0	0	0	1	0	1
11:15 PM	0	7	1	1	0	0	0	0	0	1	0	1
11:30 PM	0	7	1	1	0	0	0	0	0	1	0	1
11:45 PM	0	7	1	1	0	0	0	0	0	1	0	1