

**LEFT – IN ONLY MEDIAN BREAK
JUSTIFICATION STUDY
FOR
SR 92 AT KROGER DRIVEWAY (W)
ACWORTH, GEORGIA**



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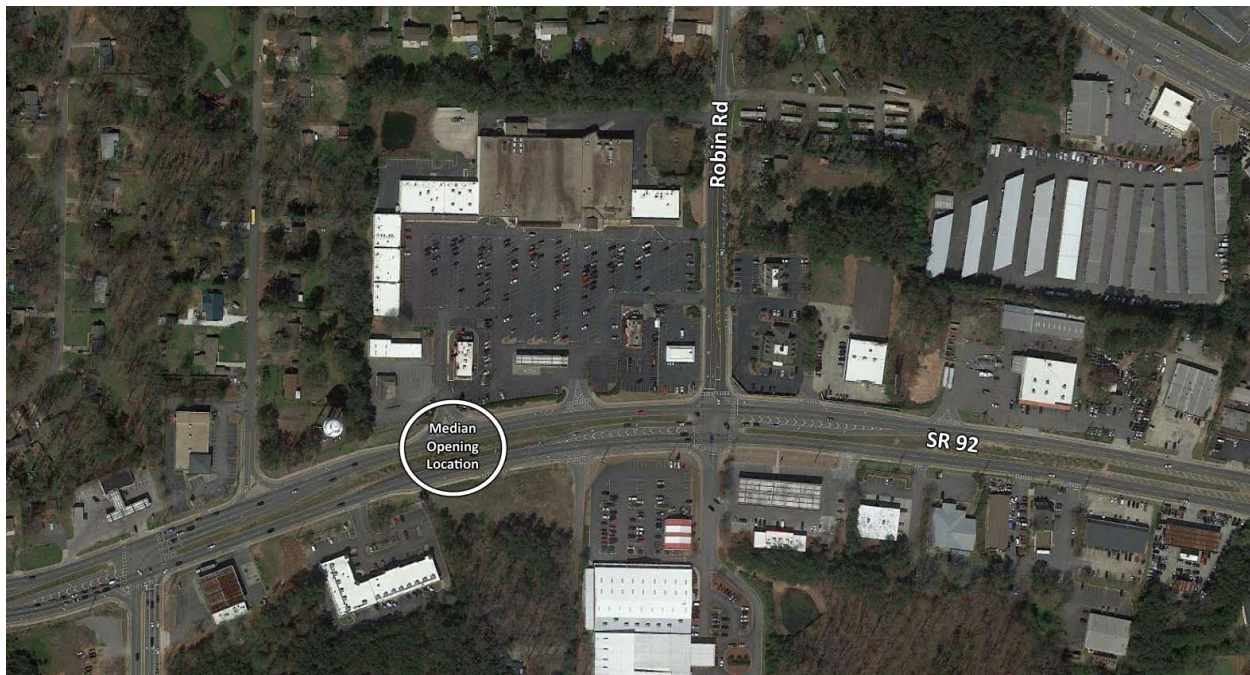
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1.0 INTRODUCTION

The purpose of this study is to evaluate the traffic impacts that will result from a proposed left-in only median break on SR 92 to serve the Cherokee Commons Shopping Center in Acworth, Georgia. The proposed median-break will be located approximately 615 feet west of the existing signalized intersection of SR 92 at Robin Road. The traffic analysis evaluates the existing and future operations with the traffic generated by 70 percent of the vacant retail space for the following two scenarios:

- Scenario 1: Evaluate anticipated operations with no median opening
- Scenario 2: Evaluate anticipated operations with left-in only median opening



The Cherokee Commons Shopping Center currently has four driveways: two full-access driveways on Robin Road and two right-in/right-out driveways on SR 92. The AM, Midday, and PM peak hours have been analyzed in this study. In addition to the site access points, this study includes the evaluation of traffic operations at the intersection of SR 92 at Robin Road.

Recommendations to improve traffic operations have been identified as appropriate and are discussed in detail in the following sections of the report. The location of the shopping center and the surrounding roadway network is shown in Figure 1.

FIGURE 1

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2.0 EXISTING FACILITIES / CONDITIONS

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

2.1 SR 92

SR 92 is an east-west, four-lane, median-divided roadway with a posted speed limit of 45 mph in the vicinity of the site. GDOT traffic counts (Station ID 0570076) indicate that the daily traffic volume on SR 92 in 2016 was 41,400 vehicles per day east of Wade Green Road. GDOT classifies SR 92 as a Principal Arterial roadway.

2.2 Robin Road

Robin Road is a north-south, two-lane, undivided roadway with a posted speed limit of 30 mph.

3.0 STUDY METHODOLOGY

In this study, the methodology used for evaluating traffic operations at each of the unsignalized intersections is based on the criteria set forth in the Transportation Research Board's Highway Capacity Manual, 2010 edition (HCM 2010). Due to the presence of U-Turns at the signalized intersection, HCM 2000 was used instead. Synchro software, which utilizes the HCM methodology, was used for the analysis. The following is a description of the methodology employed for the analysis of un-signalized and signalized intersections.

3.1 Unsignalized Intersections

For unsignalized intersections at which the side street or minor street is controlled by a stop sign, the criteria for evaluating traffic operations are the level-of-service (LOS) for the turning movements at the intersection and the level-of-service for the overall intersection. Level-of-service is based on the average controlled delay incurred at the intersection. Controlled delay for un-signalized intersections includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Several factors affect the controlled delay for un-signalized intersections, such as the availability and distribution of gaps in the conflicting traffic stream, critical gaps, and follow-up time for a vehicle in the queue.

Level-of-service is assigned a letter designation from "A" through "F". Level-of-service "A" indicates excellent operations with little delay to motorists, while level-of-service "F" exists when there are insufficient gaps of acceptable size to allow vehicles on the side street to cross safely, resulting in extremely long total delays and long queues. The level-of-service criteria for two-way stop-controlled and all-way stop-controlled (unsignalized) intersections are given in Table 1.

TABLE 1 — LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS	
Level-of-service	Average Delay (sec)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Source: Highway Capacity Manual

3.2 Signalized Intersections

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

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

TABLE 2 — LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS	
Level-of-service	Average Control Delay (sec)
A	≤ 10
B	$> 10 \text{ and } \leq 20$
C	$> 20 \text{ and } \leq 35$
D	$> 35 \text{ and } \leq 55$
E	$> 55 \text{ and } \leq 80$
F	> 80

Source: Highway Capacity Manual

4.0 EXISTING TRAFFIC ANALYSIS

Existing traffic counts were obtained at the following study intersections:

1. Robin Road at Kroger Driveway (N)
2. Robin Road at Kroger Driveway (S)
3. SR 92 at Robin Road
4. SR 92 at Kroger Driveway (E)
5. SR 92 at Kroger Driveway (W)

Turning movement counts were collected on Tuesday, July 10, 2018. All turning movement counts were recorded during the AM, Midday, and PM peak hours between 7:00 a.m. to 9:00 a.m., 12:00 p.m. to 2:00 p.m. and 4:00 p.m. to 6:00 p.m., respectively. The four consecutive 15-minute interval volumes that summed to produce the highest volume at the intersections were then determined. These volumes make up the peak hour traffic volumes for the intersections counted and are shown in Figure 2. Existing traffic operations were analyzed at the study intersections using existing signal timing and in accordance with the HCM methodology. The results of the analysis are shown in Table 3 and Table 4.

TABLE 3 — EXISTING INTERSECTION OPERATIONS					
Intersection		Traffic Control	LOS (Delay)		
			AM PEAK	MID PEAK	PM PEAK
1	<u>Robin Rd @ Kroger Drwy (N)</u> -Eastbound Approach -Northbound Left	Stop Controlled on EB Approach	C (15.7) A (8.8)	B (14.3) A (8.2)	C (16.2) A (8.5)
2	<u>Robin Rd @ Kroger Drwy (S)</u> -Eastbound Approach -Westbound Approach -Northbound Left -Southbound Left	Stop Controlled on EB and WB Approaches	B (12.2) A (0.0) A (8.9) A (0.0)	B (12.4) C (16.9) A (8.2) A (8.0)	B (14.8) B (13.8) A (8.7) A (0.0)
3	<u>SR 92 @ Robin Rd*</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	Signalized	<u>C (32.0)</u> C (20.5) C (32.3) E (63.6) E (70.7)	<u>E (58.7)</u> F (82.3) C (34.5) D (51.3) E (67.9)	<u>E (78.3)</u> E (63.7) F (91.0) E (57.2) F (94.5)
4	<u>SR 92 @ Kroger Drwy (E)</u> -Southbound Approach	Stop Controlled on SB Approach	C (15.6)	D (26.8)	F (77.7)
5	<u>SR 92 @ Kroger Drwy (W)</u> -Southbound Approach	Stop Controlled on SB Approach	C (16.7)	D (25.6)	E (43.6)
6	<u>SR 92 @ Bells Ferry Road*</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	Signalized	<u>E (64.0)</u> D (51.7) E (55.7) E (78.1) F (82.7)	-	<u>E (74.1)</u> E (59.4) F (89.9) E (74.5) E (70.0)

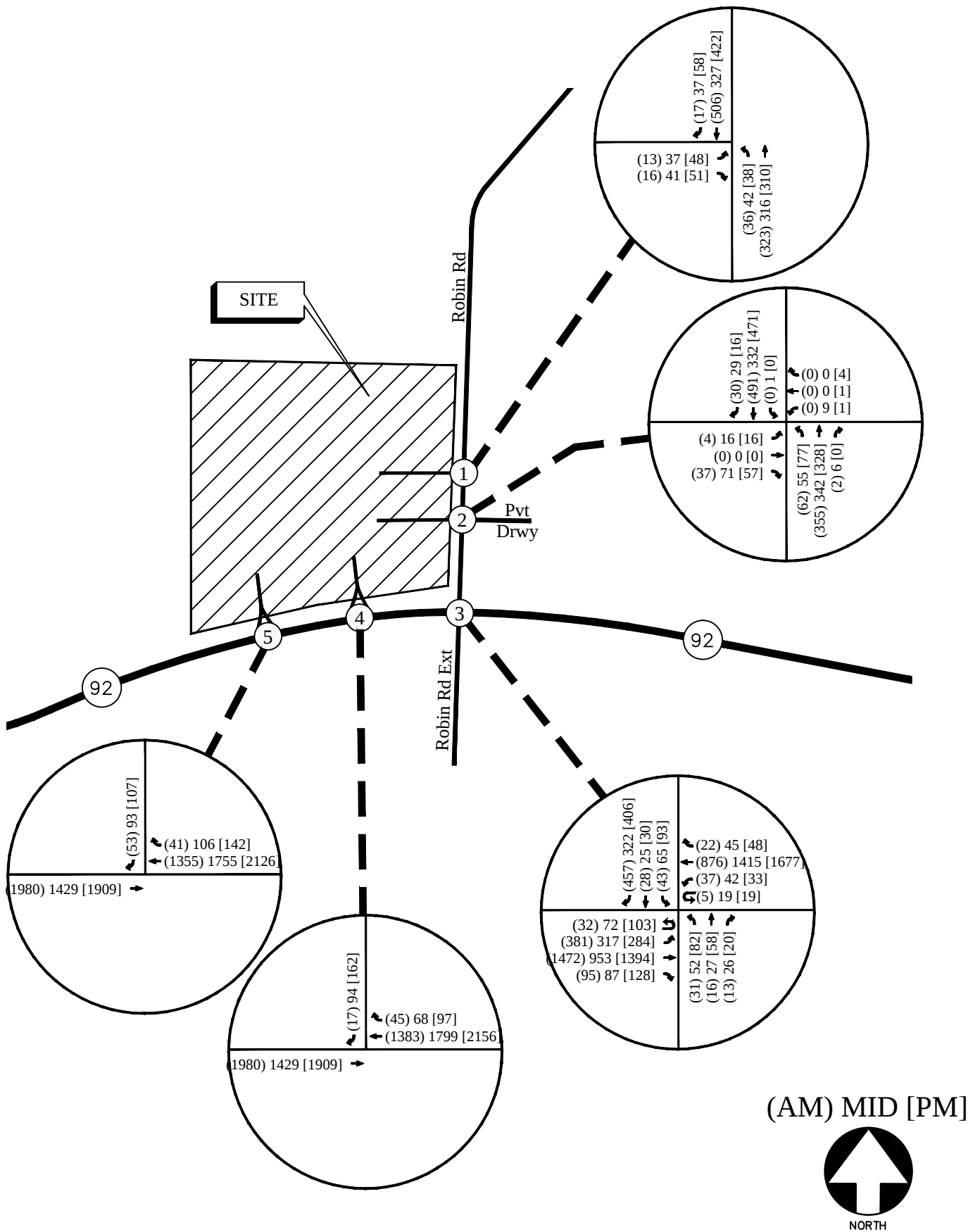
*Delay reported via HCM 2000

TABLE 4 — EXISTING INTERSECTION 95TH PERCENTILE QUEUES

Intersection		Available Storage	Queue: feet		
			AM PEAK	MID PEAK	PM PEAK
1	<u>Robin Rd @ Kroger Drwy (N)</u>				
	-Eastbound Approach	-	8	15	23
	-Northbound Approach	-	3	3	3
2	<u>Robin Rd @ Kroger Drwy (S)</u>				
	-Eastbound Approach	-	8	15	15
	-Westbound Approach	-	0	3	0
	-Northbound Approach	-	5	5	8
	-Southbound Through/Left	-	0	0	0
3	<u>SR 92 @ Robin Rd*</u>				
	-Eastbound U/Left	750'	423	684	773
	-Eastbound Through	-	821	417	775
	-Eastbound Right	160'	21	9	50
	-Westbound U/Left	425'	34	47	27
	-Westbound Through	-	557	917	1,180
	-Westbound Right	335'	0	0	0
	-Northbound Left	-	54	68	125
	-Northbound Through/Right	200'	47	59	124
	-Southbound Left	135'	70	81	139
	-Southbound Through	-	58	46	63
	-Southbound Right	575'	167	226	543
4	<u>SR 92 @ Kroger Drwy (E)</u>				
	-Southbound Approach	-	5	43	155
5	<u>SR 92 @ Kroger Drwy (W)</u>				
	-Southbound Approach	-	13	40	75
6	<u>SR 92 @ Bells Ferry Road*</u>				
	-Eastbound Left	540'	101		431
	-Eastbound Through	-	973		604
	-Eastbound Right	280'	216		27
	-Westbound Left	465'	106		167
	-Westbound Through	-	446		1,115
	-Westbound Right	230'	0	-	103
	-Northbound Left	270'	127		252
	-Northbound Through	-	240		701
	-Northbound Right	645'	55		57
	-Southbound Left	485'	221		177
	-Southbound Through	-	774		344
	-Southbound Right	210'	0		0

*Queues reported via HCM 2000

The results of existing traffic operations analysis indicate that the eastbound and southbound left turn lane queues at the intersection of SR 92 at Robin Road currently extend beyond the available storage during the PM peak hour. The intersection is also operating below an acceptable level-of-service ("D" or better) during the Midday and PM peak hours. These areas are addressed in the Future Traffic Operations section.



5.0 PROPOSED NEW TRIPS

The Cherokee Commons Shopping Center is currently located in the northwest corner of the intersection of SR 92 at Robin Road. The shopping center currently has 14,500 square feet of vacant retail space and 5,000 square feet of vacant workshop space. The traffic analysis evaluates the future operations with the traffic generated by 70 percent (10,150 sf) of the vacant retail space, for the following two scenarios:

- Scenario 1: Evaluate anticipated operations with no median opening
- Scenario 2: Evaluate anticipated operations with left-in only median opening

The Cherokee Commons Shopping Center currently has four driveways: two full-access driveways on Robin Road and two right-in/right-out driveways on SR 92.

5.1 Trip Generation

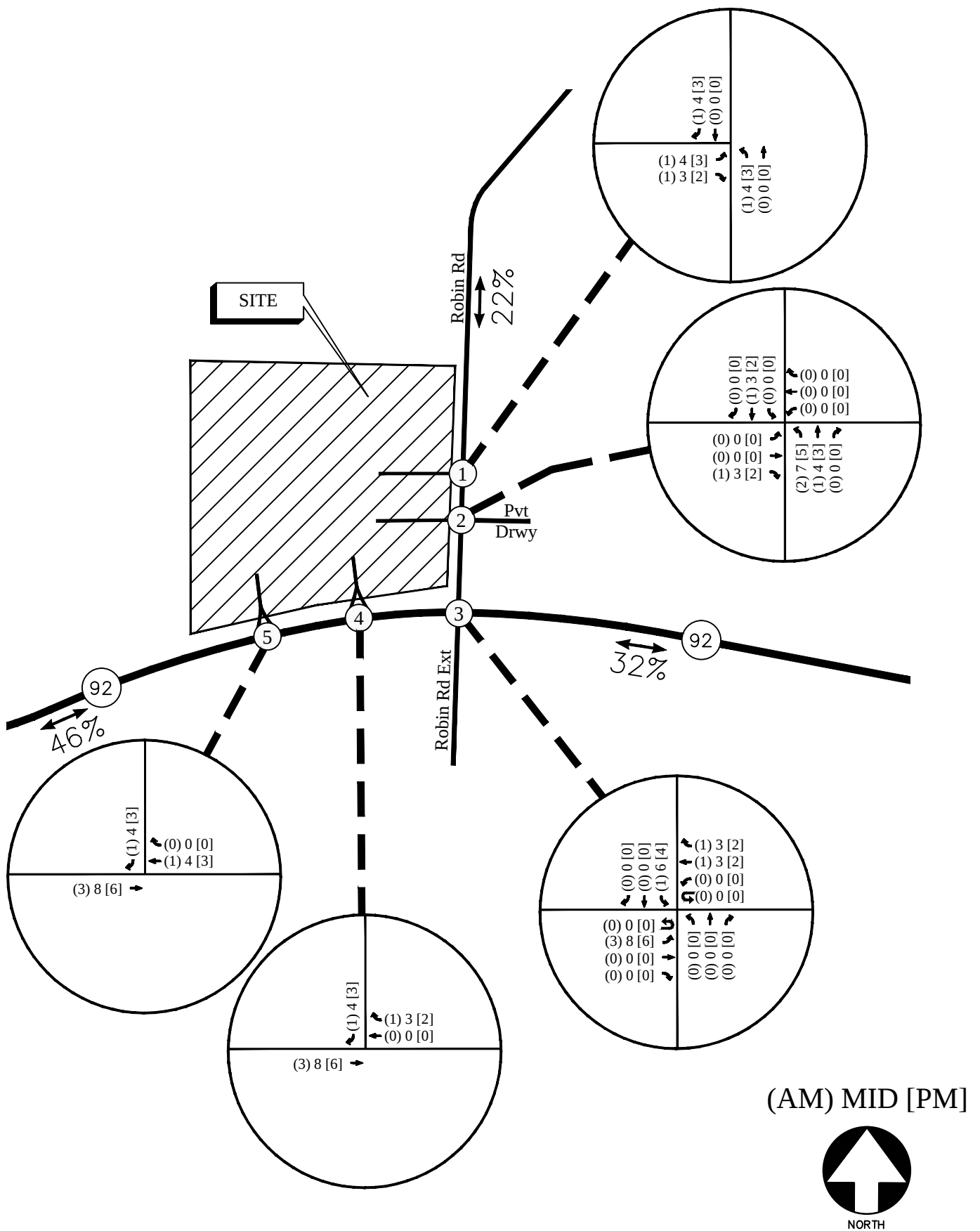
Trip generation estimates for the vacant space were based on the rates and equations published in the 10th edition of the Institute of Transportation Engineers (ITE) Trip Generation report. This reference contains traffic volume count data collected at similar facilities nationwide. The trip generation was based on the following ITE Land Use: 820 – *Shopping Center*. Due to the nature of the development, pass-by reductions have been applied per ITE standards. The calculated total trip generation for 70 percent of the vacant retail space is shown in Table 5.

TABLE 5 — TRIP GENERATION											
Land Use	Size	AM Peak Hour			Midday Peak Hour			PM Peak Hour			24-Hour
		Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Two-way
Shopping Center	10,150 sf	6	4	10	21	22	43	19	20	39	383
<i>Pass-by Trips (0%) [17%] 34%</i>		0	0	0	-4	-4	-8	-6	-7	-13	-130
Total Trips (with Reductions)		6	4	10	17	18	35	13	13	26	253

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

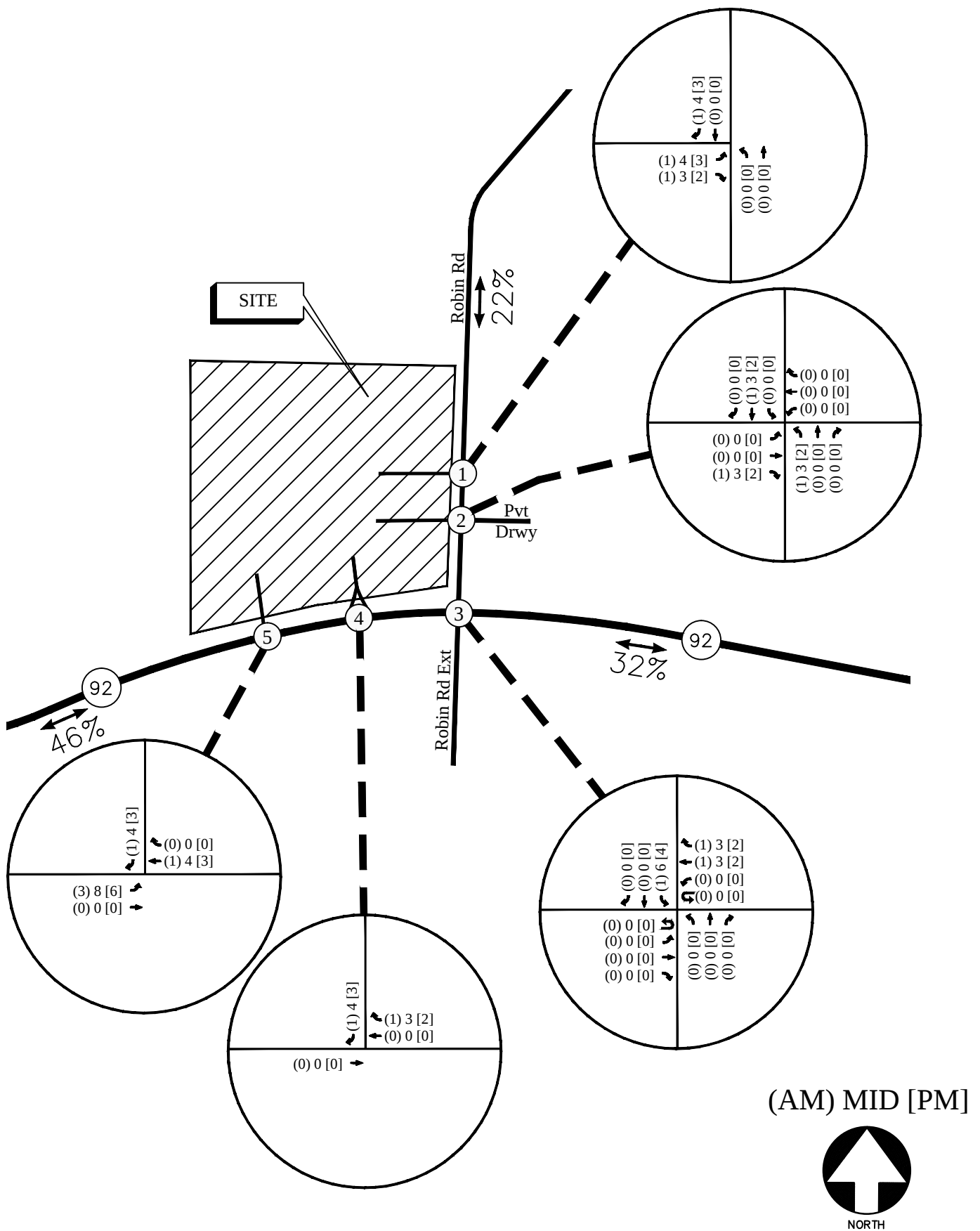
5.2 Trip Distribution

The trip distribution describes how traffic arrives and departs from the site. An overall trip distribution was developed for the site based on a review of the existing travel patterns in the area and the locations of major roadways and highways that will serve the development. The site-generated peak hour traffic volumes, shown in Table 5, were assigned to the study area intersections based on this distribution. The outer-leg distribution and the AM, Midday and PM peak hour site-generated traffic volumes for Scenario 1 (without median opening) and Scenario 2 (with median opening) are shown in Figure 3 and Figure 4, respectively.



OUTER LEG TRIP DISTRIBUTION AND SITE-GENERATED
PEAK HOUR VOLUMES (SCENARIO 1)

FIGURE 3
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OUTER LEG TRIP DISTRIBUTION AND SITE-GENERATED
PEAK HOUR VOLUMES (SCENARIO 2)

FIGURE 4
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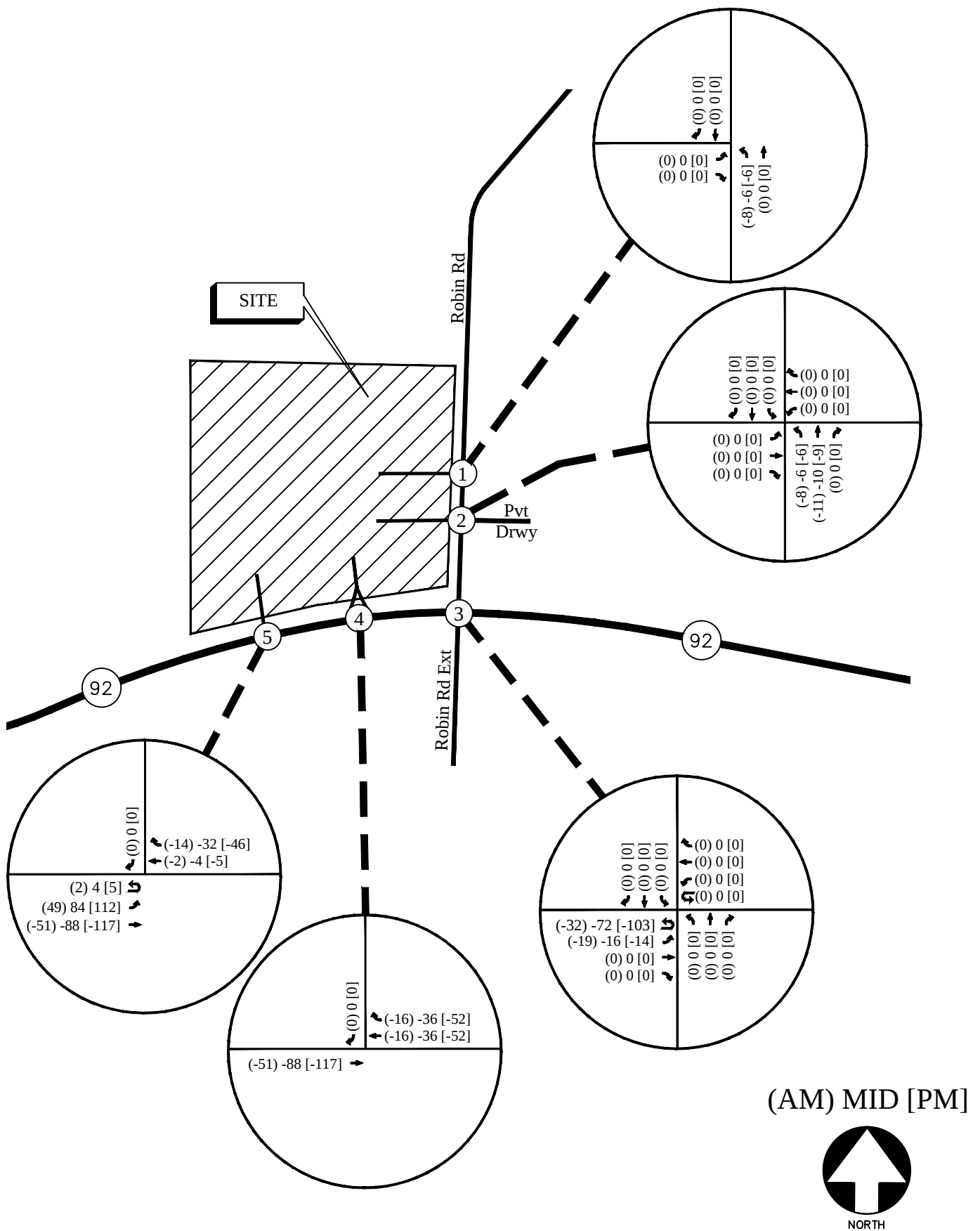
6.0 FUTURE TRAFFIC ANALYSIS

The future traffic operations provide a basis of reference for determining both the overall traffic conditions and any potential improvements needed to improve traffic operations. Note that survey and construction drawings would be needed to verify the feasibility and extent of additional right-of-way required for any recommended improvements. The future traffic operations are analyzed for the following two scenarios:

- **Scenario 1**
 - Evaluate anticipated operations with no median opening at the western driveway on SR 92.
- **Scenario 2**
 - Evaluate anticipated operations with left-in only median opening at the western driveway on SR 92.

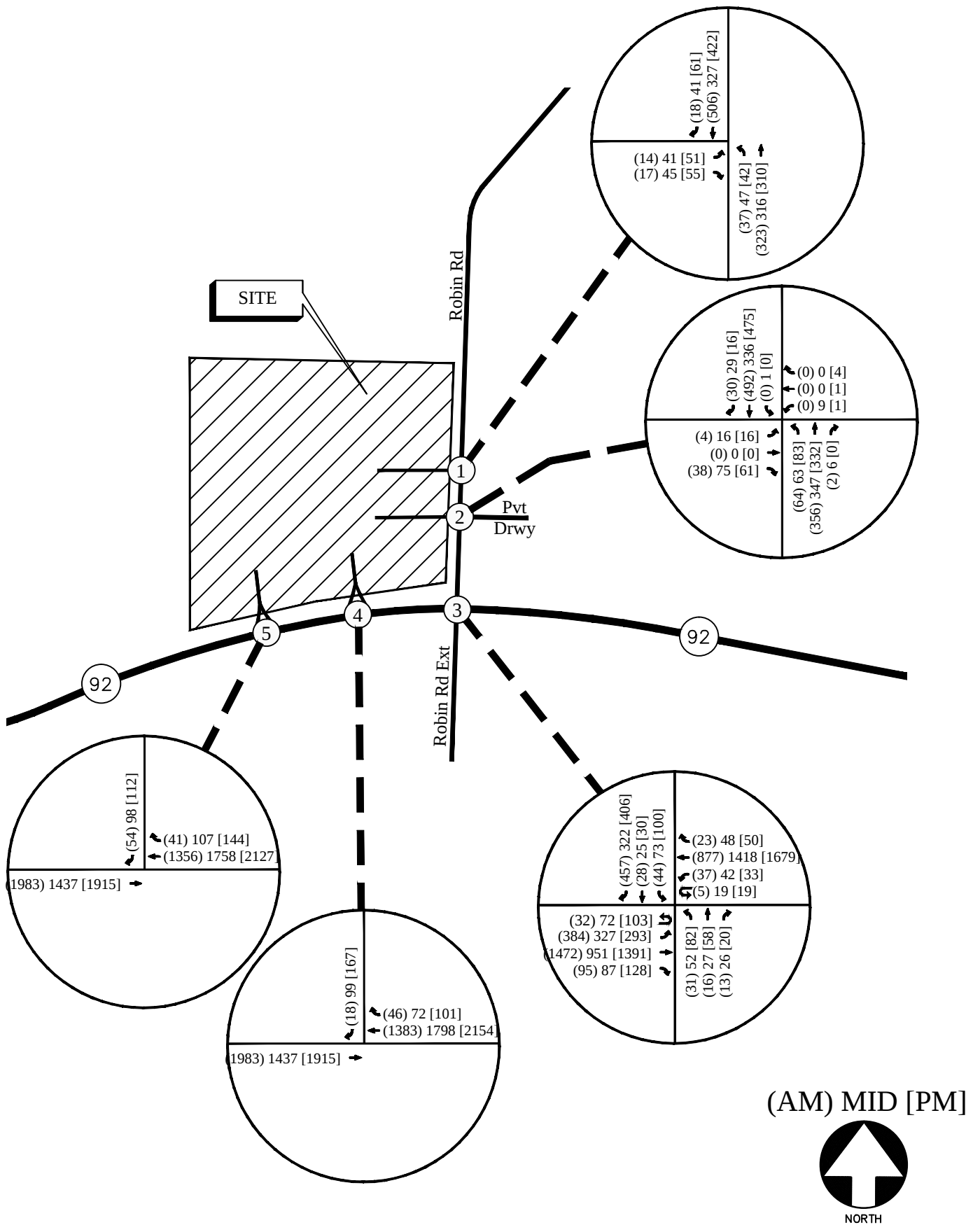
6.1 Future Traffic Volumes

Based on site observations, approximately 95% of the existing eastbound U-turns at the intersection of SR 92 and Robin Road are entering the site via the two right-in/right-out driveways on SR 92. Moreover, approximately 5% of the existing eastbound left turns at the intersection of SR 92 at Robin Road are entering the site via the two full-access driveways on Robin Road. For Scenario 2 operations, it has been assumed that 5% of the existing eastbound U-Turn movements will be able to make the same movement at the median opening; and 95% of the existing eastbound U-Turn as well as 5% of the existing left turn movements will use the median opening to turn left into the development. The shifted peak hour turning movements for Scenario 2 are shown in Figure 5. In order to evaluate the future traffic operations, the additional traffic volumes from the vacant space, shifted volumes (Scenario 2), and pass-by volumes were added to the existing volumes (Figure 2) to calculate the future traffic volumes at the study intersections. The future volumes for Scenario 1 (without median opening) are shown in Figure 6 and for Scenario 2 (with median opening) are shown in Figure 7.



SHIFTED EXISTING VOLUMES (SCENARIO 2)

FIGURE 5
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FUTURE PEAK HOUR VOLUMES (SCENARIO 1)

FIGURE 6

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6.2 Future Traffic Operations Comparison

The future traffic volumes (Figure 6 and Figure 7) were used to compare the future conditions for Scenario 1 (no median opening) with the conditions for Scenario 2 (with median opening). The results of the future traffic operations comparison are shown below in Table 6 and Table 7.

TABLE 6 — FUTURE INTERSECTION OPERATIONS COMPARISON							
Intersection		Future Conditions: LOS (Delay)					
		NO MEDIAN OPENING			WITH MEDIAN OPENING		
		AM	MIDDAY	PM	AM	MIDDAY	PM
1	<u>Robin Rd @ Kroger Drwy (N)</u>						
	-Eastbound Approach	C (15.8)	B (14.8)	C (16.6)	C (15.5)	B (14.4)	C (16.1)
	-Northbound Left	A (8.8)	A (8.2)	A (8.5)	A (8.8)	A (8.2)	A (8.5)
2	<u>Robin Rd @ Kroger Drwy (S)</u>						
	-Eastbound Approach	B (12.2)	B (12.6)	B (14.9)	B (12.1)	B (12.3)	B (14.4)
	-Westbound Approach	A (0.0)	C (17.6)	B (14.0)	A (0.0)	C (16.6)	B (13.5)
	-Northbound Left	A (8.9)	A (8.3)	A (8.8)	A (8.8)	A (8.2)	A (8.7)
	-Southbound Left	A (0.0)	A (8.1)	A (0.0)	A (0.0)	A (8.0)	A (0.0)
3	<u>SR 92 @ Robin Rd*</u>	<u>C (32.1)</u>	<u>E (60.9)</u>	<u>F (79.7)</u>	<u>C (28.6)</u>	<u>D (35.2)</u>	<u>D (46.2)</u>
	-Eastbound Approach	C (20.8)	F (87.6)	E (66.6)	B (16.7)	C (33.7)	C (32.6)
	-Westbound Approach	C (32.6)	C (34.6)	F (91.5)	C (27.3)	C (27.9)	D (44.4)
	-Northbound Approach	E (63.6)	D (52.7)	E (57.2)	E (66.3)	E (58.4)	E (66.7)
	-Southbound Approach	E (70.6)	E (67.3)	F (94.1)	E (70.1)	E (61.0)	F (91.9)
4	<u>SR 92 @ Kroger Drwy (E)</u>						
	-Southbound Approach	C (15.7)	D (27.5)	F (82.6)	C (15.5)	D (26.5)	F (73.2)
5	<u>SR 92 @ Kroger Drwy (W)</u>						
	-Eastbound Left	-	-	-	B (14.8)	D (25.3)	F (73.4)
	-Southbound Approach	C (16.7)	D (26.2)	E (45.6)	C (16.7)	D (26.1)	E (45.1)
6	<u>SR 92 @ Bells Ferry Road*</u>	<u>E (64.0)</u>		<u>E (74.2)</u>	<u>E (64.0)</u>		<u>E (75.9)</u>
	-Eastbound Approach	D (51.7)		E (59.7)	D (51.7)		E (65.2)
	-Westbound Approach	E (55.7)	-	F (89.9)	E (55.7)	-	F (89.9)
	-Northbound Approach	E (78.1)		E (74.5)	E (78.1)		E (74.5)
	-Southbound Approach	F (82.7)		E (70.0)	F (82.7)		E (70.0)

*Delay reported via HCM 2000

TABLE 7 — FUTURE INTERSECTION 95 TH PERCENTILE QUEUES COMPARISON								
Intersection		Available Storage	Future Conditions: Queue (feet)					
			AM	MIDDAY	PM	AM	MIDDAY	PM
1	<u>Robin Rd @ Kroger Drwy (N)</u>							
	-Eastbound Approach	-	8	18	25	8	18	25
	-Northbound Approach	-	3	3	3	3	3	3
2	<u>Robin Rd @ Kroger Drwy (S)</u>							
	-Eastbound Approach	-	8	15	18	8	15	15
	-Westbound Approach	-	0	3	0	0	3	0
	-Northbound Approach	-	5	5	8	5	3	5
	-Southbound Through/Left	-	0	0	0	0	0	0
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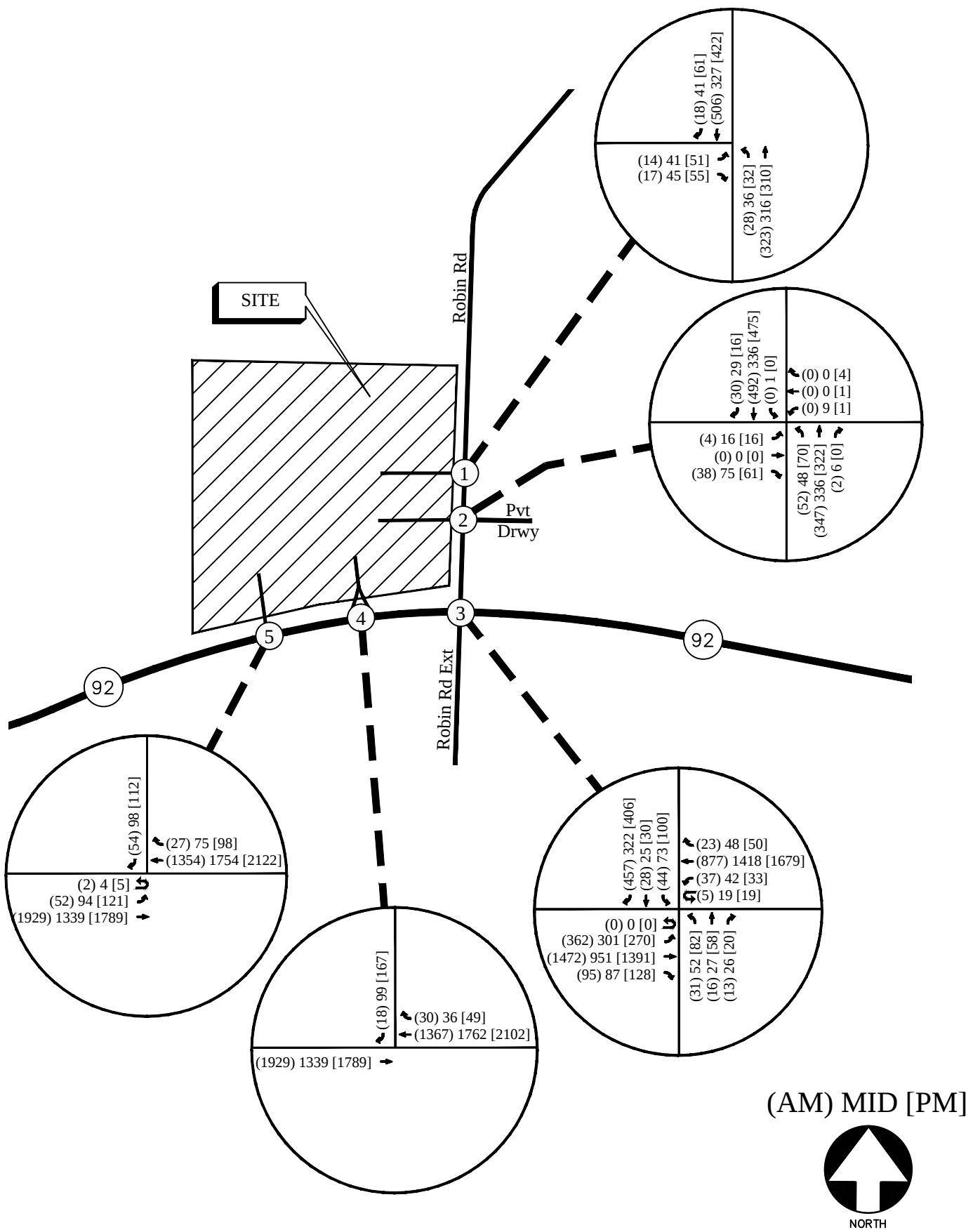
Intersection		Available Storage	Future Conditions: Queue (feet)					
			AM	MIDDAY	PM	AM	MIDDAY	PM
3	SR 92 @ Robin Rd**							
	-Eastbound U/Left	750'	430	705	796	307	338	367
	-Eastbound Through	-	821	417	773	728	281	736
	-Eastbound Right	160'	21	9	50	47	134	50
	-Westbound U/Left	425'	34	47	27	35	428	439
	-Westbound Through	-	559	921	1,181	499	824	1,376
	-Westbound Right	335'	0	0	0	17	348	423
	-Northbound Left	-	54	68	125	30	91	141
	-Northbound Through/Right	200'	47	59	124	30	98	131
	-Southbound Left	135'	71	89	148	35	94	127
	-Southbound Through	-	58	46	63	22	71	110
	-Southbound Right	575'	167	226	543	230	224	217
4	SR 92 @ Kroger Drwy (E)							
	-Southbound Approach	-	5	45	165	5	43	155
5	SR 92 @ Kroger Drwy (W)							
	-Eastbound U/Left**	285'	-	-	-	63	122	294
	-Southbound Approach**	-	15	43	80	15	43	19
6	SR 92 @ Bells Ferry Road*							
	-Eastbound Left	540'	101		431	101		431
	-Eastbound Through	-	973		607	973		608
	-Eastbound Right	280'	216		27	216		27
	-Westbound Left	465'	106		167	106		167
	-Westbound Through	-	446		1,115	446		1,115
	-Westbound Right	230'	0	-	103	0	-	103
	-Northbound Left	270'	127		252	127		252
	-Northbound Through	-	240		701	240		701
	-Northbound Right	645'	55		57	55		57
	-Southbound Left	485'	221		177	221		177
	-Southbound Through	-	774		344	774		344
	-Southbound Right	210'	0		0	0		0

*Queues reported via HCM 2000

**Queues reported via SimTraffic Simulation

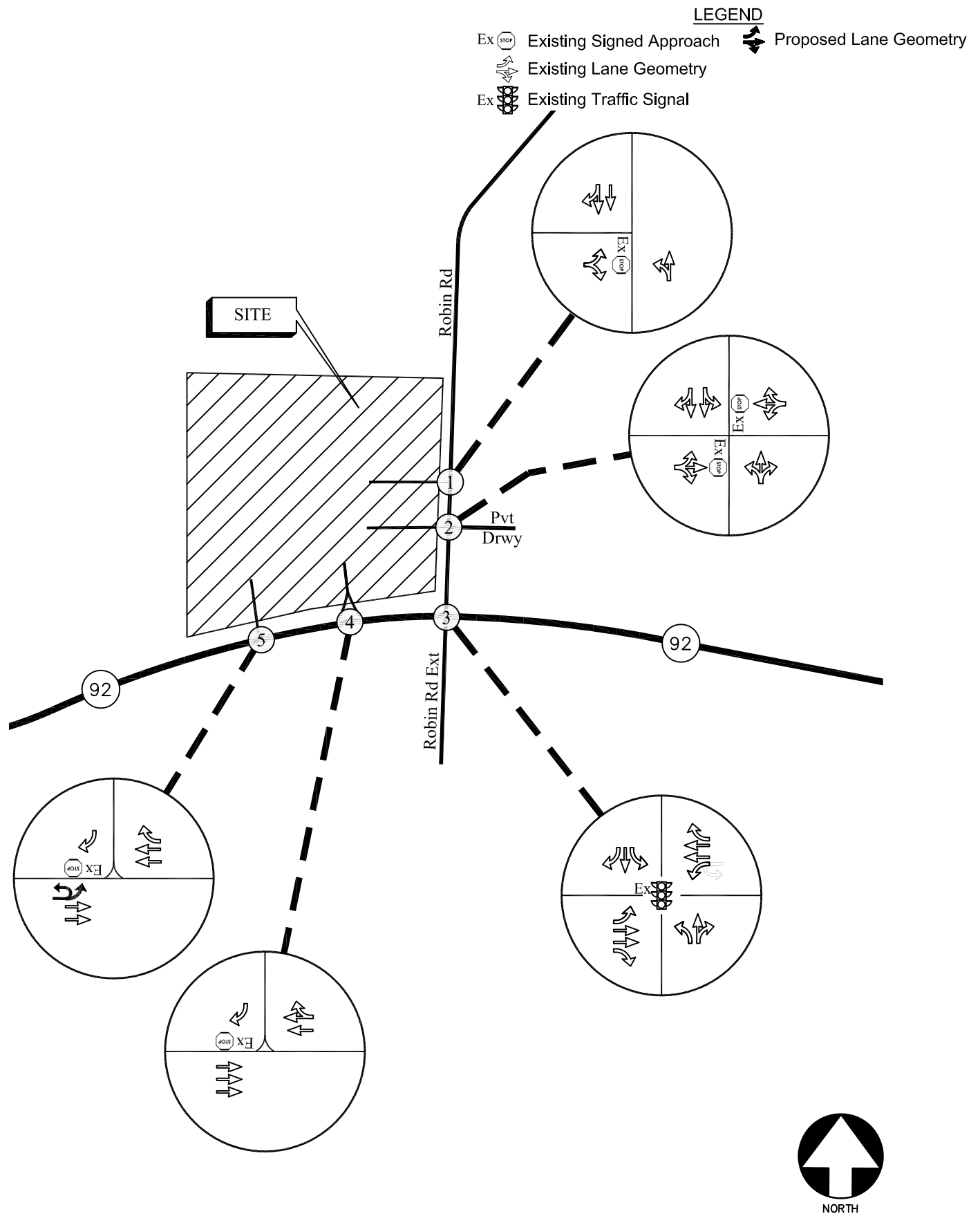
6.2.1 Recommended Improvements

The results of the future intersection operations comparison indicate that with the installation of a left-in only median opening on SR 92 at the western driveway, the adjacent signalized intersection of SR 92 at Robin Road will operate at a better level-of-service during the AM, Midday, and PM peak hours. To accommodate the median opening, the existing eastbound left turn lane at the signal will need to be decreased in order to construct a dedicated left turn lane for left-in/U-Turn movements at the median opening; however, the results of the queue analysis show that the proposed storage lengths for each turn lane will be adequate during each peak hour. A concept plan of the left-in/U-Turn only median opening is included in the Appendix. It is recommended that permissive + overlap signal phasing be installed on the southbound right turn approach and a "No U-Turn" sign be installed on the eastbound left turn approach. This will help prevent conflicts that may occur between eastbound U-Turns and southbound right turns.



FUTURE PEAK HOUR VOLUMES (SCENARIO 2)

FIGURE 7
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FUTURE TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 8
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7.0 CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to evaluate the traffic impacts that will result from a proposed left-in only median break on SR 92 to serve the Cherokee Commons Shopping Center in Acworth, Georgia. The proposed median-break will be located approximately 615 feet west of the existing signalized intersection of SR 92 at Robin Road. The traffic analysis evaluates the existing and future operations with the traffic generated by 70 percent of the vacant retail space for the following two scenarios:

- Scenario 1: Evaluate anticipated operations with no median opening
- Scenario 2: Evaluate anticipated operations with left-in only median opening

The Cherokee Commons Shopping Center currently has four driveways: two full-access driveways on Robin Road and two right-in/right-out driveways on SR 92. The results of the analysis are outlined in the following sections.

7.1 Scenario 1 (Without Median Opening)

The results of the future intersection operations for Scenario 1 indicate that without the installation of a left-in only median opening at the western driveway on SR 92, more site traffic will make U-Turn movements at the adjacent signalized intersection of SR 92 at Robin Road. The presence of a heavy eastbound U-Turn movement increases the demand on the southbound approach, which has an existing heavy conflicting right turn movement. This conflict causes the intersection to operate above its capacity.

7.2 Scenario 2 (With Left-In Only Median Opening)

The results of the future intersection operations for Scenario 2 indicated that with the installation of a left-in only median opening on SR 92 at the western driveway, the adjacent signalized intersection of SR 92 at Robin Road will operate at a better level-of-service during the AM, Midday, and PM peak hours. To accommodate the median opening, the existing eastbound left turn lane at the signal will need to be decreased in order to construct a dedicated left turn lane for left-in/U-Turn movements at the median opening; however, the results of the queue analysis show that the new storage lengths for each movement will be adequate during each peak hour.

7.3 Recommendations

A comparison of Scenario 1 and Scenario 2 indicates that installing a left-in only median break on SR 92 at the Cherokee Commons western driveway will help decrease delay as well as increase operational efficiency at the adjacent signalized intersection of SR 92 at Robin Road. Moreover, removing the existing U-Turn movements at the signal will increase the overall capacity for the heavy southbound right turn movement on Robin Road. Therefore, it is recommended that a left-in only median opening be installed on SR 92 per GDOT standards. It is also recommended that permissive + overlap signal phasing be installed on the southbound right turn approach and a “No U-Turn” sign be installed on the eastbound left turn approach. This will help prevent conflicts that may occur between eastbound U-Turns and southbound right turns

Appendix

Existing Intersection Traffic Counts
Existing Intersection Traffic Analysis.....
Future Intersections Analysis - Scenario 1
Left-In/U-Turn Only Median Opening Concept Design.....
Future Intersections Analysis - Scenario 2
Traffic Volume Worksheets

EXISTING INTERSECTION TRAFFIC COUNTS

A&R Engineering, Inc.

2160 Kingston Court, Suite O
Marietta, GA 30067

TMC Data

Robin Road @ Kroger's Northern Drwy

07-09am - 12-02 pm - 04-06pm

File Name : 20180159

Site Code : 20180159

Start Date : 7/10/2018

Page No : 1

Groups Printed- Cars, Buses & Trucks

	Robin Road Northbound				Robin Road Southbound				Kroger's Northern Driveway Eastbound				Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	5	63	0	68	0	97	6	103	4	0	4	8	0	0	0	0	179
07:15 AM	9	77	0	86	0	117	3	120	4	0	5	9	0	0	0	0	215
07:30 AM	11	93	0	104	0	134	9	143	5	0	3	8	0	0	0	0	255
07:45 AM	7	77	0	84	0	157	4	161	3	0	2	5	0	0	0	0	250
Total	32	310	0	342	0	505	22	527	16	0	14	30	0	0	0	0	899
08:00 AM	9	76	0	85	0	98	1	99	1	0	6	7	0	0	0	0	191
08:15 AM	7	84	0	91	0	85	3	88	4	0	1	5	0	0	0	0	184
08:30 AM	6	98	0	104	0	95	5	100	3	0	8	11	0	0	0	0	215
08:45 AM	4	91	0	95	0	84	1	85	6	0	2	8	0	0	0	0	188
Total	26	349	0	375	0	362	10	372	14	0	17	31	0	0	0	0	778
*** BREAK ***																	
12:00 PM	9	80	0	89	0	88	11	99	9	0	9	18	0	0	0	0	206
12:15 PM	11	77	0	88	0	74	6	80	8	0	11	19	0	0	0	0	187
12:30 PM	15	70	0	85	0	77	11	88	10	0	9	19	0	0	0	0	192
12:45 PM	7	89	0	96	0	88	9	97	10	0	12	22	0	0	0	0	215
Total	42	316	0	358	0	327	37	364	37	0	41	78	0	0	0	0	800
01:00 PM	11	69	0	80	0	82	8	90	5	0	14	19	0	0	0	0	189
01:15 PM	10	71	0	81	0	73	19	92	8	0	9	17	0	0	0	0	190
01:30 PM	8	73	0	81	0	79	11	90	10	0	9	19	0	0	0	0	190
01:45 PM	11	78	0	89	0	91	13	104	10	0	13	23	0	0	0	0	216
Total	40	291	0	331	0	325	51	376	33	0	45	78	0	0	0	0	785
*** BREAK ***																	
04:00 PM	13	76	0	89	0	75	18	93	6	0	9	15	0	0	0	0	197
04:15 PM	12	93	0	105	0	88	14	102	12	0	6	18	0	0	0	0	225
04:30 PM	11	87	0	98	0	101	12	113	12	0	8	20	0	0	0	0	231
04:45 PM	15	63	0	78	0	96	9	105	15	0	10	25	0	0	0	0	208
Total	51	319	0	370	0	360	53	413	45	0	33	78	0	0	0	0	861
05:00 PM	12	79	0	91	0	98	21	119	17	0	6	23	0	0	0	0	233
05:15 PM	9	73	0	82	0	113	8	121	13	0	12	25	0	0	0	0	228
05:30 PM	9	74	0	83	0	119	18	137	6	0	15	21	0	0	0	0	241
05:45 PM	8	84	0	92	0	92	11	103	12	0	18	30	0	0	0	0	225
Total	38	310	0	348	0	422	58	480	48	0	51	99	0	0	0	0	927
Grand Total	229	1895	0	2124	0	2301	231	2532	193	0	201	394	0	0	0	0	5050
Apprch %	10.8	89.2	0		0	90.9	9.1		49	0	51		0	0	0		
Total %	4.5	37.5	0	42.1	0	45.6	4.6	50.1	3.8	0	4	7.8	0	0	0	0	

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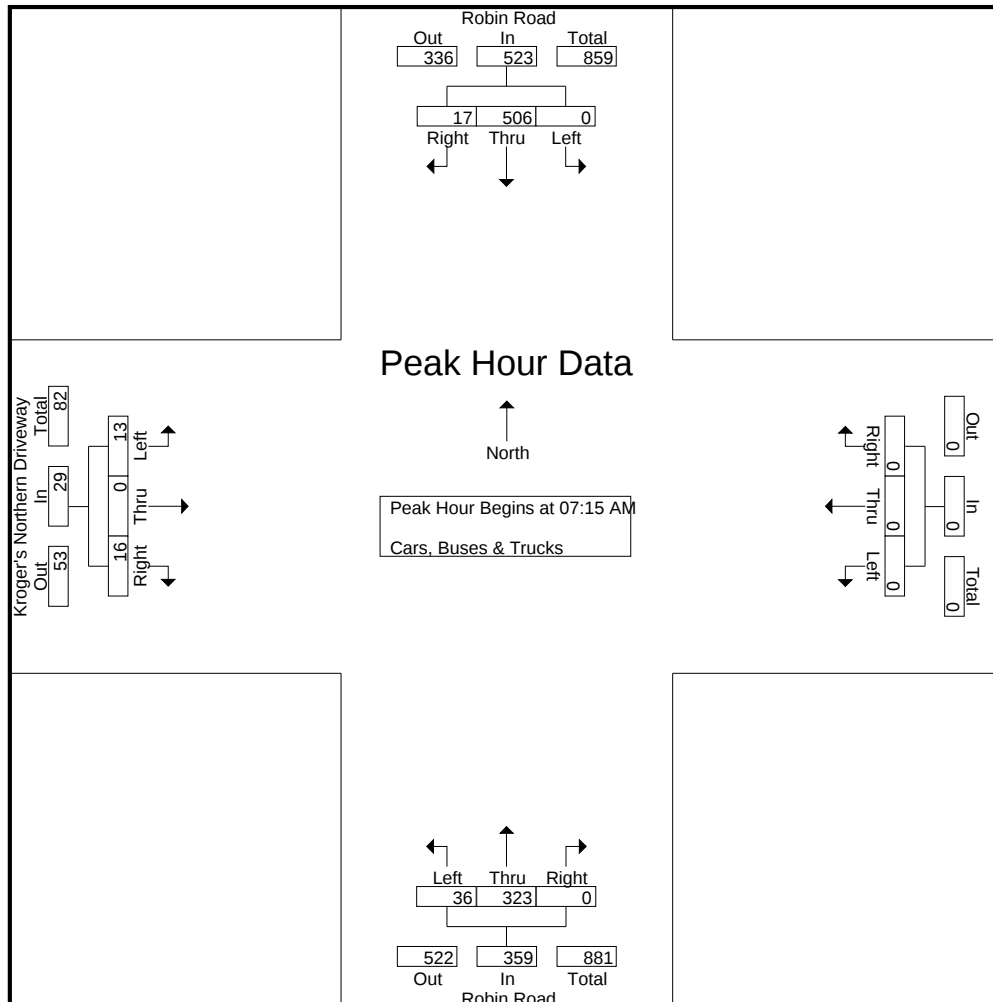
File Name : 20180159

Site Code : 20180159

Start Date : 7/10/2018

Page No : 2

	Robin Road Northbound				Robin Road Southbound				Kroger's Northern Driveway Eastbound				Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	9	77	0	86	0	117	3	120	4	0	5	9	0	0	0	0	215
07:30 AM	11	93	0	104	0	134	9	143	5	0	3	8	0	0	0	0	255
07:45 AM	7	77	0	84	0	157	4	161	3	0	2	5	0	0	0	0	250
08:00 AM	9	76	0	85	0	98	1	99	1	0	6	7	0	0	0	0	191
Total Volume	36	323	0	359	0	506	17	523	13	0	16	29	0	0	0	0	911
% App. Total	10	90	0		0	96.7	3.3		44.8	0	55.2		0	0	0		
PHF	.818	.868	.000	.863	.000	.806	.472	.812	.650	.000	.667	.806	.000	.000	.000	.000	.893



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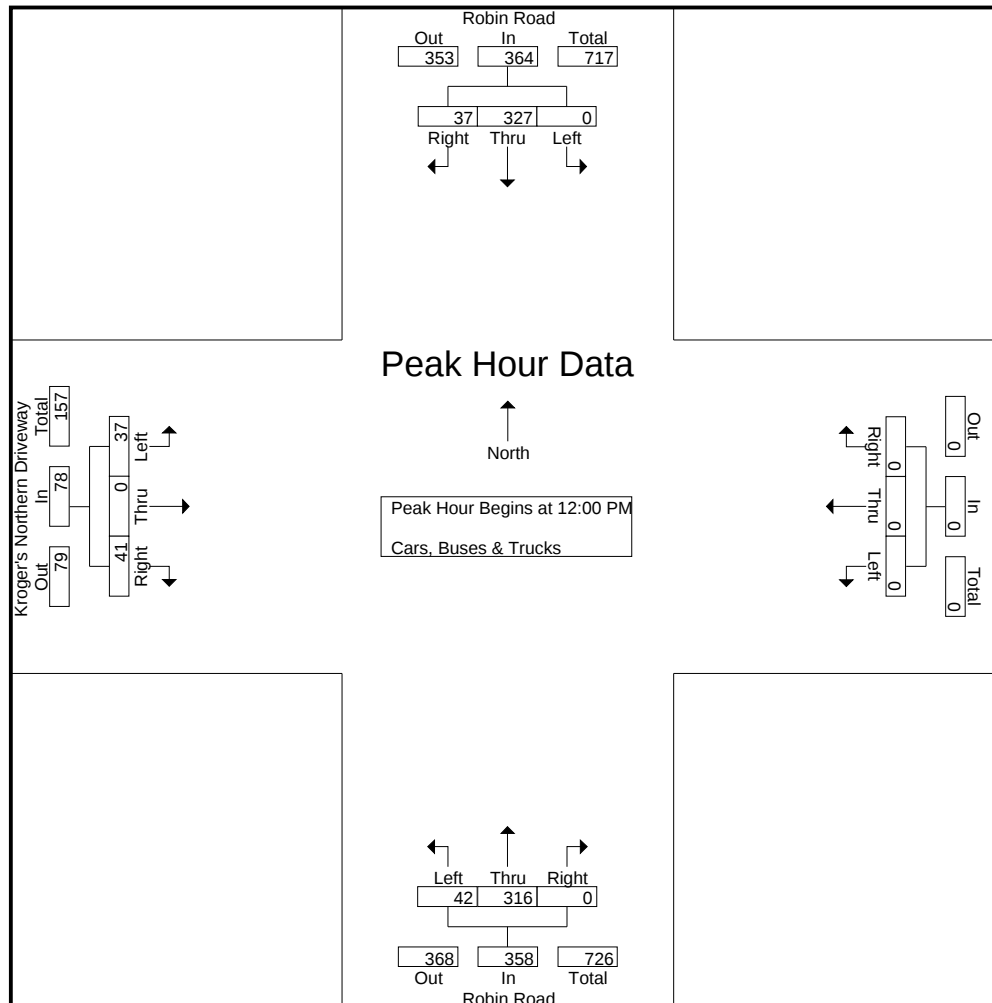
File Name : 20180159

Site Code : 20180159

Start Date : 7/10/2018

Page No : 3

	Robin Road Northbound				Robin Road Southbound				Kroger's Northern Driveway Eastbound				Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	9	80	0	89	0	88	11	99	9	0	9	18	0	0	0	0	206
12:15 PM	11	77	0	88	0	74	6	80	8	0	11	19	0	0	0	0	187
12:30 PM	15	70	0	85	0	77	11	88	10	0	9	19	0	0	0	0	192
12:45 PM	7	89	0	96	0	88	9	97	10	0	12	22	0	0	0	0	215
Total Volume	42	316	0	358	0	327	37	364	37	0	41	78	0	0	0	0	800
% App. Total	11.7	88.3	0		0	89.8	10.2		47.4	0	52.6		0	0	0		
PHF	.700	.888	.000	.932	.000	.929	.841	.919	.925	.000	.854	.886	.000	.000	.000	.000	.930



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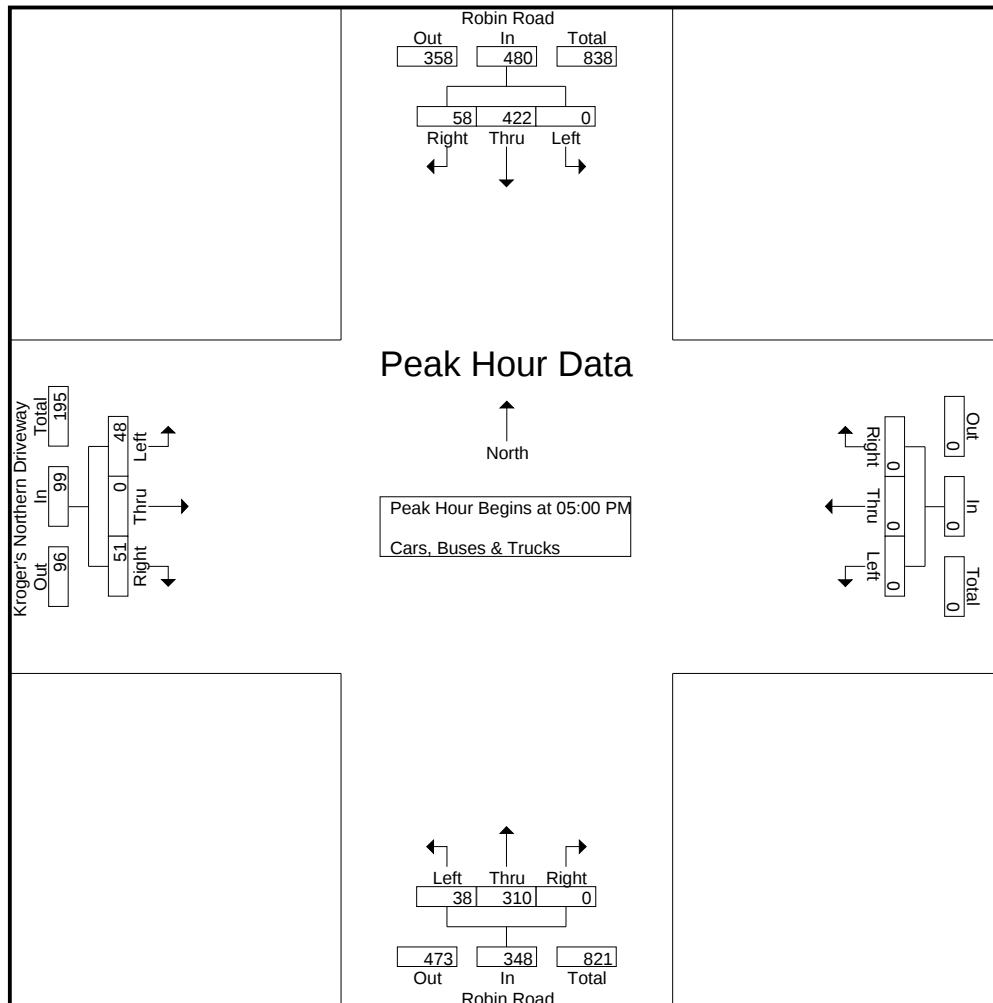
File Name : 20180159

Site Code : 20180159

Start Date : 7/10/2018

Page No : 4

	Robin Road Northbound				Robin Road Southbound				Kroger's Northern Driveway Eastbound				Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	12	79	0	91	0	98	21	119	17	0	6	23	0	0	0	0	233
05:15 PM	9	73	0	82	0	113	8	121	13	0	12	25	0	0	0	0	228
05:30 PM	9	74	0	83	0	119	18	137	6	0	15	21	0	0	0	0	241
05:45 PM	8	84	0	92	0	92	11	103	12	0	18	30	0	0	0	0	225
Total Volume	38	310	0	348	0	422	58	480	48	0	51	99	0	0	0	0	927
% App. Total	10.9	89.1	0		0	87.9	12.1		48.5	0	51.5		0	0	0		
PHF	.792	.923	.000	.946	.000	.887	.690	.876	.706	.000	.708	.825	.000	.000	.000	.000	.962



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TMC Data

Robin Road @ Kroger's Southern Drwy

07-09am - 12-02pm - 04-06pm

File Name : 20180158

Site Code : 20180158

Start Date : 7/10/2018

Page No : 1

Groups Printed- Cars, Buses & Truciks

	Robin Road Northbound				Robin Road Southbound				Kroger's Southern Drwy Eastbound				Private Driveway Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	14	66	2	82	0	97	4	101	2	0	8	10	0	0	0	0	193
07:15 AM	15	86	0	101	0	115	7	122	0	0	10	10	0	0	0	0	233
07:30 AM	18	104	0	122	0	130	7	137	0	0	11	11	0	0	0	0	270
07:45 AM	10	81	0	91	0	150	9	159	3	0	7	10	0	0	0	0	260
Total	57	337	2	396	0	492	27	519	5	0	36	41	0	0	0	0	956
08:00 AM	19	84	2	105	0	96	7	103	1	0	9	10	0	0	0	0	218
08:15 AM	25	90	2	117	0	85	1	86	1	0	6	7	0	0	0	0	210
08:30 AM	27	104	2	133	2	99	2	103	0	1	5	6	2	2	0	4	246
08:45 AM	24	95	1	120	0	81	5	86	0	0	11	11	0	0	0	0	217
Total	95	373	7	475	2	361	15	378	2	1	31	34	2	2	0	4	891
*** BREAK ***																	
12:00 PM	18	86	1	105	0	91	6	97	3	0	15	18	1	0	0	1	221
12:15 PM	14	82	1	97	0	78	5	83	6	0	14	20	1	0	0	1	201
12:30 PM	11	85	4	100	1	73	8	82	0	0	24	24	5	0	0	5	211
12:45 PM	12	89	0	101	0	90	10	100	7	0	18	25	2	0	0	2	228
Total	55	342	6	403	1	332	29	362	16	0	71	87	9	0	0	9	861
01:00 PM	15	75	1	91	0	90	6	96	4	0	17	21	0	0	1	1	209
01:15 PM	15	77	2	94	1	71	10	82	4	0	18	22	1	0	0	1	199
01:30 PM	16	78	4	98	0	80	6	86	2	0	11	13	2	0	0	2	199
01:45 PM	18	81	0	99	0	98	6	104	6	0	19	25	0	0	0	0	228
Total	64	311	7	382	1	339	28	368	16	0	65	81	3	0	1	4	835
*** BREAK ***																	
04:00 PM	14	85	1	100	0	82	4	86	3	0	13	16	0	0	1	1	203
04:15 PM	19	101	4	124	0	88	7	95	4	0	11	15	1	0	0	1	235
04:30 PM	20	93	0	113	0	106	3	109	4	0	18	22	2	0	1	3	247
04:45 PM	16	77	1	94	0	92	2	94	1	0	13	14	3	0	0	3	205
Total	69	356	6	431	0	368	16	384	12	0	55	67	6	0	2	8	890
05:00 PM	19	85	0	104	0	108	6	114	3	0	11	14	1	0	3	4	236
05:15 PM	21	78	0	99	0	124	5	129	4	0	25	29	0	0	0	0	257
05:30 PM	15	79	0	94	0	132	2	134	4	0	10	14	0	0	0	0	242
05:45 PM	22	86	0	108	0	107	3	110	5	0	11	16	0	1	1	2	236
Total	77	328	0	405	0	471	16	487	16	0	57	73	1	1	4	6	971
Grand Total	417	2047	28	2492	4	2363	131	2498	67	1	315	383	21	3	7	31	5404
Apprch %	16.7	82.1	1.1		0.2	94.6	5.2		17.5	0.3	82.2		67.7	9.7	22.6		
Total %	7.7	37.9	0.5	46.1	0.1	43.7	2.4	46.2	1.2	0	5.8	7.1	0.4	0.1	0.1	0.6	

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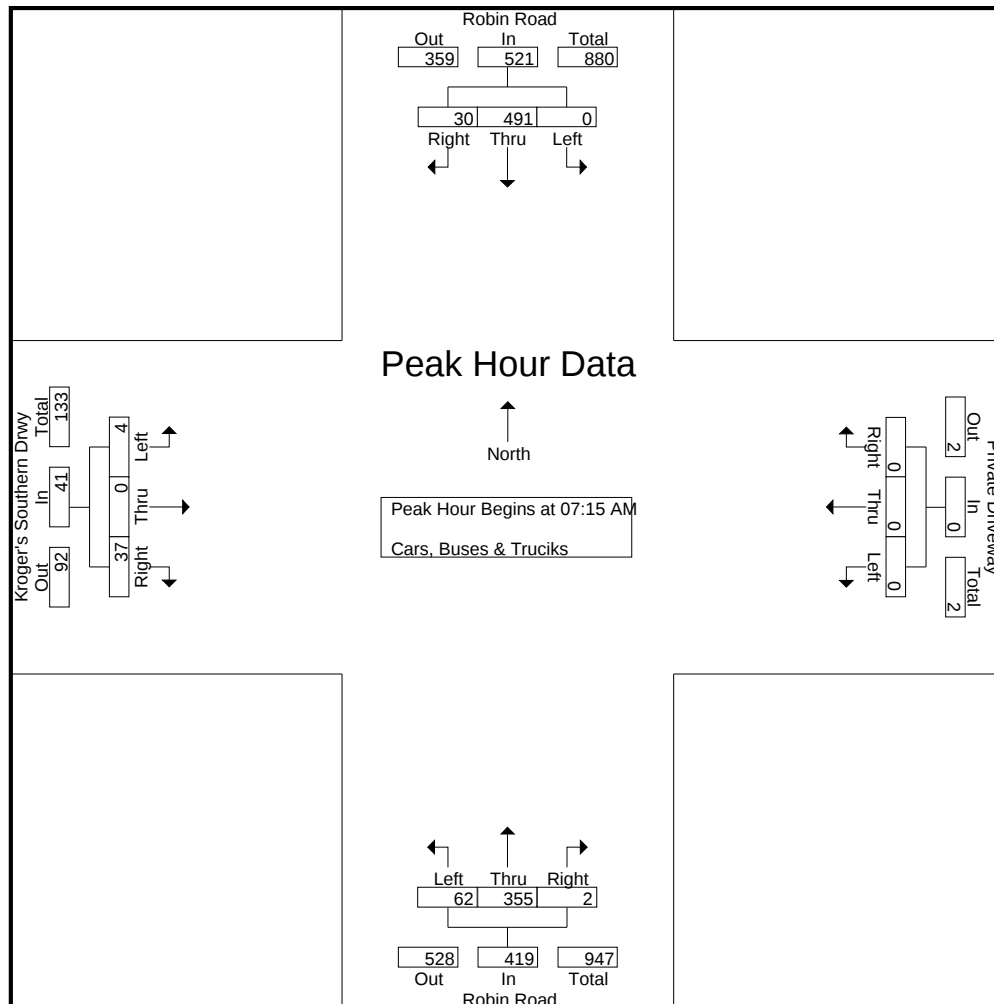
File Name : 20180158

Site Code : 20180158

Start Date : 7/10/2018

Page No : 2

	Robin Road Northbound				Robin Road Southbound				Kroger's Southern Drwy Eastbound				Private Driveway Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	15	86	0	101	0	115	7	122	0	0	10	10	0	0	0	0	233
07:30 AM	18	104	0	122	0	130	7	137	0	0	11	11	0	0	0	0	270
07:45 AM	10	81	0	91	0	150	9	159	3	0	7	10	0	0	0	0	260
08:00 AM	19	84	2	105	0	96	7	103	1	0	9	10	0	0	0	0	218
Total Volume	62	355	2	419	0	491	30	521	4	0	37	41	0	0	0	0	981
% App. Total	14.8	84.7	0.5		0	94.2	5.8		9.8	0	90.2		0	0	0		
PHF	.816	.853	.250	.859	.000	.818	.833	.819	.333	.000	.841	.932	.000	.000	.000	.000	.908



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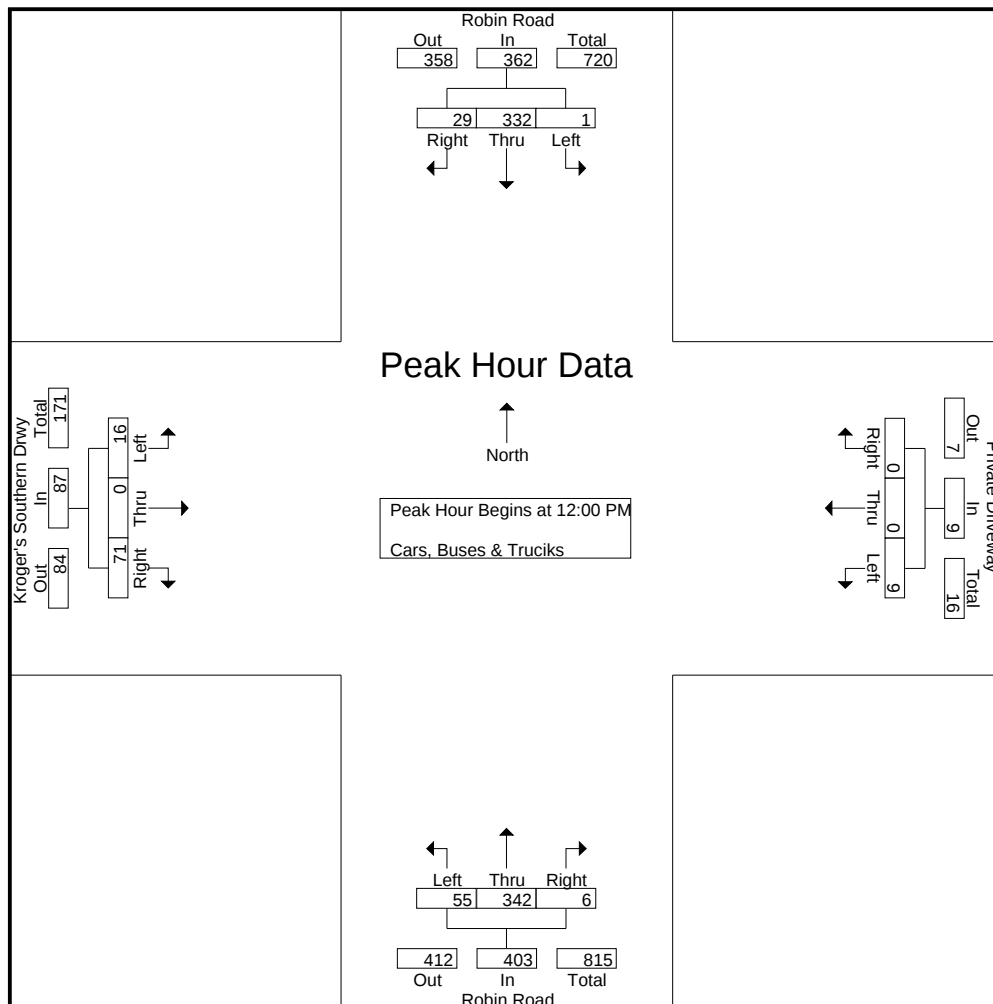
File Name : 20180158

Site Code : 20180158

Start Date : 7/10/2018

Page No : 3

	Robin Road Northbound				Robin Road Southbound				Kroger's Southern Drwy Eastbound				Private Driveway Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	18	86	1	105	0	91	6	97	3	0	15	18	1	0	0	1	221
12:15 PM	14	82	1	97	0	78	5	83	6	0	14	20	1	0	0	1	201
12:30 PM	11	85	4	100	1	73	8	82	0	0	24	24	5	0	0	5	211
12:45 PM	12	89	0	101	0	90	10	100	7	0	18	25	2	0	0	2	228
Total Volume	55	342	6	403	1	332	29	362	16	0	71	87	9	0	0	9	861
% App. Total	13.6	84.9	1.5		0.3	91.7	8		18.4	0	81.6		100	0	0		
PHF	.764	.961	.375	.960	.250	.912	.725	.905	.571	.000	.740	.870	.450	.000	.000	.450	.944



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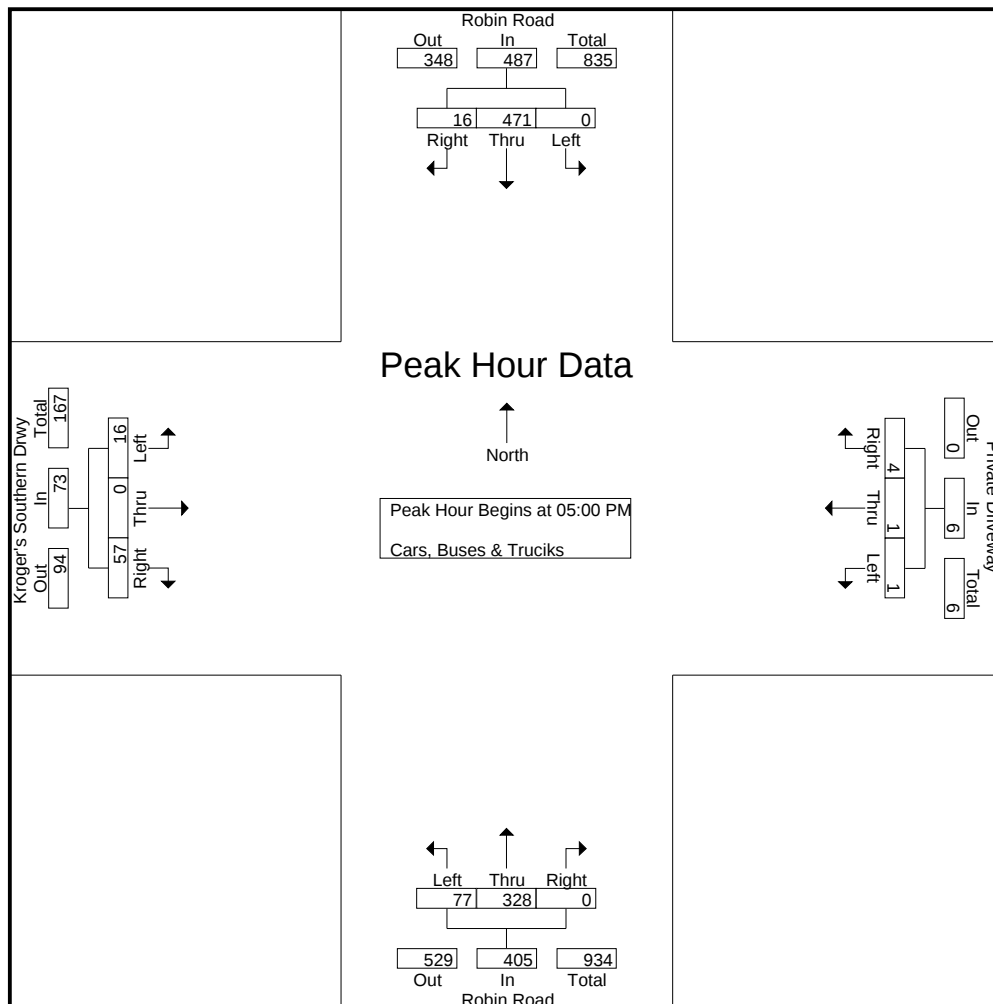
File Name : 20180158

Site Code : 20180158

Start Date : 7/10/2018

Page No : 4

	Robin Road Northbound				Robin Road Southbound				Kroger's Southern Drwy Eastbound				Private Driveway Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	19	85	0	104	0	108	6	114	3	0	11	14	1	0	3	4	236
05:15 PM	21	78	0	99	0	124	5	129	4	0	25	29	0	0	0	0	257
05:30 PM	15	79	0	94	0	132	2	134	4	0	10	14	0	0	0	0	242
05:45 PM	22	86	0	108	0	107	3	110	5	0	11	16	0	1	1	2	236
Total Volume	77	328	0	405	0	471	16	487	16	0	57	73	1	1	4	6	971
% App. Total	19	81	0		0	96.7	3.3		21.9	0	78.1		16.7	16.7	66.7		
PHF	.875	.953	.000	.938	.000	.892	.667	.909	.800	.000	.570	.629	.250	.250	.333	.375	.945



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Marietta, GA 30067

TMC Data
SR 92 at Robin Road
07-09am - 12-02pm - 04-06pm

File Name : 20180160
Site Code : 20180160
Start Date : 7/10/2018
Page No : 1

Groups Printed- Cars, Buses & Trucks

	QuikTrip/Furniture Store Driveway Northbound					Robin Road Southbound					SR 92 Eastbound					SR 92 Westbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	9	3	1	0	13	9	4	92	0	105	76	354	24	6	460	8	170	3	0	181	759
07:15 AM	2	4	2	0	8	10	8	107	0	125	92	403	31	5	531	5	173	5	0	183	847
07:30 AM	9	7	2	0	18	14	7	120	0	141	112	387	20	8	527	11	242	3	0	256	942
07:45 AM	12	3	0	0	15	11	7	139	0	157	82	357	21	9	469	11	233	6	1	251	892
Total	32	17	5	0	54	44	26	458	0	528	362	1501	96	28	1987	35	818	17	1	871	3440
08:00 AM	8	2	9	0	19	8	6	91	0	105	95	325	23	10	453	10	228	8	4	250	827
08:15 AM	12	6	8	0	26	15	4	72	0	91	107	324	25	12	468	8	209	4	1	222	807
08:30 AM	16	9	5	0	30	16	9	81	0	106	111	311	26	10	458	14	175	13	9	211	805
08:45 AM	14	9	10	0	33	14	4	74	0	92	94	270	23	14	401	8	165	17	5	195	721
Total	50	26	32	0	108	53	23	318	0	394	407	1230	97	46	1780	40	777	42	19	878	3160
*** BREAK ***																					
12:00 PM	16	6	7	0	29	17	6	84	0	107	85	239	19	11	354	12	318	14	1	345	835
12:15 PM	15	6	5	0	26	8	4	81	0	93	79	232	21	14	346	9	322	12	4	347	812
12:30 PM	14	5	9	0	28	12	10	80	0	102	80	261	15	16	372	12	361	15	3	391	893
12:45 PM	8	9	4	0	21	23	3	84	0	110	82	245	29	22	378	7	376	10	6	399	908
Total	53	26	25	0	104	60	23	329	0	412	326	977	84	63	1450	40	1377	51	14	1482	3448
01:00 PM	15	7	8	0	30	22	8	77	0	107	76	215	22	20	333	14	356	8	6	384	854
01:15 PM	23	6	6	0	35	25	6	59	0	90	84	188	17	18	307	11	275	7	6	299	731
01:30 PM	9	6	2	0	17	23	3	67	0	93	77	195	9	17	298	12	251	15	12	290	698
01:45 PM	18	7	6	0	31	28	8	81	0	117	82	182	15	24	303	13	249	15	4	281	732
Total	65	26	22	0	113	98	25	284	0	407	319	780	63	79	1241	50	1131	45	28	1254	3015
*** BREAK ***																					
04:00 PM	12	8	7	0	27	29	4	62	0	95	89	229	12	18	348	13	291	9	7	320	790
04:15 PM	9	5	6	0	20	18	7	75	0	100	103	214	12	17	346	14	355	16	6	391	857
04:30 PM	11	6	5	0	22	26	7	93	0	126	91	245	32	19	387	8	391	19	5	423	958
04:45 PM	13	8	8	0	29	22	4	80	0	106	76	296	13	17	402	10	379	15	11	415	952
Total	45	27	26	0	98	95	22	310	0	427	359	984	69	71	1483	45	1416	59	29	1549	3557
05:00 PM	17	13	12	0	42	20	7	93	0	120	78	332	22	20	452	8	413	11	6	438	1052
05:15 PM	31	17	0	0	48	24	6	119	0	149	68	366	41	24	499	5	422	11	1	439	1135
05:30 PM	16	18	3	0	37	28	8	106	0	142	65	362	33	26	486	10	415	11	7	443	1108
05:45 PM	18	10	5	0	33	21	9	88	0	118	73	334	32	33	472	10	427	15	5	457	1080
Total	82	58	20	0	160	93	30	406	0	529	284	1394	128	103	1909	33	1677	48	19	1777	4375
Grand Total	327	180	130	0	637	443	149	2105	0	2697	2057	6866	537	390	9850	243	7196	262	110	7811	20995
Apprch %	51.3	28.3	20.4	0		16.4	5.5	78	0		20.9	69.7	5.5	4		3.1	92.1	3.4	1.4		
Total %	1.6	0.9	0.6	0	3	2.1	0.7	10	0	12.8	9.8	32.7	2.6	1.9	46.9	1.2	34.3	1.2	0.5	37.2	

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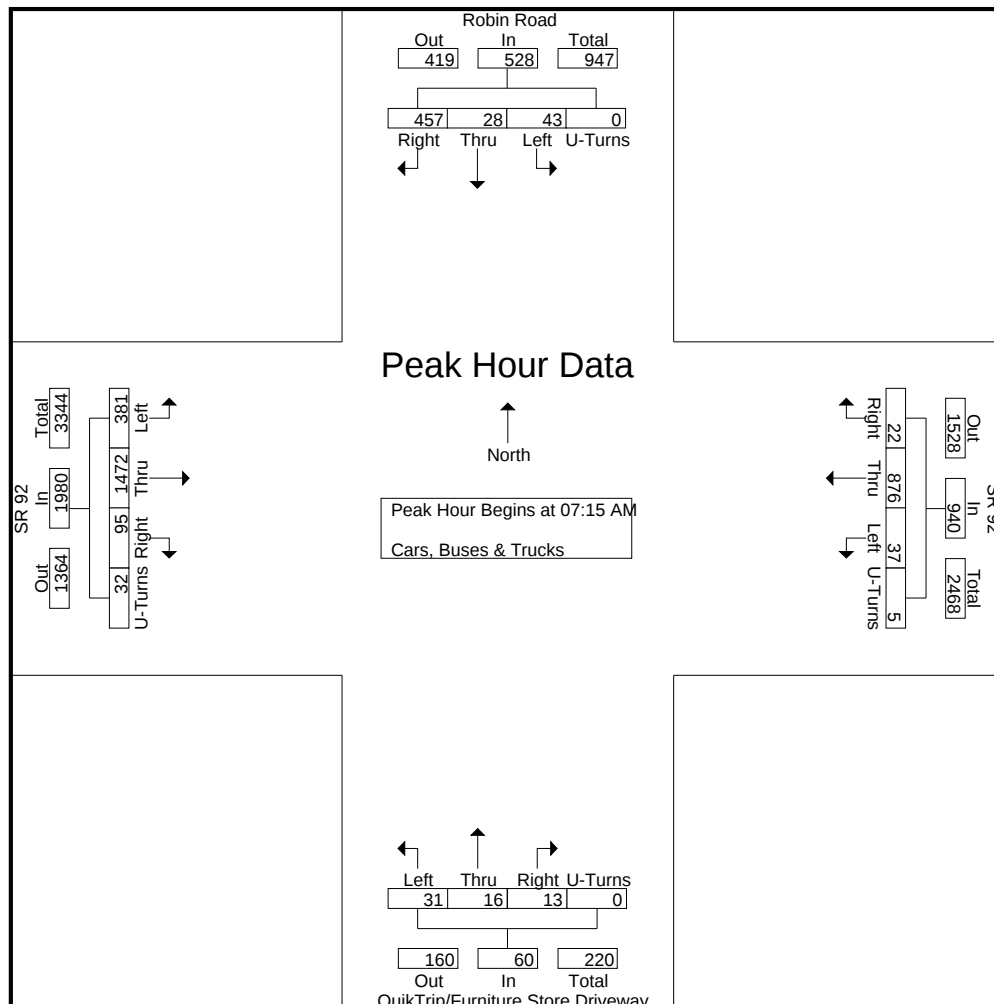
File Name : 20180160

Site Code : 20180160

Start Date : 7/10/2018

Page No : 2

	QuikTrip/Furniture Store Driveway Northbound					Robin Road Southbound					SR 92 Eastbound					SR 92 Westbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	2	4	2	0	8	10	8	107	0	125	92	403	31	5	531	5	173	5	0	183	847
07:30 AM	9	7	2	0	18	14	7	120	0	141	112	387	20	8	527	11	242	3	0	256	942
07:45 AM	12	3	0	0	15	11	7	139	0	157	82	357	21	9	469	11	233	6	1	251	892
08:00 AM	8	2	9	0	19	8	6	91	0	105	95	325	23	10	453	10	228	8	4	250	827
Total Volume	31	16	13	0	60	43	28	457	0	528	381	1472	95	32	1980	37	876	22	5	940	3508
% App. Total	51.7	26.7	21.7	0		8.1	5.3	86.6	0		19.2	74.3	4.8	1.6		3.9	93.2	2.3	0.5		
PHF	.646	.571	.361	.000	.789	.768	.875	.822	.000	.841	.850	.913	.766	.800	.932	.841	.905	.688	.313	.918	.931



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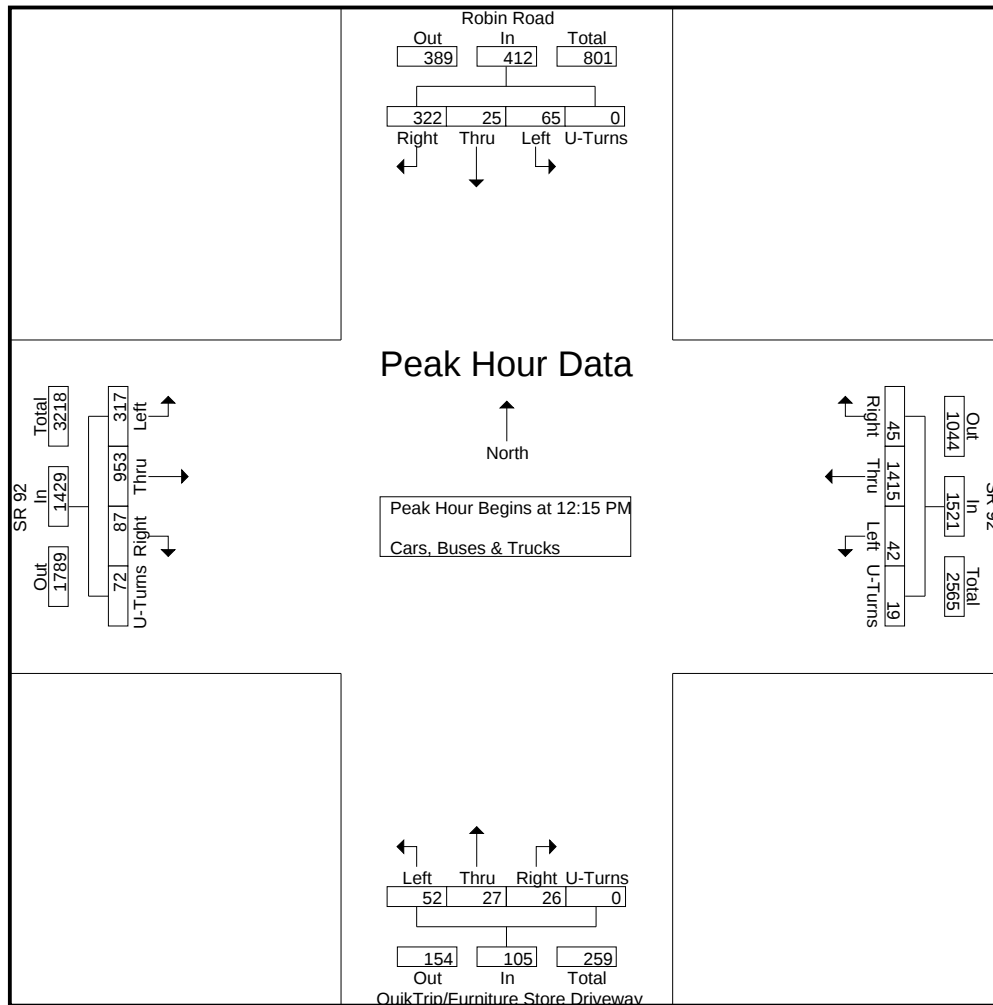
File Name : 20180160

Site Code : 20180160

Start Date : 7/10/2018

Page No : 3

	QuikTrip/Furniture Store Driveway Northbound					Robin Road Southbound					SR 92 Eastbound					SR 92 Westbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:15 PM																					
12:15 PM	15	6	5	0	26	8	4	81	0	93	79	232	21	14	346	9	322	12	4	347	812
12:30 PM	14	5	9	0	28	12	10	80	0	102	80	261	15	16	372	12	361	15	3	391	893
12:45 PM	8	9	4	0	21	23	3	84	0	110	82	245	29	22	378	7	376	10	6	399	908
01:00 PM	15	7	8	0	30	22	8	77	0	107	76	215	22	20	333	14	356	8	6	384	854
Total Volume	52	27	26	0	105	65	25	322	0	412	317	953	87	72	1429	42	1415	45	19	1521	3467
% App. Total	49.5	25.7	24.8	0		15.8	6.1	78.2	0		22.2	66.7	6.1	5		2.8	93	3	1.2		
PHF	.867	.750	.722	.000	.875	.707	.625	.958	.000	.936	.966	.913	.750	.818	.945	.750	.941	.750	.792	.953	.955



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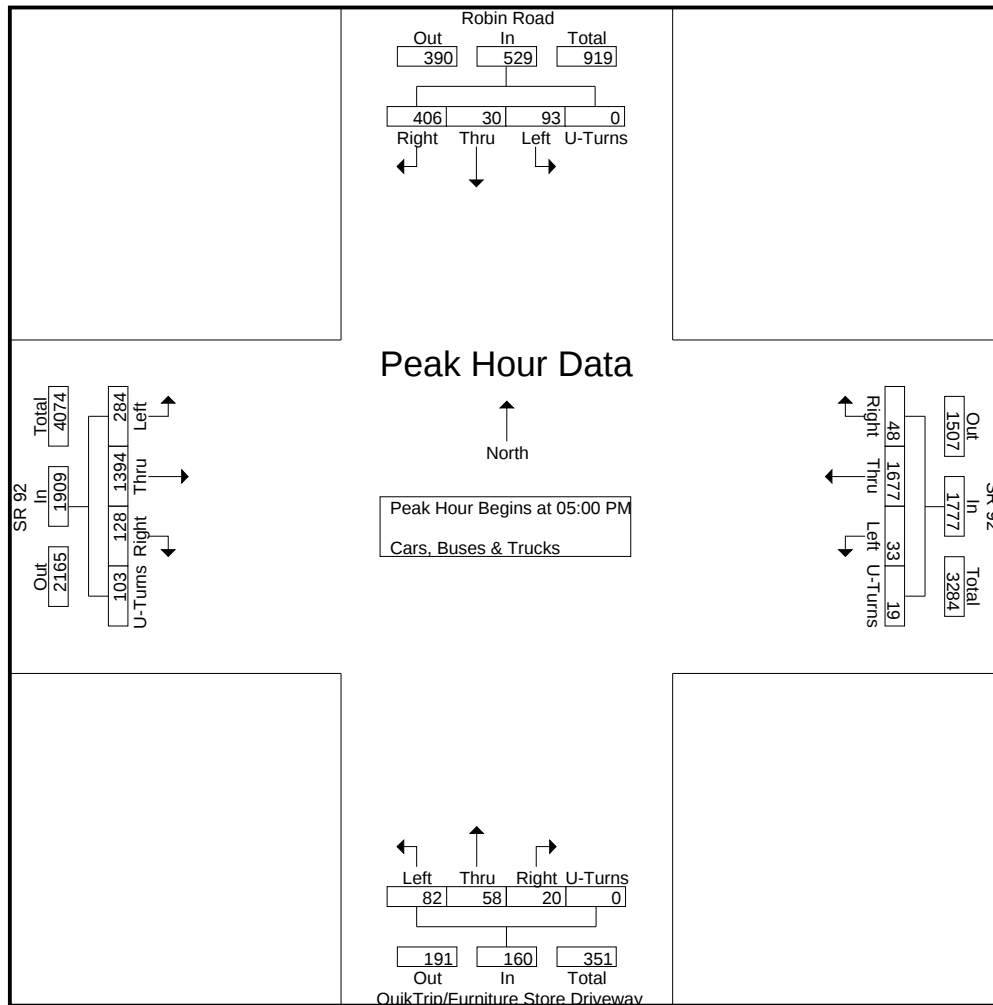
File Name : 20180160

Site Code : 20180160

Start Date : 7/10/2018

Page No : 4

	QuikTrip/Furniture Store Driveway Northbound					Robin Road Southbound					SR 92 Eastbound					SR 92 Westbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	17	13	12	0	42	20	7	93	0	120	78	332	22	20	452	8	413	11	6	438	1052
05:15 PM	31	17	0	0	48	24	6	119	0	149	68	366	41	24	499	5	422	11	1	439	1135
05:30 PM	16	18	3	0	37	28	8	106	0	142	65	362	33	26	486	10	415	11	7	443	1108
05:45 PM	18	10	5	0	33	21	9	88	0	118	73	334	32	33	472	10	427	15	5	457	1080
Total Volume	82	58	20	0	160	93	30	406	0	529	284	1394	128	103	1909	33	1677	48	19	1777	4375
% App. Total	51.2	36.2	12.5	0		17.6	5.7	76.7	0		14.9	73	6.7	5.4		1.9	94.4	2.7	1.1		
PHF	.661	.806	.417	.000	.833	.830	.833	.853	.000	.888	.910	.952	.780	.780	.956	.825	.982	.800	.679	.972	.964



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TMC Data

SR 92 @ Kroger's Eastern Driveway

07-09am - 12-02 pm - 04-06pm

File Name : 20180161.

Site Code : 20180161

Start Date : 7/10/2018

Page No : 1

Groups Printed- Cars, Buses & Trucks

Start Time	Northbound				Kroger Eastern Driveway Southbound				SR 92 Eastbound				SR 92 Westbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	0	0	0	0	0	5	5	0	460	0	460	0	279	9	288	753
07:15 AM	0	0	0	0	0	0	4	4	0	531	0	531	0	284	11	295	830
07:30 AM	0	0	0	0	0	0	7	7	0	527	0	527	0	380	10	390	924
07:45 AM	0	0	0	0	0	0	2	2	0	469	0	469	0	385	12	397	868
Total	0	0	0	0	0	0	18	18	0	1987	0	1987	0	1328	42	1370	3375
08:00 AM	0	0	0	0	0	0	4	4	0	453	0	453	0	334	12	346	803
08:15 AM	0	0	0	0	0	0	7	7	0	468	0	468	0	300	10	310	785
08:30 AM	0	0	0	0	0	0	5	5	0	458	0	458	0	279	9	288	751
08:45 AM	0	0	0	0	0	0	6	6	0	401	0	401	0	251	11	262	669
Total	0	0	0	0	0	0	22	22	0	1780	0	1780	0	1164	42	1206	3008
*** BREAK ***																	
12:00 PM	0	0	0	0	0	0	21	21	0	354	0	354	0	407	22	429	804
12:15 PM	0	0	0	0	0	0	21	21	0	346	0	346	0	412	18	430	797
12:30 PM	0	0	0	0	0	0	25	25	0	372	0	372	0	450	16	466	863
12:45 PM	0	0	0	0	0	0	15	15	0	378	0	378	0	477	17	494	887
Total	0	0	0	0	0	0	82	82	0	1450	0	1450	0	1746	73	1819	3351
01:00 PM	0	0	0	0	0	0	33	33	0	333	0	333	0	460	17	477	843
01:15 PM	0	0	0	0	0	0	24	24	0	307	0	307	0	353	20	373	704
01:30 PM	0	0	0	0	0	0	21	21	0	298	0	298	0	328	23	351	670
01:45 PM	0	0	0	0	0	0	24	24	0	303	0	303	0	344	24	368	695
Total	0	0	0	0	0	0	102	102	0	1241	0	1241	0	1485	84	1569	2912
*** BREAK ***																	
04:00 PM	0	0	0	0	0	0	20	20	0	348	0	348	0	353	26	379	747
04:15 PM	0	0	0	0	0	0	30	30	0	346	0	346	0	440	21	461	837
04:30 PM	0	0	0	0	0	0	35	35	0	387	0	387	0	493	20	513	935
04:45 PM	0	0	0	0	0	0	29	29	0	402	0	402	0	456	23	479	910
Total	0	0	0	0	0	0	114	114	0	1483	0	1483	0	1742	90	1832	3429
05:00 PM	0	0	0	0	0	0	42	42	0	452	0	452	0	511	22	533	1027
05:15 PM	0	0	0	0	0	0	41	41	0	499	0	499	0	565	26	591	1131
05:30 PM	0	0	0	0	0	0	44	44	0	486	0	486	0	545	23	568	1098
05:45 PM	0	0	0	0	0	0	35	35	0	472	0	472	0	535	26	561	1068
Total	0	0	0	0	0	0	162	162	0	1909	0	1909	0	2156	97	2253	4324
Grand Total	0	0	0	0	0	0	500	500	0	9850	0	9850	0	9621	428	10049	20399
Apprch %	0	0	0		0	0	100		0	100	0		0	95.7	4.3		
Total %	0	0	0		0	0	2.5		0	48.3	0		0	47.2	2.1	49.3	

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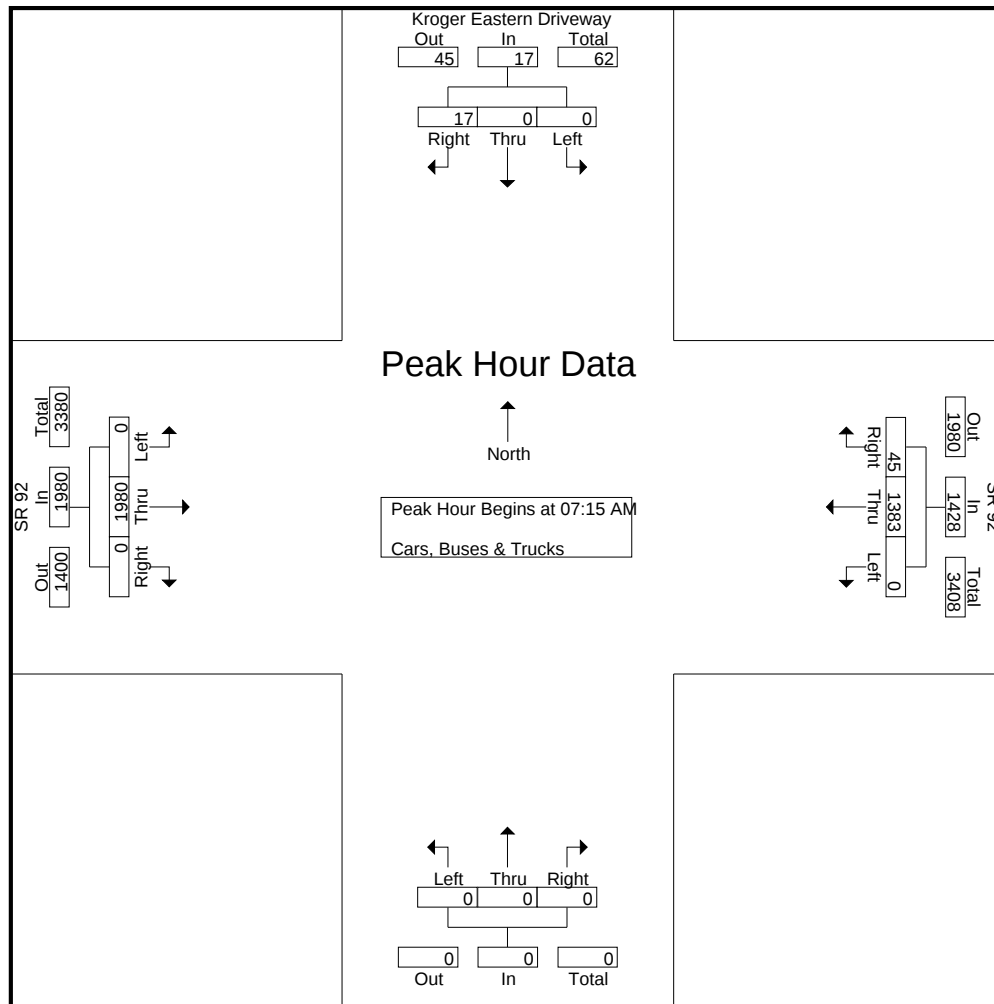
File Name : 20180161.

Site Code : 20180161

Start Date : 7/10/2018

Page No : 2

	Northbound				Kroger Eastern Driveway Southbound				SR 92 Eastbound				SR 92 Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	4	4	0	531	0	531	0	284	11	295	830
07:30 AM	0	0	0	0	0	0	7	7	0	527	0	527	0	380	10	390	924
07:45 AM	0	0	0	0	0	0	2	2	0	469	0	469	0	385	12	397	868
08:00 AM	0	0	0	0	0	0	4	4	0	453	0	453	0	334	12	346	803
Total Volume	0	0	0	0	0	0	17	17	0	1980	0	1980	0	1383	45	1428	3425
% App. Total	0	0	0		0	0	100		0	100	0		0	96.8	3.2		
PHF	.000	.000	.000	.000	.000	.000	.607	.607	.000	.932	.000	.932	.000	.898	.938	.899	.927



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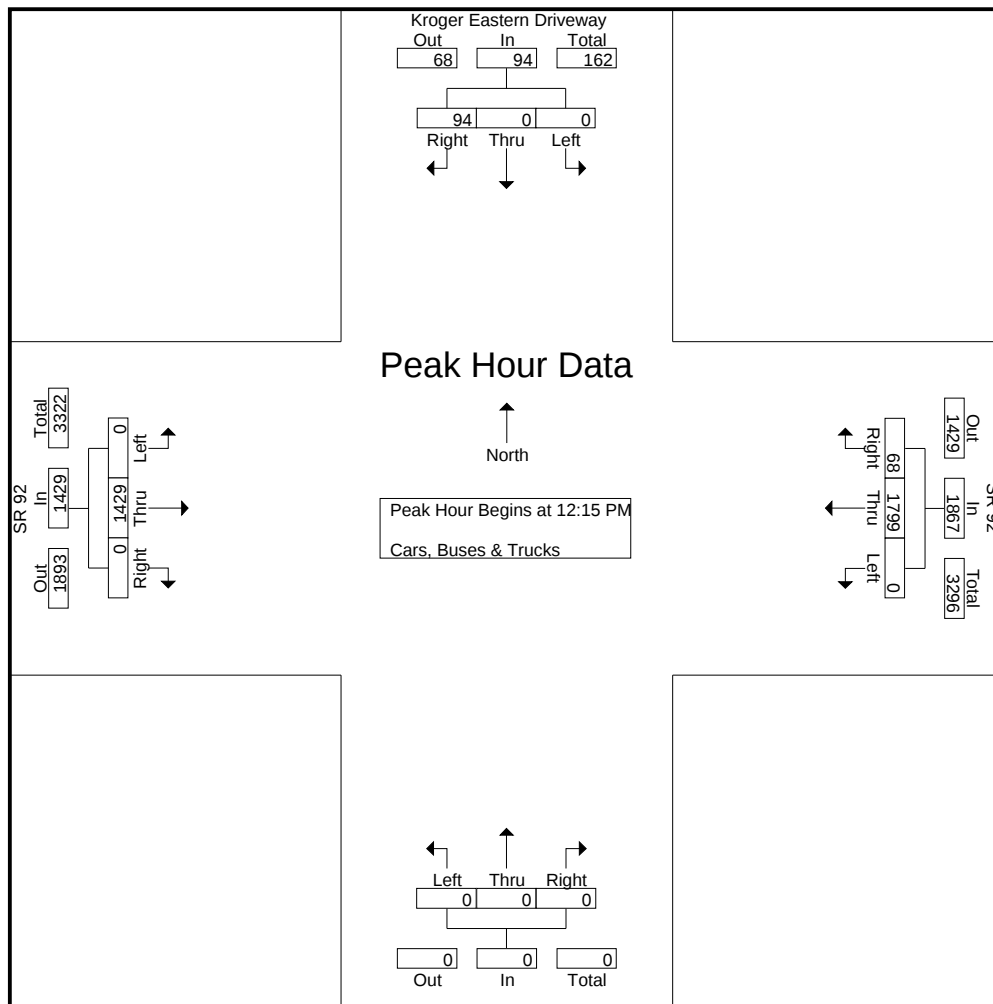
File Name : 20180161.

Site Code : 20180161

Start Date : 7/10/2018

Page No : 3

	Northbound				Kroger Eastern Driveway Southbound				SR 92 Eastbound				SR 92 Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:15 PM																	
12:15 PM	0	0	0	0	0	0	21	21	0	346	0	346	0	412	18	430	797
12:30 PM	0	0	0	0	0	0	25	25	0	372	0	372	0	450	16	466	863
12:45 PM	0	0	0	0	0	0	15	15	0	378	0	378	0	477	17	494	887
01:00 PM	0	0	0	0	0	0	33	33	0	333	0	333	0	460	17	477	843
Total Volume	0	0	0	0	0	0	94	94	0	1429	0	1429	0	1799	68	1867	3390
% App. Total	0	0	0		0	0	100		0	100	0		0	96.4	3.6		
PHF	.000	.000	.000	.000	.000	.000	.712	.712	.000	.945	.000	.945	.000	.943	.944	.945	.955



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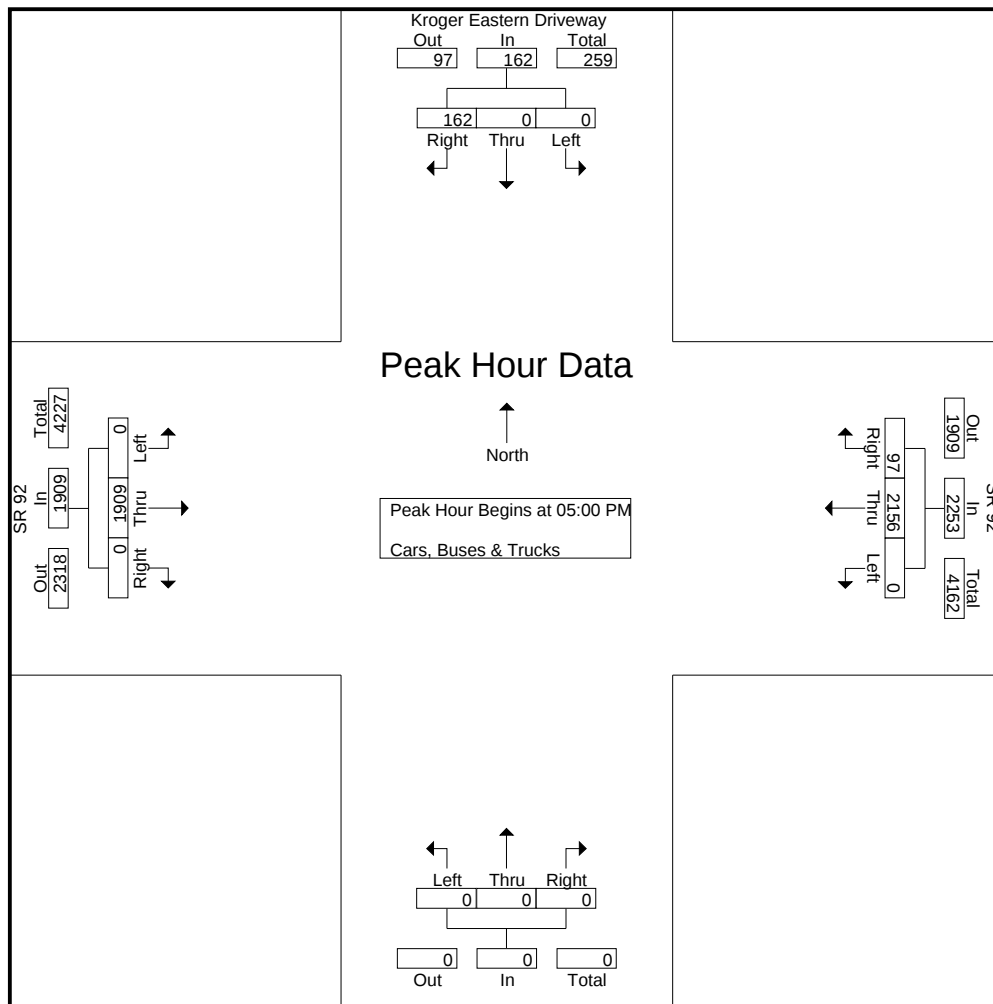
File Name : 20180161.

Site Code : 20180161

Start Date : 7/10/2018

Page No : 4

	Northbound				Kroger Eastern Driveway Southbound				SR 92 Eastbound				SR 92 Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	42	42	0	452	0	452	0	511	22	533	1027
05:15 PM	0	0	0	0	0	0	41	41	0	499	0	499	0	565	26	591	1131
05:30 PM	0	0	0	0	0	0	44	44	0	486	0	486	0	545	23	568	1098
05:45 PM	0	0	0	0	0	0	35	35	0	472	0	472	0	535	26	561	1068
Total Volume	0	0	0	0	0	0	162	162	0	1909	0	1909	0	2156	97	2253	4324
% App. Total	0	0	0		0	0	100		0	100	0		0	95.7	4.3		
PHF	.000	.000	.000	.000	.000	.000	.920	.920	.000	.956	.000	.956	.000	.954	.933	.953	.956



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TMC Data

SR 92 @ Kroger's Western Driveway/

Wendy's Driveway

07-09am - 12-02 pm - 04-06pm

File Name : 20180162.

Site Code : 20180162

Start Date : 7/10/2018

Page No : 1

Groups Printed- Cars, Buses & Trucks

	Northbound				Kroger West Drwy/Wendy's Drwy Southbound				SR 92 Eastbound				SR 92 Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	16	16	0	460	0	460	0	265	12	277	753
07:15 AM	0	0	0	0	0	0	12	12	0	531	0	531	0	278	9	287	830
07:30 AM	0	0	0	0	0	0	13	13	0	527	0	527	0	372	7	379	919
07:45 AM	0	0	0	0	0	0	12	12	0	469	0	469	0	380	13	393	874
Total	0	0	0	0	0	0	53	53	0	1987	0	1987	0	1295	41	1336	3376
08:00 AM	0	0	0	0	0	0	16	16	0	453	0	453	0	325	12	337	806
08:15 AM	0	0	0	0	0	0	10	10	0	468	0	468	0	295	10	305	783
08:30 AM	0	0	0	0	0	0	13	13	0	458	0	458	0	270	12	282	753
08:45 AM	0	0	0	0	0	0	12	12	0	401	0	401	0	245	22	267	680
Total	0	0	0	0	0	0	51	51	0	1780	0	1780	0	1135	56	1191	3022
*** BREAK ***																	
12:00 PM	0	0	0	0	0	0	17	17	0	354	0	354	0	407	22	429	800
12:15 PM	0	0	0	0	0	0	20	20	0	346	0	346	0	405	27	432	798
12:30 PM	0	0	0	0	0	0	22	22	0	372	0	372	0	440	31	471	865
12:45 PM	0	0	0	0	0	0	24	24	0	378	0	378	0	465	25	490	892
Total	0	0	0	0	0	0	83	83	0	1450	0	1450	0	1717	105	1822	3355
01:00 PM	0	0	0	0	0	0	27	27	0	333	0	333	0	445	23	468	828
01:15 PM	0	0	0	0	0	0	23	23	0	307	0	307	0	345	30	375	705
01:30 PM	0	0	0	0	0	0	30	30	0	298	0	298	0	316	28	344	672
01:45 PM	0	0	0	0	0	0	14	14	0	303	0	303	0	349	23	372	689
Total	0	0	0	0	0	0	94	94	0	1241	0	1241	0	1455	104	1559	2894
*** BREAK ***																	
04:00 PM	0	0	0	0	0	0	26	26	0	348	0	348	0	348	35	383	757
04:15 PM	0	0	0	0	0	0	28	28	0	346	0	346	0	428	28	456	830
04:30 PM	0	0	0	0	0	0	31	31	0	387	0	387	0	477	37	514	932
04:45 PM	0	0	0	0	0	0	25	25	0	402	0	402	0	449	40	489	916
Total	0	0	0	0	0	0	110	110	0	1483	0	1483	0	1702	140	1842	3435
05:00 PM	0	0	0	0	0	0	28	28	0	452	0	452	0	500	43	543	1023
05:15 PM	0	0	0	0	0	0	26	26	0	499	0	499	0	560	36	596	1121
05:30 PM	0	0	0	0	0	0	27	27	0	486	0	486	0	536	27	563	1076
05:45 PM	0	0	0	0	0	0	26	26	0	472	0	472	0	530	36	566	1064
Total	0	0	0	0	0	0	107	107	0	1909	0	1909	0	2126	142	2268	4284
Grand Total	0	0	0	0	0	0	498	498	0	9850	0	9850	0	9430	588	10018	20366
Apprch %	0	0	0		0	0	100		0	100	0		0	94.1	5.9		
Total %	0	0	0		0	0	2.4		0	48.4	0		0	46.3	2.9	49.2	

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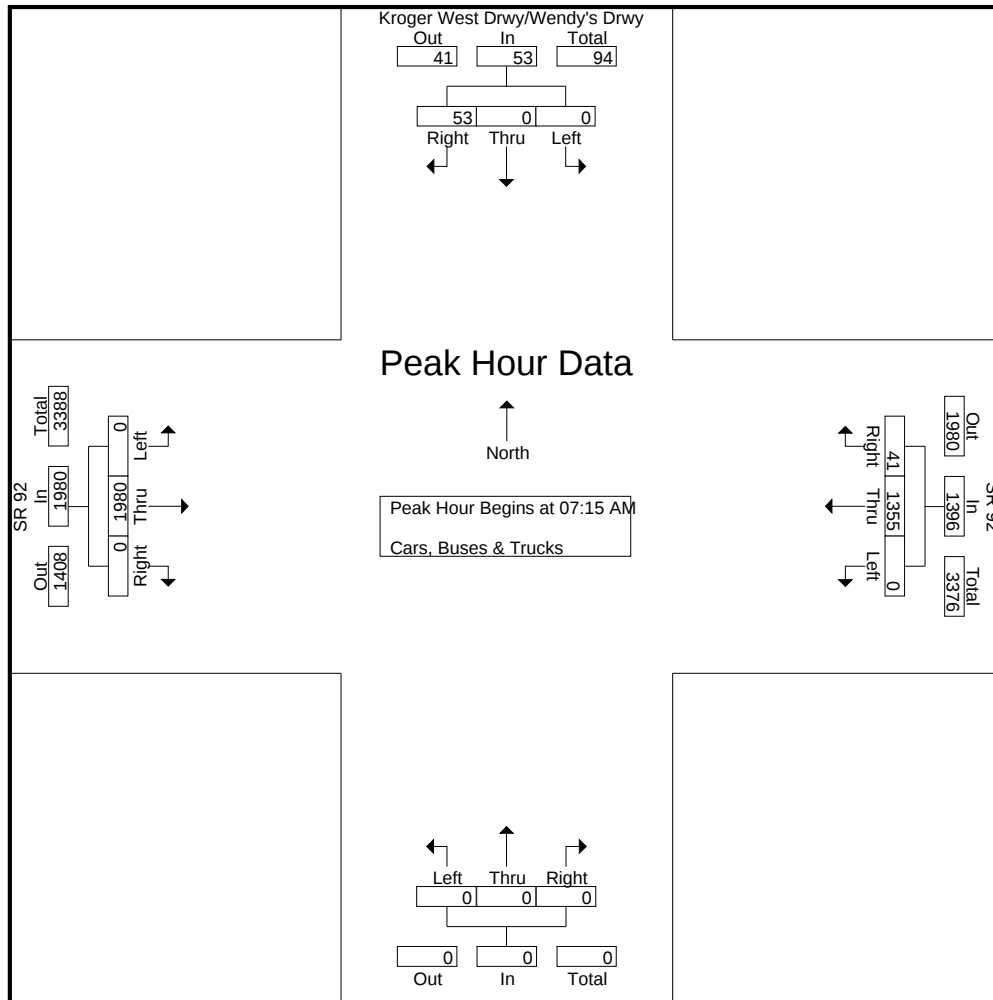
File Name : 20180162.

Site Code : 20180162

Start Date : 7/10/2018

Page No : 2

	Northbound				Kroger West Drwy/Wendy's Drwy Southbound				SR 92 Eastbound				SR 92 Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	12	12	0	531	0	531	0	278	9	287	830
07:30 AM	0	0	0	0	0	0	13	13	0	527	0	527	0	372	7	379	919
07:45 AM	0	0	0	0	0	0	12	12	0	469	0	469	0	380	13	393	874
08:00 AM	0	0	0	0	0	0	16	16	0	453	0	453	0	325	12	337	806
Total Volume	0	0	0	0	0	0	53	53	0	1980	0	1980	0	1355	41	1396	3429
% App. Total	0	0	0	0	0	0	100		0	100	0		0	97.1	2.9		
PHF	.000	.000	.000	.000	.000	.000	.828	.828	.000	.932	.000	.932	.000	.891	.788	.888	.933



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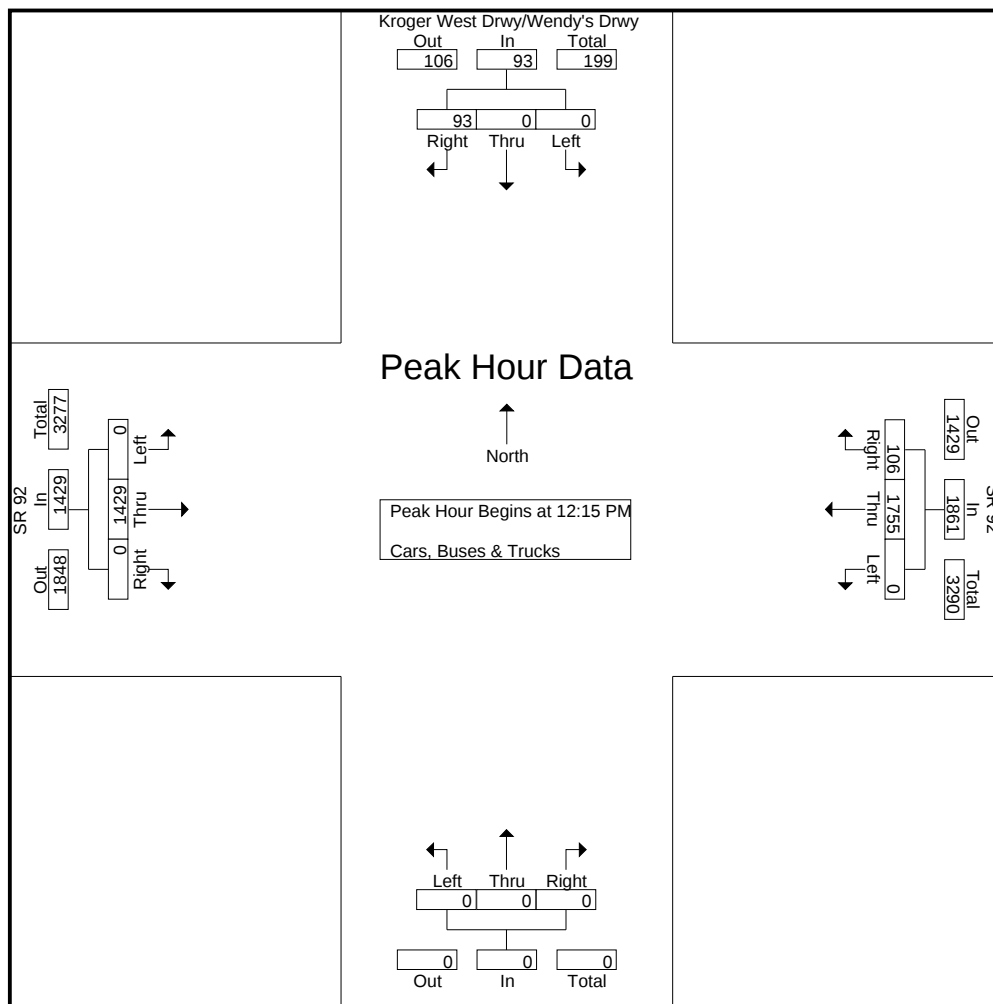
File Name : 20180162.

Site Code : 20180162

Start Date : 7/10/2018

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	Northbound				Kroger West Drwy/Wendy's Drwy Southbound				SR 92 Eastbound				SR 92 Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:15 PM																	
12:15 PM	0	0	0	0	0	0	20	20	0	346	0	346	0	405	27	432	798
12:30 PM	0	0	0	0	0	0	22	22	0	372	0	372	0	440	31	471	865
12:45 PM	0	0	0	0	0	0	24	24	0	378	0	378	0	465	25	490	892
01:00 PM	0	0	0	0	0	0	27	27	0	333	0	333	0	445	23	468	828
Total Volume	0	0	0	0	0	0	93	93	0	1429	0	1429	0	1755	106	1861	3383
% App. Total	0	0	0	0	0	0	100	100	0	100	0	100	0	94.3	5.7	100	100
PHF	.000	.000	.000	.000	.000	.000	.861	.861	.000	.945	.000	.945	.000	.944	.855	.949	.948



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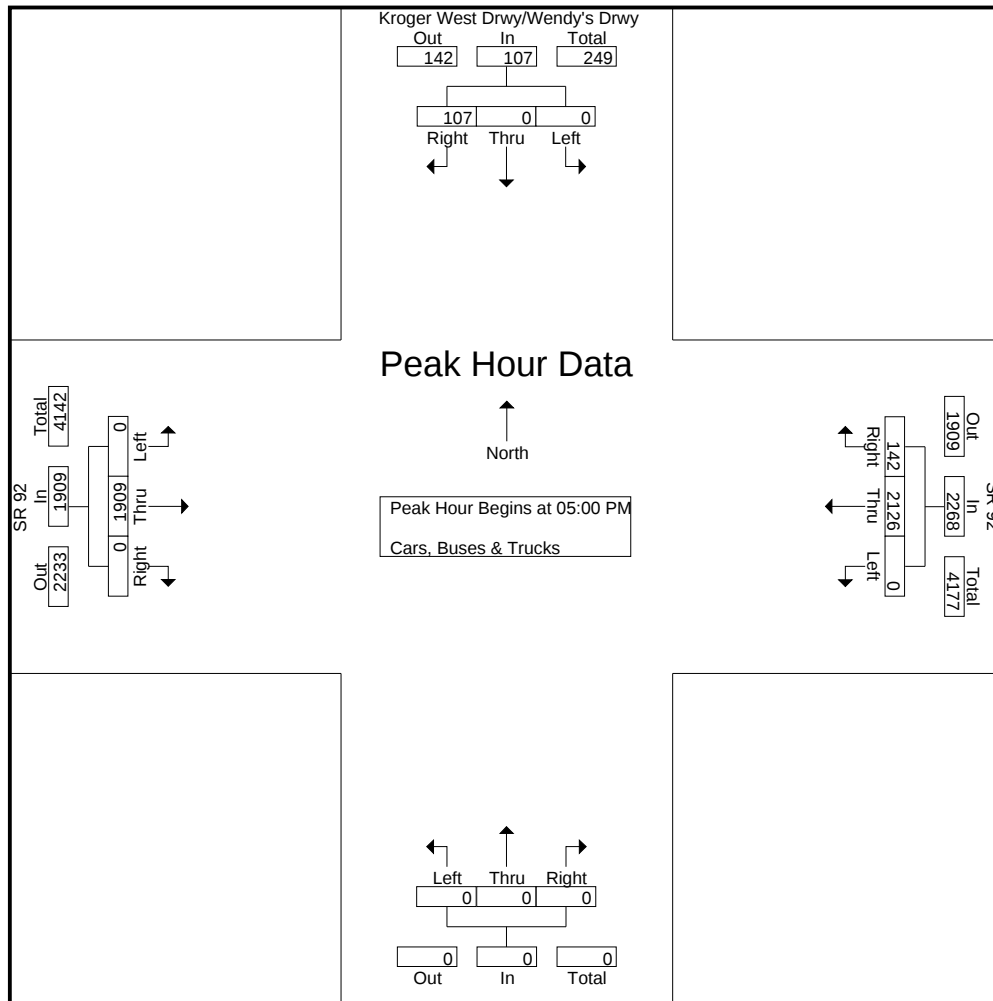
File Name : 20180162.

Site Code : 20180162

Start Date : 7/10/2018

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	Northbound				Kroger West Drwy/Wendy's Drwy Southbound				SR 92 Eastbound				SR 92 Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	28	28	0	452	0	452	0	500	43	543	1023
05:15 PM	0	0	0	0	0	0	26	26	0	499	0	499	0	560	36	596	1121
05:30 PM	0	0	0	0	0	0	27	27	0	486	0	486	0	536	27	563	1076
05:45 PM	0	0	0	0	0	0	26	26	0	472	0	472	0	530	36	566	1064
Total Volume	0	0	0	0	0	0	107	107	0	1909	0	1909	0	2126	142	2268	4284
% App. Total	0	0	0		0	0	100		0	100	0		0	93.7	6.3		
PHF	.000	.000	.000	.000	.000	.000	.955	.955	.000	.956	.000	.956	.000	.949	.826	.951	.955



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TMC Data

SR 92 @ Bells Ferry Road

07-09am | 04-06pm

File Name : 20180324

Site Code : 20180324

Start Date : 12/6/2018

Page No : 1

Groups Printed- Cars, Buses & Trucks

	Bells Ferry Road Northbound				Bells Ferry Road Southbound				SR 92 Eastbound				SR 92 Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	29	65	12	106	53	195	4	252	14	223	101	338	21	147	27	195	891
07:15 AM	27	60	23	110	66	201	4	271	27	276	115	418	27	153	23	203	1002
07:30 AM	43	66	27	136	77	213	8	298	32	314	97	443	29	164	21	214	1091
07:45 AM	35	87	37	159	76	216	7	299	24	378	97	499	29	180	24	233	1190
Total	134	278	99	511	272	825	23	1120	97	1191	410	1698	106	644	95	845	4174
08:00 AM	33	78	29	140	69	221	8	298	27	353	76	456	26	191	22	239	1133
08:15 AM	26	65	33	124	57	215	9	281	23	291	65	379	24	203	17	244	1028
08:30 AM	29	72	28	129	63	195	5	263	26	289	53	368	29	195	16	240	1000
08:45 AM	36	70	21	127	47	178	7	232	28	285	48	361	28	191	13	232	952
Total	124	285	111	520	236	809	29	1074	104	1218	242	1564	107	780	68	955	4113
*** BREAK ***																	
04:00 PM	59	179	26	264	51	102	21	174	65	221	36	322	35	290	47	372	1132
04:15 PM	63	198	31	292	46	111	19	176	69	236	39	344	49	293	43	385	1197
04:30 PM	66	211	25	302	35	104	21	160	71	247	33	351	53	298	48	399	1212
04:45 PM	78	218	30	326	42	97	25	164	72	235	40	347	49	304	53	406	1243
Total	266	806	112	1184	174	414	86	674	277	939	148	1364	186	1185	191	1562	4784
05:00 PM	83	223	35	341	47	101	22	170	93	259	45	397	43	335	49	427	1335
05:15 PM	78	231	41	350	49	115	24	188	104	279	53	436	45	357	41	443	1417
05:30 PM	84	235	37	356	46	121	25	192	107	289	61	457	48	351	48	447	1452
05:45 PM	80	241	31	352	44	131	26	201	112	280	58	450	53	341	56	450	1453
Total	325	930	144	1399	186	468	97	751	416	1107	217	1740	189	1384	194	1767	5657
Grand Total	849	2299	466	3614	868	2516	235	3619	894	4455	1017	6366	588	3993	548	5129	18728
Apprch %	23.5	63.6	12.9		24	69.5	6.5		14	70	16		11.5	77.9	10.7		
Total %	4.5	12.3	2.5	19.3	4.6	13.4	1.3	19.3	4.8	23.8	5.4	34	3.1	21.3	2.9	27.4	

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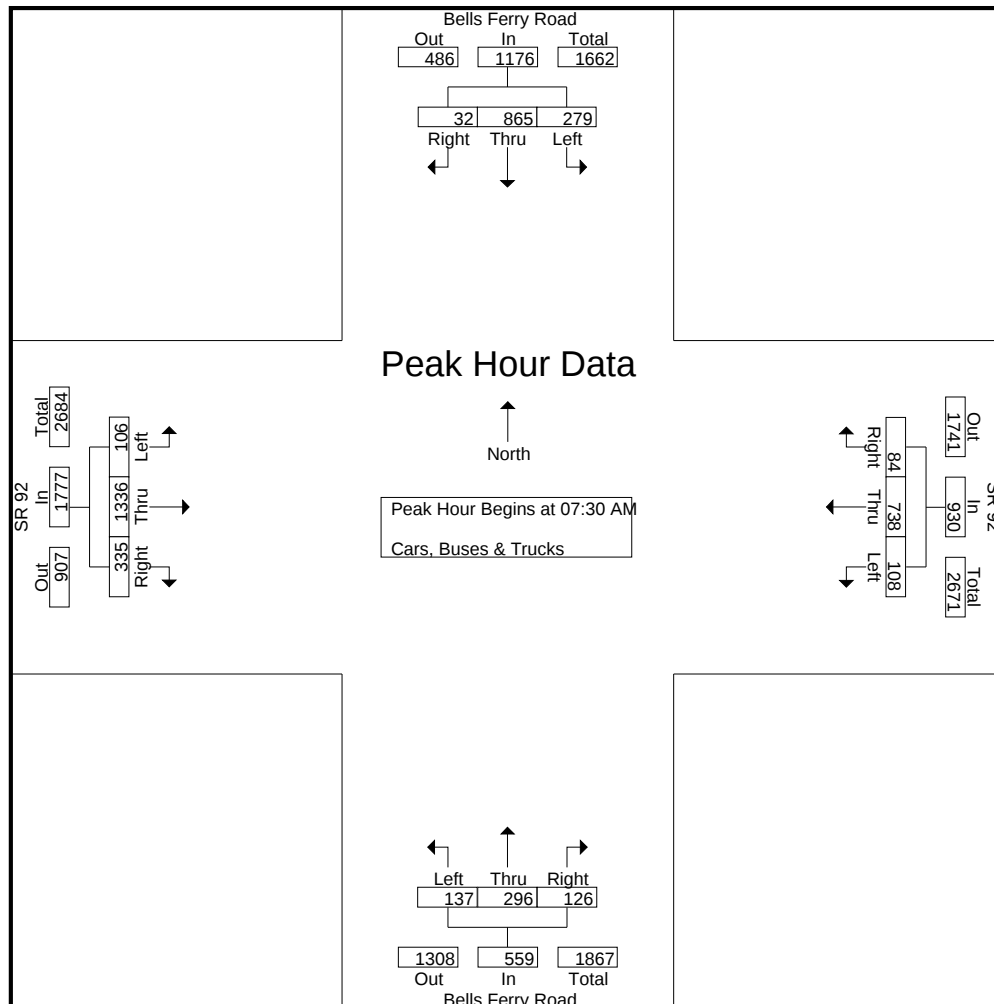
File Name : 20180324

Site Code : 20180324

Start Date : 12/6/2018

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	Bells Ferry Road Northbound				Bells Ferry Road Southbound				SR 92 Eastbound				SR 92 Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	43	66	27	136	77	213	8	298	32	314	97	443	29	164	21	214	1091
07:45 AM	35	87	37	159	76	216	7	299	24	378	97	499	29	180	24	233	1190
08:00 AM	33	78	29	140	69	221	8	298	27	353	76	456	26	191	22	239	1133
08:15 AM	26	65	33	124	57	215	9	281	23	291	65	379	24	203	17	244	1028
Total Volume	137	296	126	559	279	865	32	1176	106	1336	335	1777	108	738	84	930	4442
% App. Total	24.5	53	22.5		23.7	73.6	2.7		6	75.2	18.9		11.6	79.4	9		
PHF	.797	.851	.851	.879	.906	.979	.889	.983	.828	.884	.863	.890	.931	.909	.875	.953	.933



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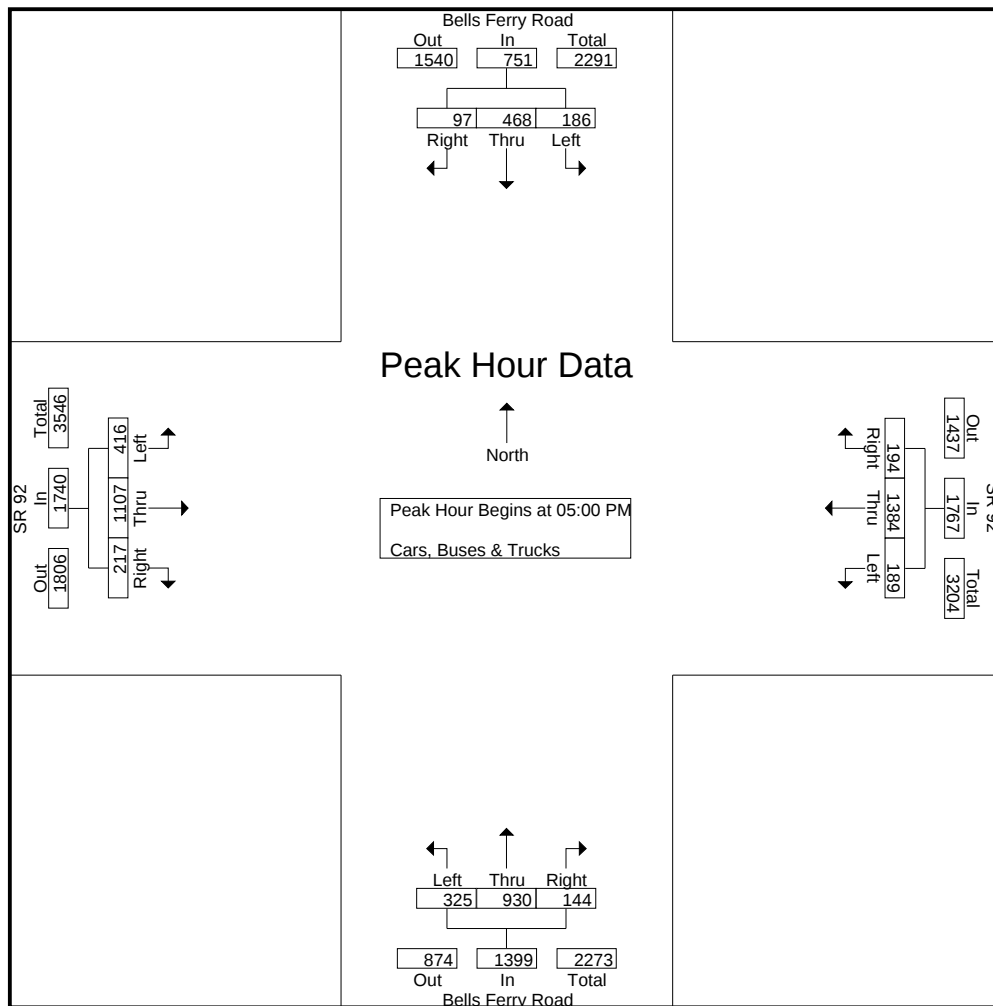
File Name : 20180324

Site Code : 20180324

Start Date : 12/6/2018

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	Bells Ferry Road Northbound				Bells Ferry Road Southbound				SR 92 Eastbound				SR 92 Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	83	223	35	341	47	101	22	170	93	259	45	397	43	335	49	427	1335
05:15 PM	78	231	41	350	49	115	24	188	104	279	53	436	45	357	41	443	1417
05:30 PM	84	235	37	356	46	121	25	192	107	289	61	457	48	351	48	447	1452
05:45 PM	80	241	31	352	44	131	26	201	112	280	58	450	53	341	56	450	1453
Total Volume	325	930	144	1399	186	468	97	751	416	1107	217	1740	189	1384	194	1767	5657
% App. Total	23.2	66.5	10.3		24.8	62.3	12.9		23.9	63.6	12.5		10.7	78.3	11		
PHF	.967	.965	.878	.982	.949	.893	.933	.934	.929	.958	.889	.952	.892	.969	.866	.982	.973



EXISTING INTERSECTION TRAFFIC ANALYSIS

Intersection

Int Delay, s/veh 0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	16	36	323	506	17
Future Vol, veh/h	13	16	36	323	506	17
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	-	-	-	-	135
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	18	40	363	569	19

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1022	294	588
Stage 1	579	-	-
Stage 2	443	-	-
Critical Hdwy	6.63	6.93	4.13
Critical Hdwy Stg 1	5.83	-	-
Critical Hdwy Stg 2	5.43	-	-
Follow-up Hdwy	3.519	3.319	2.219
Pot Cap-1 Maneuver	246	703	985
Stage 1	525	-	-
Stage 2	646	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	233	703	985
Mov Cap-2 Maneuver	233	-	-
Stage 1	498	-	-
Stage 2	646	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.7	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	985	-	369	-	-
HCM Lane V/C Ratio	0.041	-	0.088	-	-
HCM Control Delay (s)	8.8	0	15.7	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	4	0	37	0	0	0	62	355	2	0	491	30
Future Vol, veh/h	4	0	37	0	0	0	62	355	2	0	491	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	41	0	0	0	68	390	2	0	540	33

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1084	1085	287	797	1100	391	573	0	0	392	0	0
Stage 1	557	557	-	527	527	-	-	-	-	-	-	-
Stage 2	527	528	-	270	573	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	183	216	710	291	212	657	998	-	-	1165	-	-
Stage 1	483	511	-	534	527	-	-	-	-	-	-	-
Stage 2	534	527	-	713	503	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	171	197	710	256	194	657	998	-	-	1165	-	-
Mov Cap-2 Maneuver	171	197	-	256	194	-	-	-	-	-	-	-
Stage 1	441	511	-	488	481	-	-	-	-	-	-	-
Stage 2	488	481	-	672	503	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.2	0	1.3	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	998	-	-	543	-	1165	-
HCM Lane V/C Ratio	0.068	-	-	0.083	-	-	-
HCM Control Delay (s)	8.9	0	-	12.2	0	0	-
HCM Lane LOS	A	A	-	B	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	-	0	-

Timings
3: Robin Rd & SR 92

Existing AM Peak
01/08/2019

												
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	32	381	1472	95	5	37	876	22	31	16	43	28
Future Volume (vph)	32	381	1472	95	5	37	876	22	31	16	43	28
Lane Group Flow (vph)	0	444	1583	102	0	45	942	24	33	31	46	30
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	1	1	6		5	5	2		3	8	7	4
Permitted Phases	6	6		6	2	2		2	8		4	
Detector Phase	1	1	6	6	5	5	2	2	3	8	7	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	5.0	15.0	15.0	5.0	8.0	5.0	8.0
Minimum Split (s)	11.3	11.3	30.1	30.1	15.0	15.0	37.1	37.1	11.8	50.1	12.0	49.1
Total Split (s)	47.0	47.0	84.0	84.0	16.0	16.0	53.0	53.0	15.0	45.0	15.0	45.0
Total Split (%)	29.4%	29.4%	52.5%	52.5%	10.0%	10.0%	33.1%	33.1%	9.4%	28.1%	9.4%	28.1%
Yellow Time (s)	3.0	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0
All-Red Time (s)	3.3	3.3	1.6	1.6	3.5	3.5	1.6	1.6	3.8	4.1	4.0	4.1
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)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1	7.0	7.1
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	C-Min	C-Min	None	None	C-Min	C-Min	None	None	None	None
v/c Ratio		0.76	0.66	0.09		0.23	0.57	0.03	0.16	0.17	0.22	0.16
Control Delay		29.9	20.3	1.8		17.1	35.5	0.0	51.0	40.6	53.3	63.6
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		29.9	20.3	1.8		17.1	35.5	0.0	51.0	40.6	53.3	63.6
Queue Length 50th (ft)		221	486	0		11	377	0	30	17	42	30
Queue Length 95th (ft)		423	821	21		34	557	0	54	47	70	58
Internal Link Dist (ft)			238				2076			297		211
Turn Bay Length (ft)				150		365		305			80	
Base Capacity (vph)		613	2399	1111		228	1663	830	212	421	208	441
Starvation Cap Reductn		0	0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.72	0.66	0.09		0.20	0.57	0.03	0.16	0.07	0.22	0.07

Intersection Summary

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 10 (6%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Splits and Phases: 3: Robin Rd & SR 92



Timings
3: Robin Rd & SR 92

Existing AM Peak
01/08/2019

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	457
Future Volume (vph)	457
Lane Group Flow (vph)	491
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	8.0
Minimum Split (s)	49.1
Total Split (s)	45.0
Total Split (%)	28.1%
Yellow Time (s)	3.0
All-Red Time (s)	4.1
Lost Time Adjust (s)	0.0
Total Lost Time (s)	7.1
Lead/Lag	Lag
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	0.87
Control Delay	24.5
Queue Delay	0.0
Total Delay	24.5
Queue Length 50th (ft)	38
Queue Length 95th (ft)	167
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	721
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.68
Intersection Summary	

HCM Signalized Intersection Capacity Analysis

3: Robin Rd & SR 92

Existing AM Peak

01/08/2019

												
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	32	381	1472	95	5	37	876	22	31	16	13	43
Future Volume (vph)	32	381	1472	95	5	37	876	22	31	16	13	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0
Lane Util. Factor		1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		1.00
Frt		1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.93		1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95
Satd. Flow (prot)		1770	3539	1583		1770	3539	1583	1770	1737		1770
Flt Permitted		0.18	1.00	1.00		0.14	1.00	1.00	0.74	1.00		0.73
Satd. Flow (perm)		333	3539	1583		263	3539	1583	1374	1737		1355
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	34	410	1583	102	5	40	942	24	33	17	14	46
RTOR Reduction (vph)	0	0	0	34	0	0	0	13	0	13	0	0
Lane Group Flow (vph)	0	444	1583	68	0	45	942	11	33	18	0	46
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt
Protected Phases	1	1	6		5	5	2		3	8		7
Permitted Phases	6	6		6	2	2		2	8			4
Actuated Green, G (s)		118.0	105.9	105.9		79.5	73.9	73.9	21.8	15.5		22.0
Effective Green, g (s)		118.0	105.9	105.9		79.5	73.9	73.9	21.8	15.5		22.0
Actuated g/C Ratio		0.74	0.66	0.66		0.50	0.46	0.46	0.14	0.10		0.14
Clearance Time (s)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0
Vehicle Extension (s)		3.0	5.0	5.0		3.0	5.0	5.0	3.0	3.0		3.0
Lane Grp Cap (vph)		585	2342	1047		183	1634	731	202	168		202
v/s Ratio Prot		c0.18	0.45			0.01	0.27		0.01	0.01		c0.01
v/s Ratio Perm		c0.38		0.04		0.11		0.01	0.02			0.02
v/c Ratio		0.76	0.68	0.06		0.25	0.58	0.02	0.16	0.11		0.23
Uniform Delay, d1		26.0	16.6	9.6		21.0	31.6	23.3	60.8	65.9		61.1
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2		5.6	1.6	0.1		0.7	1.5	0.0	0.4	0.3		0.6
Delay (s)		31.6	18.1	9.7		21.8	33.1	23.4	61.2	66.2		61.7
Level of Service		C	B	A		C	C	C	E	E		E
Approach Delay (s)			20.5				32.3			63.6		
Approach LOS			C				C			E		
Intersection Summary												
HCM 2000 Control Delay			32.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			160.0				Sum of lost time (s)			26.7		
Intersection Capacity Utilization			101.5%				ICU Level of Service			G		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Robin Rd & SR 92

Existing AM Peak
01/08/2019

Movement	SBT	SBR
Lane Configurations	↑	↑
Traffic Volume (vph)	28	457
Future Volume (vph)	28	457
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	7.1	7.1
Lane Util. Factor	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	1863	1583
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1863	1583
Peak-hour factor, PHF	0.93	0.93
Adj. Flow (vph)	30	491
RTOR Reduction (vph)	0	409
Lane Group Flow (vph)	30	82
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	15.7	15.7
Effective Green, g (s)	15.7	15.7
Actuated g/C Ratio	0.10	0.10
Clearance Time (s)	7.1	7.1
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	182	155
v/s Ratio Prot	0.02	
v/s Ratio Perm		0.05
v/c Ratio	0.16	0.53
Uniform Delay, d1	66.1	68.6
Progression Factor	1.00	1.00
Incremental Delay, d2	0.4	3.2
Delay (s)	66.6	71.8
Level of Service	E	E
Approach Delay (s)	70.7	
Approach LOS	E	
Intersection Summary		

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑			↑
Traffic Vol, veh/h	0	1980	1383	45	0	17
Future Vol, veh/h	0	1980	1383	45	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2129	1487	48	0	18

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 744
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.94
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.32
Pot Cap-1 Maneuver	0	-	0 0 357
Stage 1	0	-	0 0 -
Stage 2	0	-	0 0 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- - 357
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.6
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	357
HCM Lane V/C Ratio	-	-	0.051
HCM Control Delay (s)	-	-	15.6
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.2

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1980	1355	41	0	53
Future Vol, veh/h	0	1980	1355	41	0	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	100	-	-	105	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2129	1457	44	0	57

Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	-	0	-	0	-	729
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	0	365
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	365
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.7
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	365
HCM Lane V/C Ratio	-	-	0.156
HCM Control Delay (s)	-	-	16.7
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.5

Timings

6: Bells Ferry Rd & SR 92

Existing AM Peak
01/08/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	1336	335	108	738	84	137	296	126	279	865	32
Future Volume (vph)	106	1336	335	108	738	84	137	296	126	279	865	32
Lane Group Flow (vph)	114	1437	360	116	794	90	147	318	135	300	930	34
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	8.0	15.0	15.0	8.0	15.0	15.0	8.0	15.0	15.0	8.0	15.0	15.0
Minimum Split (s)	14.0	48.0	48.0	14.0	50.0	50.0	15.0	48.8	48.8	15.0	50.8	50.8
Total Split (s)	25.0	85.0	85.0	20.0	80.0	80.0	25.0	50.0	50.0	25.0	50.0	50.0
Total Split (%)	13.9%	47.2%	47.2%	11.1%	44.4%	44.4%	13.9%	27.8%	27.8%	13.9%	27.8%	27.8%
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	4.5	4.3	4.3	4.5	4.3	4.3
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.19	0.91	0.44	0.54	0.66	0.14	0.59	0.67	0.40	0.42	0.98	0.06
Control Delay	68.3	55.4	15.7	90.9	52.5	0.5	90.5	81.1	10.7	65.3	89.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	55.4	15.7	90.9	52.5	0.5	90.5	81.1	10.7	65.3	89.3	0.2
Queue Length 50th (ft)	60	825	119	70	420	0	88	191	0	161	580	0
Queue Length 95th (ft)	101	#973	216	106	446	0	127	240	55	221	#774	0
Internal Link Dist (ft)		2076			1139			943			995	
Turn Bay Length (ft)	540		280	465		230	270		645	485		210
Base Capacity (vph)	585	1587	823	267	1435	731	343	849	490	707	946	529
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.91	0.44	0.43	0.55	0.12	0.43	0.37	0.28	0.42	0.98	0.06

Intersection Summary

Cycle Length: 180

Actuated Cycle Length: 180

Offset: 20 (11%), Referenced to phase 2:WBT and 6:EBT, Start of Green

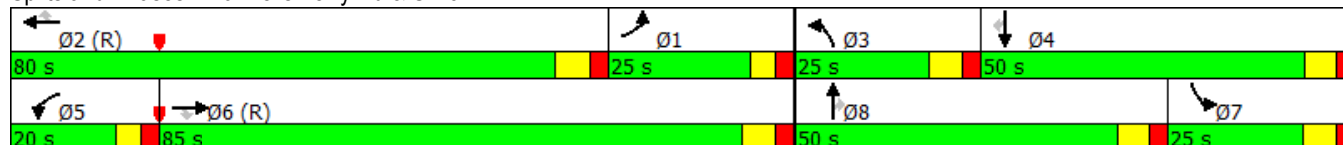
Natural Cycle: 150

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 6: Bells Ferry Rd & SR 92



HCM Signalized Intersection Capacity Analysis

6: Bells Ferry Rd & SR 92

Existing AM Peak

01/08/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	1336	335	108	738	84	137	296	126	279	865	32
Future Volume (vph)	106	1336	335	108	738	84	137	296	126	279	865	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	114	1437	360	116	794	90	147	318	135	300	930	34
RTOR Reduction (vph)	0	0	113	0	0	59	0	0	117	0	0	25
Lane Group Flow (vph)	114	1437	247	116	794	31	147	318	18	300	930	9
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	30.7	80.7	80.7	11.3	61.3	61.3	13.0	24.1	24.1	37.1	48.2	48.2
Effective Green, g (s)	30.7	80.7	80.7	11.3	61.3	61.3	13.0	24.1	24.1	37.1	48.2	48.2
Actuated g/C Ratio	0.17	0.45	0.45	0.06	0.34	0.34	0.07	0.13	0.13	0.21	0.27	0.27
Clearance Time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	585	1586	709	215	1205	539	247	473	211	707	947	423
v/s Ratio Prot	0.03	c0.41		0.03	c0.22		0.04	c0.09		0.09	c0.26	
v/s Ratio Perm			0.16			0.02			0.01			0.01
v/c Ratio	0.19	0.91	0.35	0.54	0.66	0.06	0.60	0.67	0.09	0.42	0.98	0.02
Uniform Delay, d1	64.0	46.1	32.5	81.8	50.5	39.9	80.9	74.2	68.3	62.2	65.5	48.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	9.0	1.4	2.6	2.8	0.2	3.8	4.9	0.4	0.4	24.9	0.0
Delay (s)	64.2	55.1	33.8	84.4	53.3	40.1	84.8	79.1	68.7	62.6	90.4	48.6
Level of Service	E	E	C	F	D	D	F	E	E	E	F	D
Approach Delay (s)		51.7			55.7			78.1			82.7	
Approach LOS		D			E			E			F	
Intersection Summary												
HCM 2000 Control Delay			64.0				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			180.0				Sum of lost time (s)			26.8		
Intersection Capacity Utilization			94.1%				ICU Level of Service			F		
Analysis Period (min)			15									

c Critical Lane Group

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	41	42	316	327	37
Future Vol, veh/h	37	41	42	316	327	37
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	-	-	-	-	135
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	44	45	340	352	40

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	802	196	391
Stage 1	372	-	-
Stage 2	430	-	-
Critical Hdwy	6.63	6.93	4.13
Critical Hdwy Stg 1	5.83	-	-
Critical Hdwy Stg 2	5.43	-	-
Follow-up Hdwy	3.519	3.319	2.219
Pot Cap-1 Maneuver	337	813	1166
Stage 1	668	-	-
Stage 2	655	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	321	813	1166
Mov Cap-2 Maneuver	321	-	-
Stage 1	668	-	-
Stage 2	624	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.3	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1166	-	471	-	-
HCM Lane V/C Ratio	0.039	-	0.178	-	-
HCM Control Delay (s)	8.2	0	14.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	71	9	0	0	55	342	6	1	332	29
Future Vol, veh/h	16	0	71	9	0	0	55	342	6	1	332	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	76	10	0	0	59	364	6	1	353	31

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	855	858	192	663	870	367	384	0	0	370	0	0
Stage 1	371	371	-	484	484	-	-	-	-	-	-	-
Stage 2	484	487	-	179	386	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	265	294	818	360	289	677	1173	-	-	1187	-	-
Stage 1	622	619	-	563	551	-	-	-	-	-	-	-
Stage 2	563	550	-	806	609	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	252	275	818	311	271	677	1173	-	-	1187	-	-
Mov Cap-2 Maneuver	252	275	-	311	271	-	-	-	-	-	-	-
Stage 1	583	618	-	528	516	-	-	-	-	-	-	-
Stage 2	528	515	-	731	608	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.4		16.9		1.1		0	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1173	-	-	579	311	1187	-
HCM Lane V/C Ratio	0.05	-	-	0.16	0.031	0.001	-
HCM Control Delay (s)	8.2	0	-	12.4	16.9	8	0
HCM Lane LOS	A	A	-	B	C	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.6	0.1	0	-

Timings
3: Robin Rd & SR 92

Existing Midday Peak

08/20/2018

												
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	72	317	953	87	19	42	1415	45	52	27	65	25
Future Volume (vph)	72	317	953	87	19	42	1415	45	52	27	65	25
Lane Group Flow (vph)	0	410	1003	92	0	64	1489	47	55	55	68	26
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	1	1	6		5	5	2		3	8	7	4
Permitted Phases	6	6		6	2	2		2	8		4	
Detector Phase	1	1	6	6	5	5	2	2	3	8	7	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	5.0	15.0	15.0	5.0	8.0	5.0	8.0
Minimum Split (s)	11.3	11.3	30.1	30.1	15.0	15.0	37.1	37.1	11.8	50.1	12.0	49.1
Total Split (s)	25.0	25.0	64.0	64.0	15.0	15.0	54.0	54.0	15.0	46.0	15.0	46.0
Total Split (%)	17.9%	17.9%	45.7%	45.7%	10.7%	10.7%	38.6%	38.6%	10.7%	32.9%	10.7%	32.9%
Yellow Time (s)	3.0	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0
All-Red Time (s)	3.3	3.3	1.6	1.6	3.5	3.5	1.6	1.6	3.8	4.1	4.0	4.1
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)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1	7.0	7.1
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	C-Min	C-Min	None	None	C-Min	C-Min	None	None	None	None
v/c Ratio		1.41	0.47	0.09		0.19	0.83	0.05	0.20	0.22	0.26	0.10
Control Delay		238.7	19.4	0.9		12.7	36.5	0.1	40.4	30.1	42.0	49.4
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		238.7	19.4	0.9		12.7	36.5	0.1	40.4	30.1	42.0	49.4
Queue Length 50th (ft)		~454	278	0		19	618	0	40	23	49	21
Queue Length 95th (ft)		#684	417	9		47	#917	0	68	59	81	46
Internal Link Dist (ft)			238				769			297		211
Turn Bay Length (ft)				150		365		305			80	
Base Capacity (vph)		290	2141	1012		354	1793	893	275	498	267	517
Starvation Cap Reductn		0	0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		1.41	0.47	0.09		0.18	0.83	0.05	0.20	0.11	0.25	0.05

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 6 (4%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

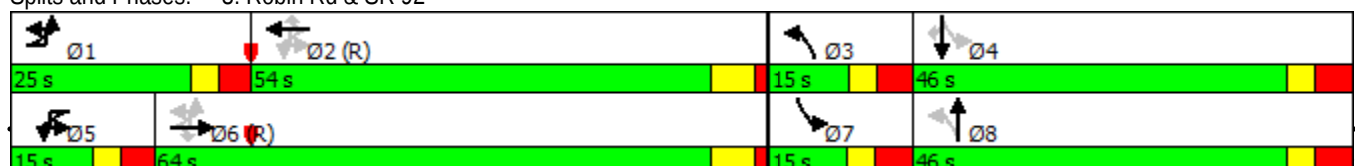
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Robin Rd & SR 92



Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	322
Future Volume (vph)	322
Lane Group Flow (vph)	339
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	8.0
Minimum Split (s)	49.1
Total Split (s)	46.0
Total Split (%)	32.9%
Yellow Time (s)	3.0
All-Red Time (s)	4.1
Lost Time Adjust (s)	0.0
Total Lost Time (s)	7.1
Lead/Lag	Lag
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	0.87
Control Delay	44.0
Queue Delay	0.0
Total Delay	44.0
Queue Length 50th (ft)	126
Queue Length 95th (ft)	226
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	587
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.58
Intersection Summary	

HCM Signalized Intersection Capacity Analysis

3: Robin Rd & SR 92

Existing Midday Peak
08/20/2018

												
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	72	317	953	87	19	42	1415	45	52	27	26	65
Future Volume (vph)	72	317	953	87	19	42	1415	45	52	27	26	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0
Lane Util. Factor		1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		1.00
Frt		1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.93		1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95
Satd. Flow (prot)		1770	3539	1583		1770	3539	1583	1770	1726		1770
Flt Permitted		0.05	1.00	1.00		0.26	1.00	1.00	0.74	1.00		0.72
Satd. Flow (perm)		98	3539	1583		490	3539	1583	1379	1726		1336
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	76	334	1003	92	20	44	1489	47	55	28	27	68
RTOR Reduction (vph)	0	0	0	38	0	0	0	24	0	23	0	0
Lane Group Flow (vph)	0	410	1003	54	0	64	1489	23	55	32	0	68
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt
Protected Phases	1	1	6		5	5	2		3	8		7
Permitted Phases	6	6		6	2	2		2	8			4
Actuated Green, G (s)		94.6	82.0	82.0		75.7	69.6	69.6	25.3	18.8		25.3
Effective Green, g (s)		94.6	82.0	82.0		75.7	69.6	69.6	25.3	18.8		25.3
Actuated g/C Ratio		0.68	0.59	0.59		0.54	0.50	0.50	0.18	0.13		0.18
Clearance Time (s)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0
Vehicle Extension (s)		3.0	5.0	5.0		3.0	5.0	5.0	3.0	3.0		3.0
Lane Grp Cap (vph)		289	2072	927		320	1759	786	267	231		261
v/s Ratio Prot		c0.19	0.28			0.01	0.42		0.01	0.02		c0.01
v/s Ratio Perm		c0.77		0.03		0.10		0.01	0.03			0.04
v/c Ratio		1.42	0.48	0.06		0.20	0.85	0.03	0.21	0.14		0.26
Uniform Delay, d1		48.6	16.8	12.4		15.4	30.6	18.0	48.5	53.4		48.9
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2		207.6	0.8	0.1		0.3	5.2	0.1	0.4	0.3		0.5
Delay (s)		256.1	17.6	12.6		15.8	35.8	18.0	48.9	53.7		49.4
Level of Service		F	B	B		B	D	B	D	D		D
Approach Delay (s)			82.3				34.5			51.3		
Approach LOS			F				C			D		
Intersection Summary												
HCM 2000 Control Delay			58.7				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			1.28									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			26.7		
Intersection Capacity Utilization			106.7%				ICU Level of Service			G		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Robin Rd & SR 92

Existing Midday Peak

08/20/2018



Movement	SBT	SBR
Lane Configurations	↑	↑
Traffic Volume (vph)	25	322
Future Volume (vph)	25	322
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	7.1	7.1
Lane Util. Factor	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	1863	1583
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1863	1583
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	26	339
RTOR Reduction (vph)	0	177
Lane Group Flow (vph)	26	162
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	18.9	18.9
Effective Green, g (s)	18.9	18.9
Actuated g/C Ratio	0.13	0.13
Clearance Time (s)	7.1	7.1
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	251	213
v/s Ratio Prot	0.01	
v/s Ratio Perm		c0.10
v/c Ratio	0.10	0.76
Uniform Delay, d1	53.1	58.4
Progression Factor	1.00	1.00
Incremental Delay, d2	0.2	14.3
Delay (s)	53.3	72.7
Level of Service	D	E
Approach Delay (s)	67.9	
Approach LOS	E	
Intersection Summary		

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑↑	↑↑↵			↵
Traffic Vol, veh/h	0	1429	1799	68	0	94
Future Vol, veh/h	0	1429	1799	68	0	94
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1504	1894	72	0	99
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	947
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	0	262
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	262
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		SB	
HCM Control Delay, s	0		0		26.8	
HCM LOS					D	
Minor Lane/Major Mvmt	EBT		WBT		SBLn1	
Capacity (veh/h)	-		-		262	
HCM Lane V/C Ratio	-		-		0.378	
HCM Control Delay (s)	-		-		26.8	
HCM Lane LOS	-		-		D	
HCM 95th %tile O(veh)	-		-		1.7	

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1429	1755	106	0	93
Future Vol, veh/h	0	1429	1755	106	0	93
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	100	-	-	105	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1504	1847	112	0	98
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	924
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	0	271
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	271
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		25.6		
HCM LOS	D					
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	271			
HCM Lane V/C Ratio	-	-	0.361			
HCM Control Delay (s)	-	-	25.6			
HCM Lane LOS	-	-	D			
HCM 95th %tile O(veh)	-	-	1.6			

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	48	51	38	310	422	58
Future Vol, veh/h	48	51	38	310	422	58
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	-	-	-	-	135
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	53	40	323	440	60

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	873	250	500
Stage 1	470	-	-
Stage 2	403	-	-
Critical Hdwy	6.63	6.93	4.13
Critical Hdwy Stg 1	5.83	-	-
Critical Hdwy Stg 2	5.43	-	-
Follow-up Hdwy	3.519	3.319	2.219
Pot Cap-1 Maneuver	305	751	1062
Stage 1	596	-	-
Stage 2	674	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	291	751	1062
Mov Cap-2 Maneuver	291	-	-
Stage 1	569	-	-
Stage 2	674	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.2	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1062	-	425	-	-
HCM Lane V/C Ratio	0.037	-	0.243	-	-
HCM Control Delay (s)	8.5	0	16.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	-	-

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	16	0	57	1	1	4	77	328	0	0	471	16
Future Vol, veh/h	16	0	57	1	1	4	77	328	0	0	471	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	61	1	1	4	82	349	0	0	501	17

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1026	1023	259	764	1031	349	518	0	0	349	0	0
Stage 1	510	510	-	513	513	-	-	-	-	-	-	-
Stage 2	516	513	-	251	518	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	201	235	741	306	232	693	1046	-	-	1208	-	-
Stage 1	515	537	-	543	535	-	-	-	-	-	-	-
Stage 2	541	535	-	732	532	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	184	212	741	260	209	693	1046	-	-	1208	-	-
Mov Cap-2 Maneuver	184	212	-	260	209	-	-	-	-	-	-	-
Stage 1	465	537	-	490	483	-	-	-	-	-	-	-
Stage 2	484	483	-	672	532	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.8		13.8		1.7		0	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1046	-	-	445 417	1208	-	-
HCM Lane V/C Ratio	0.078	-	-	0.175 0.015	-	-	-
HCM Control Delay (s)	8.7	0	-	14.8 13.8	0	-	-
HCM Lane LOS	A	A	-	B B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	0.6 0	0	-	-

Timings

3: Robin Rd & SR 92

Existing PM Peak
01/08/2019

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	103	284	1394	128	19	33	1677	48	82	58	93	30
Future Volume (vph)	103	284	1394	128	19	33	1677	48	82	58	93	30
Lane Group Flow (vph)	0	403	1452	133	0	54	1747	50	85	81	97	31
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	1	1	6		5	5	2		3	8	7	4
Permitted Phases	6	6		6	2	2		2	8		4	
Detector Phase	1	1	6	6	5	5	2	2	3	8	7	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	5.0	15.0	15.0	5.0	8.0	5.0	8.0
Minimum Split (s)	11.3	11.3	30.1	30.1	15.0	15.0	37.1	37.1	11.8	50.1	12.0	49.1
Total Split (s)	35.0	35.0	104.0	104.0	15.0	15.0	84.0	84.0	15.0	46.0	15.0	46.0
Total Split (%)	19.4%	19.4%	57.8%	57.8%	8.3%	8.3%	46.7%	46.7%	8.3%	25.6%	8.3%	25.6%
Yellow Time (s)	3.0	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0
All-Red Time (s)	3.3	3.3	1.6	1.6	3.5	3.5	1.6	1.6	3.8	4.1	4.0	4.1
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)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1	7.0	7.1
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	C-Min	C-Min	None	None	C-Min	C-Min	None	None	None	None
v/c Ratio		1.25	0.71	0.14		0.32	1.10	0.06	0.24	0.22	0.28	0.08
Control Delay		182.0	30.8	5.3		21.9	91.3	0.6	49.7	53.9	51.2	57.4
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		182.0	30.8	5.3		21.9	91.3	0.6	49.7	53.9	51.2	57.4
Queue Length 50th (ft)		~543	676	14		25	~1240	0	74	70	86	30
Queue Length 95th (ft)		#773	775	50		m27	m#1180	m0	125	124	139	63
Internal Link Dist (ft)			238				2076			297		211
Turn Bay Length (ft)				150		365		305			80	
Base Capacity (vph)		323	2051	962		181	1588	790	357	393	341	402
Starvation Cap Reductn		0	0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		1.25	0.71	0.14		0.30	1.10	0.06	0.24	0.21	0.28	0.08

Intersection Summary

Cycle Length: 180

Actuated Cycle Length: 180

Offset: 155 (86%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

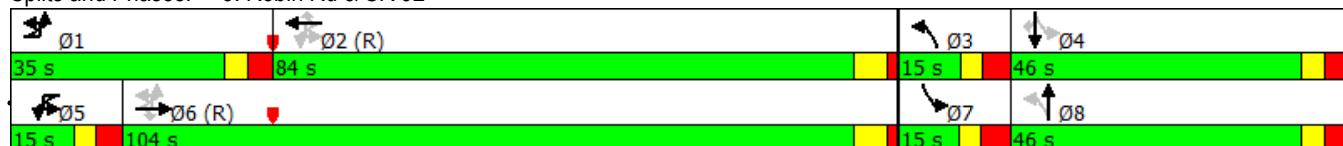
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Robin Rd & SR 92



Timings
3: Robin Rd & SR 92

Existing PM Peak
01/08/2019

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	406
Future Volume (vph)	406
Lane Group Flow (vph)	423
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	8.0
Minimum Split (s)	49.1
Total Split (s)	46.0
Total Split (%)	25.6%
Yellow Time (s)	3.0
All-Red Time (s)	4.1
Lost Time Adjust (s)	0.0
Total Lost Time (s)	7.1
Lead/Lag	Lag
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	0.96
Control Delay	76.7
Queue Delay	0.0
Total Delay	76.7
Queue Length 50th (ft)	332
Queue Length 95th (ft)	#543
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	465
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.91
Intersection Summary	

HCM Signalized Intersection Capacity Analysis

3: Robin Rd & SR 92

Existing PM Peak

01/08/2019

												
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	103	284	1394	128	19	33	1677	48	82	58	20	93
Future Volume (vph)	103	284	1394	128	19	33	1677	48	82	58	20	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0
Lane Util. Factor		1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		1.00
Frt		1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.96		1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95
Satd. Flow (prot)		1770	3539	1583		1770	3539	1583	1770	1790		1770
Flt Permitted		0.05	1.00	1.00		0.12	1.00	1.00	0.74	1.00		0.70
Satd. Flow (perm)		86	3539	1583		220	3539	1583	1373	1790		1312
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	107	296	1452	133	20	34	1747	50	85	60	21	97
RTOR Reduction (vph)	0	0	0	46	0	0	0	28	0	7	0	0
Lane Group Flow (vph)	0	403	1452	87	0	54	1747	22	85	74	0	97
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt
Protected Phases	1	1	6		5	5	2		3	8		7
Permitted Phases	6	6		6	2	2		2	8			4
Actuated Green, G (s)		115.8	103.1	103.1		87.0	80.8	80.8	44.2	36.0		44.0
Effective Green, g (s)		115.8	103.1	103.1		87.0	80.8	80.8	44.2	36.0		44.0
Actuated g/C Ratio		0.64	0.57	0.57		0.48	0.45	0.45	0.25	0.20		0.24
Clearance Time (s)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0
Vehicle Extension (s)		3.0	5.0	5.0		3.0	5.0	5.0	3.0	3.0		3.0
Lane Grp Cap (vph)		323	2027	906		159	1588	710	355	358		341
v/s Ratio Prot		c0.20	0.41			0.01	0.49		0.01	0.04		c0.01
v/s Ratio Perm		c0.61		0.06		0.15		0.01	0.05			0.06
v/c Ratio		1.25	0.72	0.10		0.34	1.10	0.03	0.24	0.21		0.28
Uniform Delay, d1		65.3	27.9	17.4		27.4	49.6	27.7	53.8	60.1		54.4
Progression Factor		1.00	1.00	1.00		1.27	0.92	1.00	1.00	1.00		1.00
Incremental Delay, d2		134.7	2.2	0.2		0.5	49.1	0.0	0.4	0.3		0.5
Delay (s)		200.0	30.1	17.6		35.2	94.6	27.8	54.2	60.4		54.8
Level of Service		F	C	B		D	F	C	D	E		D
Approach Delay (s)			63.7				91.0			57.2		
Approach LOS			E				F			E		
Intersection Summary												
HCM 2000 Control Delay			78.3				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			1.15									
Actuated Cycle Length (s)			180.0				Sum of lost time (s)			26.7		
Intersection Capacity Utilization			119.4%				ICU Level of Service			H		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Robin Rd & SR 92

Existing PM Peak
01/08/2019

	↓	↘
Movement	SBT	SBR
Lane Configurations	↑	↑
Traffic Volume (vph)	30	406
Future Volume (vph)	30	406
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	7.1	7.1
Lane Util. Factor	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	1863	1583
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1863	1583
Peak-hour factor, PHF	0.96	0.96
Adj. Flow (vph)	31	423
RTOR Reduction (vph)	0	126
Lane Group Flow (vph)	31	297
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	36.0	36.0
Effective Green, g (s)	36.0	36.0
Actuated g/C Ratio	0.20	0.20
Clearance Time (s)	7.1	7.1
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	372	316
v/s Ratio Prot	0.02	
v/s Ratio Perm		0.19
v/c Ratio	0.08	0.94
Uniform Delay, d1	58.6	71.0
Progression Factor	1.00	1.00
Incremental Delay, d2	0.1	35.3
Delay (s)	58.7	106.3
Level of Service	E	F
Approach Delay (s)	94.5	
Approach LOS	F	
Intersection Summary		

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑			↑
Traffic Vol, veh/h	0	1909	2156	97	0	162
Future Vol, veh/h	0	1909	2156	97	0	162
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1989	2246	101	0	169
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	1123
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	0	200
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	200
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		77.7		
HCM LOS				F		
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	200			
HCM Lane V/C Ratio	-	-	0.844			
HCM Control Delay (s)	-	-	77.7			
HCM Lane LOS	-	-	F			
HCM 95th %tile Q(veh)	-	-	6.2			

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1909	2126	142	0	107
Future Vol, veh/h	0	1909	2126	142	0	107
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	100	-	-	105	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2009	2238	149	0	113

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 1119
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.94
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.32
Pot Cap-1 Maneuver	0	-	0 0 201
Stage 1	0	-	0 0 -
Stage 2	0	-	0 0 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- - 201
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	43.6
HCM LOS			E

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	201
HCM Lane V/C Ratio	-	-	0.56
HCM Control Delay (s)	-	-	43.6
HCM Lane LOS	-	-	E
HCM 95th %tile Q(veh)	-	-	3

Timings 6: Bells Ferry Rd & SR 92

Existing PM Peak
01/08/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	416	1107	217	189	1384	194	325	930	144	186	468	97
Future Volume (vph)	416	1107	217	189	1384	194	325	930	144	186	468	97
Lane Group Flow (vph)	429	1141	224	195	1427	200	335	959	148	192	482	100
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	8.0	15.0	15.0	8.0	15.0	15.0	8.0	15.0	15.0	8.0	15.0	15.0
Minimum Split (s)	14.0	49.0	49.0	14.0	51.0	51.0	15.0	50.8	50.8	15.0	52.8	52.8
Total Split (s)	25.0	80.0	80.0	20.0	75.0	75.0	35.0	60.0	60.0	20.0	45.0	45.0
Total Split (%)	13.9%	44.4%	44.4%	11.1%	41.7%	41.7%	19.4%	33.3%	33.3%	11.1%	25.0%	25.0%
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	4.5	4.3	4.3	4.5	4.3	4.3
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	1.19	0.78	0.30	0.76	1.06	0.29	0.77	0.93	0.26	0.79	0.58	0.19
Control Delay	155.3	30.3	2.8	100.4	93.0	11.5	88.3	76.5	7.3	104.8	64.3	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	155.3	30.3	2.8	100.4	93.0	11.5	88.3	76.5	7.3	104.8	64.3	0.8
Queue Length 50th (ft)	~314	633	22	118	~976	38	201	581	0	117	266	0
Queue Length 95th (ft)	#431	604	27	#167	#1115	103	252	#701	57	#177	344	0
Internal Link Dist (ft)		2076			1139			943			995	
Turn Bay Length (ft)	540		280	465		230	270		645	485		210
Base Capacity (vph)	362	1461	742	267	1351	697	534	1045	572	247	838	518
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	0.78	0.30	0.73	1.06	0.29	0.63	0.92	0.26	0.78	0.58	0.19

Intersection Summary

Cycle Length: 180

Actuated Cycle Length: 180

Offset: 1 (1%), Referenced to phase 2:WBT and 6:EBT, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

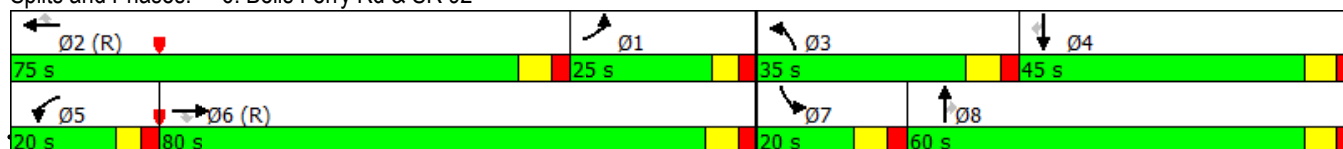
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 6: Bells Ferry Rd & SR 92



Baseline

HCM Signalized Intersection Capacity Analysis

6: Bells Ferry Rd & SR 92

Existing PM Peak

01/08/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	416	1107	217	189	1384	194	325	930	144	186	468	97
Future Volume (vph)	416	1107	217	189	1384	194	325	930	144	186	468	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	429	1141	224	195	1427	200	335	959	148	192	482	100
RTOR Reduction (vph)	0	0	90	0	0	93	0	0	105	0	0	76
Lane Group Flow (vph)	429	1141	134	195	1427	107	335	959	43	192	482	24
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	19.0	74.2	74.2	13.5	68.7	68.7	22.8	52.8	52.8	12.7	42.7	42.7
Effective Green, g (s)	19.0	74.2	74.2	13.5	68.7	68.7	22.8	52.8	52.8	12.7	42.7	42.7
Actuated g/C Ratio	0.11	0.41	0.41	0.08	0.38	0.38	0.13	0.29	0.29	0.07	0.24	0.24
Clearance Time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	362	1458	652	257	1350	604	434	1038	464	242	839	375
v/s Ratio Prot	c0.12	0.32		0.06	c0.40		c0.10	c0.27		0.06	0.14	
v/s Ratio Perm			0.08			0.07			0.03			0.01
v/c Ratio	1.19	0.78	0.21	0.76	1.06	0.18	0.77	0.92	0.09	0.79	0.57	0.06
Uniform Delay, d1	80.5	45.9	34.0	81.7	55.6	36.9	76.1	61.7	46.2	82.4	60.6	53.2
Progression Factor	0.76	0.58	0.17	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	103.9	3.5	0.6	12.1	41.1	0.6	8.3	13.8	0.2	16.2	1.5	0.1
Delay (s)	165.3	30.0	6.4	93.7	96.7	37.6	84.4	75.5	46.4	98.6	62.2	53.3
Level of Service	F	C	A	F	F	D	F	E	D	F	E	D
Approach Delay (s)		59.4			89.9			74.5			70.0	
Approach LOS		E			F			E			E	
Intersection Summary												
HCM 2000 Control Delay			74.1				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			180.0				Sum of lost time (s)			26.8		
Intersection Capacity Utilization			104.8%				ICU Level of Service			G		
Analysis Period (min)			15									

c Critical Lane Group

**FUTURE INTERSECTIONS ANALYSIS
SCENARIO 1**

Intersection

Int Delay, s/veh 0.9

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations	↔↔			↔	↔↔	
Traffic Vol, veh/h	14	17	37	323	506	18
Future Vol, veh/h	14	17	37	323	506	18
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	-	-	-	-	135
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	19	42	363	569	20

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	1026	295	589	0	-	0
Stage 1	579	-	-	-	-	-
Stage 2	447	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	245	702	984	-	-	-
Stage 1	525	-	-	-	-	-
Stage 2	643	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	232	702	984	-	-	-
Mov Cap-2 Maneuver	232	-	-	-	-	-
Stage 1	497	-	-	-	-	-
Stage 2	643	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s	15.8	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h)	984	-	367	-	-
HCM Lane V/C Ratio	0.042	-	0.095	-	-
HCM Control Delay (s)	8.8	0	15.8	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	0	38	0	0	0	64	356	2	0	492	30
Future Vol, veh/h	4	0	38	0	0	0	64	356	2	0	492	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	42	0	0	0	70	391	2	0	541	33

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1090	1091	287	803	1106	392	574	0	0	393	0	0
Stage 1	558	558	-	532	532	-	-	-	-	-	-	-
Stage 2	532	533	-	271	574	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	181	214	710	288	210	656	997	-	-	1164	-	-
Stage 1	482	511	-	530	525	-	-	-	-	-	-	-
Stage 2	530	524	-	712	502	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	169	195	710	252	191	656	997	-	-	1164	-	-
Mov Cap-2 Maneuver	169	195	-	252	191	-	-	-	-	-	-	-
Stage 1	439	511	-	482	478	-	-	-	-	-	-	-
Stage 2	482	477	-	670	502	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.2	0	1.3	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	997	-	-	544	-	1164	-
HCM Lane V/C Ratio	0.071	-	-	0.085	-	-	-
HCM Control Delay (s)	8.9	0	-	12.2	0	0	-
HCM Lane LOS	A	A	-	B	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	-	0	-

Timings
3: Robin Rd & SR 92

Future AM Peak - No Median Opening

01/08/2019

												
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	32	384	1472	95	5	37	877	23	31	16	44	28
Future Volume (vph)	32	384	1472	95	5	37	877	23	31	16	44	28
Lane Group Flow (vph)	0	447	1583	102	0	45	943	25	33	31	47	30
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	1	1	6		5	5	2		3	8	7	4
Permitted Phases	6	6		6	2	2		2	8		4	
Detector Phase	1	1	6	6	5	5	2	2	3	8	7	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	5.0	15.0	15.0	5.0	8.0	5.0	8.0
Minimum Split (s)	11.3	11.3	30.1	30.1	15.0	15.0	37.1	37.1	11.8	50.1	12.0	49.1
Total Split (s)	47.0	47.0	84.0	84.0	16.0	16.0	53.0	53.0	15.0	45.0	15.0	45.0
Total Split (%)	29.4%	29.4%	52.5%	52.5%	10.0%	10.0%	33.1%	33.1%	9.4%	28.1%	9.4%	28.1%
Yellow Time (s)	3.0	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0
All-Red Time (s)	3.3	3.3	1.6	1.6	3.5	3.5	1.6	1.6	3.8	4.1	4.0	4.1
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)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1	7.0	7.1
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	C-Min	C-Min	None	None	C-Min	C-Min	None	None	None	None
v/c Ratio		0.76	0.66	0.09		0.23	0.57	0.03	0.16	0.17	0.23	0.16
Control Delay		30.4	20.3	1.8		17.1	35.6	0.1	51.0	40.6	53.4	63.6
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		30.4	20.3	1.8		17.1	35.6	0.1	51.0	40.6	53.4	63.6
Queue Length 50th (ft)		225	486	0		11	378	0	30	17	43	30
Queue Length 95th (ft)		430	821	21		34	559	0	54	47	71	58
Internal Link Dist (ft)			238				2076			297		211
Turn Bay Length (ft)				150		365		305			80	
Base Capacity (vph)		613	2399	1111		227	1659	829	212	421	208	441
Starvation Cap Reductn		0	0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.73	0.66	0.09		0.20	0.57	0.03	0.16	0.07	0.23	0.07

Intersection Summary

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 10 (6%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Splits and Phases: 3: Robin Rd & SR 92



Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	457
Future Volume (vph)	457
Lane Group Flow (vph)	491
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	8.0
Minimum Split (s)	49.1
Total Split (s)	45.0
Total Split (%)	28.1%
Yellow Time (s)	3.0
All-Red Time (s)	4.1
Lost Time Adjust (s)	0.0
Total Lost Time (s)	7.1
Lead/Lag	Lag
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	0.87
Control Delay	24.5
Queue Delay	0.0
Total Delay	24.5
Queue Length 50th (ft)	38
Queue Length 95th (ft)	167
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	721
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.68
Intersection Summary	

HCM Signalized Intersection Capacity Analysis

3: Robin Rd & SR 92

Future AM Peak - No Median Opening

01/08/2019

												
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	32	384	1472	95	5	37	877	23	31	16	13	44
Future Volume (vph)	32	384	1472	95	5	37	877	23	31	16	13	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0
Lane Util. Factor		1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		1.00
Frt		1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.93		1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95
Satd. Flow (prot)		1770	3539	1583		1770	3539	1583	1770	1737		1770
Flt Permitted		0.18	1.00	1.00		0.14	1.00	1.00	0.74	1.00		0.72
Satd. Flow (perm)		331	3539	1583		263	3539	1583	1374	1737		1347
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	34	413	1583	102	5	40	943	25	33	17	14	47
RTOR Reduction (vph)	0	0	0	35	0	0	0	14	0	13	0	0
Lane Group Flow (vph)	0	447	1583	67	0	45	943	12	33	18	0	47
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt
Protected Phases	1	1	6		5	5	2		3	8		7
Permitted Phases	6	6		6	2	2		2	8			4
Actuated Green, G (s)		117.9	105.8	105.8		79.2	73.6	73.6	21.8	15.5		22.2
Effective Green, g (s)		117.9	105.8	105.8		79.2	73.6	73.6	21.8	15.5		22.2
Actuated g/C Ratio		0.74	0.66	0.66		0.50	0.46	0.46	0.14	0.10		0.14
Clearance Time (s)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0
Vehicle Extension (s)		3.0	5.0	5.0		3.0	5.0	5.0	3.0	3.0		3.0
Lane Grp Cap (vph)		585	2340	1046		182	1627	728	202	168		203
v/s Ratio Prot		c0.18	0.45			0.01	0.27		0.01	0.01		c0.01
v/s Ratio Perm		c0.38		0.04		0.11		0.01	0.02			0.02
v/c Ratio		0.76	0.68	0.06		0.25	0.58	0.02	0.16	0.11		0.23
Uniform Delay, d1		26.5	16.6	9.6		21.2	31.8	23.5	60.8	65.9		61.0
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2		5.9	1.6	0.1		0.7	1.5	0.0	0.4	0.3		0.6
Delay (s)		32.4	18.2	9.7		21.9	33.3	23.5	61.2	66.2		61.5
Level of Service		C	B	A		C	C	C	E	E		E
Approach Delay (s)			20.8				32.6			63.6		
Approach LOS			C				C			E		
Intersection Summary												
HCM 2000 Control Delay			32.1				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			160.0				Sum of lost time (s)			26.7		
Intersection Capacity Utilization			101.7%				ICU Level of Service			G		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Robin Rd & SR 92

Future AM Peak - No Median Opening

01/08/2019

	↓	↘
Movement	SBT	SBR
Lane Configurations	↑	↑
Traffic Volume (vph)	28	457
Future Volume (vph)	28	457
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	7.1	7.1
Lane Util. Factor	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	1863	1583
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1863	1583
Peak-hour factor, PHF	0.93	0.93
Adj. Flow (vph)	30	491
RTOR Reduction (vph)	0	409
Lane Group Flow (vph)	30	82
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	15.8	15.8
Effective Green, g (s)	15.8	15.8
Actuated g/C Ratio	0.10	0.10
Clearance Time (s)	7.1	7.1
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	183	156
v/s Ratio Prot	0.02	
v/s Ratio Perm		c0.05
v/c Ratio	0.16	0.52
Uniform Delay, d1	66.0	68.5
Progression Factor	1.00	1.00
Incremental Delay, d2	0.4	3.2
Delay (s)	66.5	71.7
Level of Service	E	E
Approach Delay (s)	70.6	
Approach LOS	E	
Intersection Summary		

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑			↗
Traffic Vol, veh/h	0	1983	1383	46	0	18
Future Vol, veh/h	0	1983	1383	46	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2132	1487	49	0	19
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	744
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	0	357
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	357
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		15.7		
HCM LOS	C					
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	357			
HCM Lane V/C Ratio	-	-	0.054			
HCM Control Delay (s)	-	-	15.7			
HCM Lane LOS	-	-	C			
HCM 95th %tile Q(veh)	-	-	0.2			

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1983	1356	41	0	54
Future Vol, veh/h	0	1983	1356	41	0	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	235	-	-	105	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2132	1458	44	0	58

Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	-	0	-	0	-	729
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	0	365
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	365
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.7
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	365
HCM Lane V/C Ratio	-	-	0.159
HCM Control Delay (s)	-	-	16.7
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.6

Timings
6: Bells Ferry Rd & SR 92

Future AM Peak - No Median Opening

01/08/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	1336	335	108	738	84	137	296	126	279	865	32
Future Volume (vph)	106	1336	335	108	738	84	137	296	126	279	865	32
Lane Group Flow (vph)	114	1437	360	116	794	90	147	318	135	300	930	34
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	8.0	15.0	15.0	8.0	15.0	15.0	8.0	15.0	15.0	8.0	15.0	15.0
Minimum Split (s)	14.0	48.0	48.0	14.0	50.0	50.0	15.0	48.8	48.8	15.0	50.8	50.8
Total Split (s)	25.0	85.0	85.0	20.0	80.0	80.0	25.0	50.0	50.0	25.0	50.0	50.0
Total Split (%)	13.9%	47.2%	47.2%	11.1%	44.4%	44.4%	13.9%	27.8%	27.8%	13.9%	27.8%	27.8%
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	4.5	4.3	4.3	4.5	4.3	4.3
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.19	0.91	0.44	0.54	0.66	0.14	0.59	0.67	0.40	0.42	0.98	0.06
Control Delay	68.3	55.4	15.7	90.9	52.5	0.5	90.5	81.1	10.7	65.3	89.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	55.4	15.7	90.9	52.5	0.5	90.5	81.1	10.7	65.3	89.3	0.2
Queue Length 50th (ft)	60	825	119	70	420	0	88	191	0	161	580	0
Queue Length 95th (ft)	101	#973	216	106	446	0	127	240	55	221	#774	0
Internal Link Dist (ft)		2076			1139			943			995	
Turn Bay Length (ft)	540		280	465		230	270		645	485		210
Base Capacity (vph)	585	1587	823	267	1435	731	343	849	490	707	946	529
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.91	0.44	0.43	0.55	0.12	0.43	0.37	0.28	0.42	0.98	0.06

Intersection Summary

Cycle Length: 180

Actuated Cycle Length: 180

Offset: 20 (11%), Referenced to phase 2:WBT and 6:EBT, Start of Green

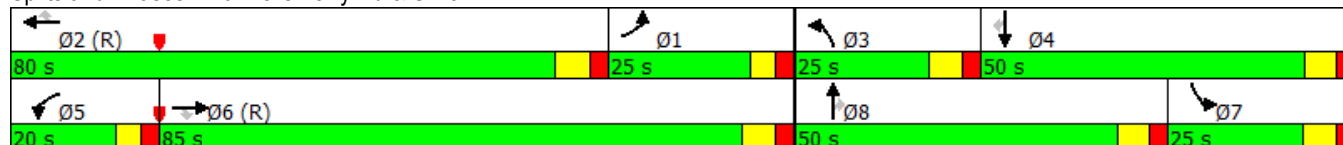
Natural Cycle: 150

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 6: Bells Ferry Rd & SR 92



HCM Signalized Intersection Capacity Analysis

6: Bells Ferry Rd & SR 92

Future AM Peak - No Median Opening

01/08/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	1336	335	108	738	84	137	296	126	279	865	32
Future Volume (vph)	106	1336	335	108	738	84	137	296	126	279	865	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	114	1437	360	116	794	90	147	318	135	300	930	34
RTOR Reduction (vph)	0	0	113	0	0	59	0	0	117	0	0	25
Lane Group Flow (vph)	114	1437	247	116	794	31	147	318	18	300	930	9
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	30.7	80.7	80.7	11.3	61.3	61.3	13.0	24.1	24.1	37.1	48.2	48.2
Effective Green, g (s)	30.7	80.7	80.7	11.3	61.3	61.3	13.0	24.1	24.1	37.1	48.2	48.2
Actuated g/C Ratio	0.17	0.45	0.45	0.06	0.34	0.34	0.07	0.13	0.13	0.21	0.27	0.27
Clearance Time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	585	1586	709	215	1205	539	247	473	211	707	947	423
v/s Ratio Prot	0.03	c0.41		0.03	c0.22		0.04	c0.09		0.09	c0.26	
v/s Ratio Perm			0.16			0.02			0.01			0.01
v/c Ratio	0.19	0.91	0.35	0.54	0.66	0.06	0.60	0.67	0.09	0.42	0.98	0.02
Uniform Delay, d1	64.0	46.1	32.5	81.8	50.5	39.9	80.9	74.2	68.3	62.2	65.5	48.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	9.0	1.4	2.6	2.8	0.2	3.8	4.9	0.4	0.4	24.9	0.0
Delay (s)	64.2	55.1	33.8	84.4	53.3	40.1	84.8	79.1	68.7	62.6	90.4	48.6
Level of Service	E	E	C	F	D	D	F	E	E	E	F	D
Approach Delay (s)		51.7			55.7			78.1			82.7	
Approach LOS		D			E			E			F	
Intersection Summary												
HCM 2000 Control Delay			64.0				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			180.0				Sum of lost time (s)			26.8		
Intersection Capacity Utilization			94.1%				ICU Level of Service			F		
Analysis Period (min)			15									

c Critical Lane Group

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	41	45	47	316	327	41
Future Vol, veh/h	41	45	47	316	327	41
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	-	-	-	-	135
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	48	51	340	352	44
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	815	198	396	0	-	0
Stage 1	374	-	-	-	-	-
Stage 2	441	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	331	811	1161	-	-	-
Stage 1	667	-	-	-	-	-
Stage 2	648	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	313	811	1161	-	-	-
Mov Cap-2 Maneuver	313	-	-	-	-	-
Stage 1	667	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	14.8	1.1		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1161	-	461	-	-	
HCM Lane V/C Ratio	0.044	-	0.201	-	-	
HCM Control Delay (s)	8.2	0	14.8	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-	

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	0	75	9	0	0	63	347	6	1	336	29
Future Vol, veh/h	16	0	75	9	0	0	63	347	6	1	336	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	80	10	0	0	67	369	6	1	357	31
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	881	885	194	687	896	372	388	0	0	376	0	0
Stage 1	375	375	-	506	506	-	-	-	-	-	-	-
Stage 2	506	510	-	181	390	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	254	283	815	347	279	673	1169	-	-	1181	-	-
Stage 1	619	616	-	548	539	-	-	-	-	-	-	-
Stage 2	548	537	-	804	607	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	240	262	815	296	259	673	1169	-	-	1181	-	-
Mov Cap-2 Maneuver	240	262	-	296	259	-	-	-	-	-	-	-
Stage 1	574	615	-	509	500	-	-	-	-	-	-	-
Stage 2	509	498	-	725	606	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	12.6		17.6		1.3		0					
HCM LOS	B		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1169	-	-	573	296	1181	-	-				
HCM Lane V/C Ratio	0.057	-	-	0.169	0.032	0.001	-	-				
HCM Control Delay (s)	8.3	0	-	12.6	17.6	8.1	0	-				
HCM Lane LOS	A	A	-	B	C	A	A	-				
HCM 95th %tile Q(veh)	0.2	-	-	0.6	0.1	0	-	-				

Timings
3: Robin Rd & SR 92

Future Midday Peak (SC 1)

09/13/2018

												
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	72	327	951	87	19	42	1418	48	52	27	73	25
Future Volume (vph)	72	327	951	87	19	42	1418	48	52	27	73	25
Lane Group Flow (vph)	0	420	1001	92	0	64	1493	51	55	55	77	26
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	1	1	6		5	5	2		3	8	7	4
Permitted Phases	6	6		6	2	2		2	8		4	
Detector Phase	1	1	6	6	5	5	2	2	3	8	7	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	5.0	15.0	15.0	5.0	8.0	5.0	8.0
Minimum Split (s)	11.3	11.3	30.1	30.1	15.0	15.0	37.1	37.1	11.8	50.1	12.0	49.1
Total Split (s)	25.0	25.0	64.0	64.0	15.0	15.0	54.0	54.0	15.0	46.0	15.0	46.0
Total Split (%)	17.9%	17.9%	45.7%	45.7%	10.7%	10.7%	38.6%	38.6%	10.7%	32.9%	10.7%	32.9%
Yellow Time (s)	3.0	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0
All-Red Time (s)	3.3	3.3	1.6	1.6	3.5	3.5	1.6	1.6	3.8	4.1	4.0	4.1
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)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1	7.0	7.1
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	C-Min	C-Min	None	None	C-Min	C-Min	None	None	None	None
v/c Ratio		1.45	0.47	0.09		0.19	0.83	0.06	0.20	0.22	0.30	0.10
Control Delay		252.8	19.4	0.9		12.7	36.6	0.1	40.5	30.1	43.4	49.4
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		252.8	19.4	0.9		12.7	36.6	0.1	40.5	30.1	43.4	49.4
Queue Length 50th (ft)		~473	278	0		19	621	0	40	23	56	21
Queue Length 95th (ft)		#705	417	9		47	#921	0	68	59	89	46
Internal Link Dist (ft)			238				769			297		211
Turn Bay Length (ft)				150		365		305			80	
Base Capacity (vph)		290	2141	1012		355	1793	893	275	498	253	517
Starvation Cap Reductn		0	0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		1.45	0.47	0.09		0.18	0.83	0.06	0.20	0.11	0.30	0.05

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 6 (4%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Robin Rd & SR 92



Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	322
Future Volume (vph)	322
Lane Group Flow (vph)	339
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	8.0
Minimum Split (s)	49.1
Total Split (s)	46.0
Total Split (%)	32.9%
Yellow Time (s)	3.0
All-Red Time (s)	4.1
Lost Time Adjust (s)	0.0
Total Lost Time (s)	7.1
Lead/Lag	Lag
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	0.87
Control Delay	44.0
Queue Delay	0.0
Total Delay	44.0
Queue Length 50th (ft)	126
Queue Length 95th (ft)	226
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	587
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.58
Intersection Summary	

HCM Signalized Intersection Capacity Analysis

3: Robin Rd & SR 92

Future Midday Peak (SC 1)

09/13/2018

												
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	72	327	951	87	19	42	1418	48	52	27	26	73
Future Volume (vph)	72	327	951	87	19	42	1418	48	52	27	26	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0
Lane Util. Factor		1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		1.00
Frt		1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.93		1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95
Satd. Flow (prot)		1770	3539	1583		1770	3539	1583	1770	1726		1770
Flt Permitted		0.05	1.00	1.00		0.26	1.00	1.00	0.74	1.00		0.66
Satd. Flow (perm)		98	3539	1583		491	3539	1583	1379	1726		1222
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	76	344	1001	92	20	44	1493	51	55	28	27	77
RTOR Reduction (vph)	0	0	0	38	0	0	0	26	0	24	0	0
Lane Group Flow (vph)	0	420	1001	54	0	64	1493	25	55	31	0	77
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt
Protected Phases	1	1	6		5	5	2		3	8		7
Permitted Phases	6	6		6	2	2		2	8			4
Actuated Green, G (s)		94.6	82.0	82.0		75.7	69.6	69.6	23.7	17.2		26.9
Effective Green, g (s)		94.6	82.0	82.0		75.7	69.6	69.6	23.7	17.2		26.9
Actuated g/C Ratio		0.68	0.59	0.59		0.54	0.50	0.50	0.17	0.12		0.19
Clearance Time (s)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0
Vehicle Extension (s)		3.0	5.0	5.0		3.0	5.0	5.0	3.0	3.0		3.0
Lane Grp Cap (vph)		289	2072	927		321	1759	786	251	212		266
v/s Ratio Prot		c0.19	0.28			0.01	0.42		0.01	0.02		c0.02
v/s Ratio Perm		c0.79		0.03		0.10		0.02	0.03			0.04
v/c Ratio		1.45	0.48	0.06		0.20	0.85	0.03	0.22	0.15		0.29
Uniform Delay, d1		48.6	16.8	12.4		15.4	30.6	18.0	49.9	54.9		47.8
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2		222.3	0.8	0.1		0.3	5.3	0.1	0.4	0.3		0.6
Delay (s)		270.9	17.6	12.6		15.7	35.9	18.1	50.3	55.2		48.4
Level of Service		F	B	B		B	D	B	D	E		D
Approach Delay (s)			87.6				34.6			52.7		
Approach LOS			F				C			D		
Intersection Summary												
HCM 2000 Control Delay			60.9				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			1.31									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			26.7		
Intersection Capacity Utilization			107.3%				ICU Level of Service			G		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Robin Rd & SR 92

Future Midday Peak (SC 1)

09/13/2018

	↓	↙
Movement	SBT	SBR
Lane Configurations	↑	↑
Traffic Volume (vph)	25	322
Future Volume (vph)	25	322
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	7.1	7.1
Lane Util. Factor	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	1863	1583
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1863	1583
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	26	339
RTOR Reduction (vph)	0	177
Lane Group Flow (vph)	26	162
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	18.9	18.9
Effective Green, g (s)	18.9	18.9
Actuated g/C Ratio	0.13	0.13
Clearance Time (s)	7.1	7.1
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	251	213
v/s Ratio Prot	0.01	
v/s Ratio Perm		c0.10
v/c Ratio	0.10	0.76
Uniform Delay, d1	53.1	58.4
Progression Factor	1.00	1.00
Incremental Delay, d2	0.2	14.3
Delay (s)	53.3	72.7
Level of Service	D	E
Approach Delay (s)	67.3	
Approach LOS	E	
Intersection Summary		

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑↑	↑↑↔			↗
Traffic Vol, veh/h	0	1437	1798	72	0	99
Future Vol, veh/h	0	1437	1798	72	0	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1513	1893	76	0	104
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	946
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	0	262
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	262
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		27.5		
HCM LOS	D					
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	262			
HCM Lane V/C Ratio	-	-	0.398			
HCM Control Delay (s)	-	-	27.5			
HCM Lane LOS	-	-	D			
HCM 95th %tile O(veh)	-	-	1.8			

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1437	1758	107	0	98
Future Vol, veh/h	0	1437	1758	107	0	98
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	100	-	-	105	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1513	1851	113	0	103
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	925
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	0	271
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	271
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		26.2		
HCM LOS	D					
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	271			
HCM Lane V/C Ratio	-	-	0.381			
HCM Control Delay (s)	-	-	26.2			
HCM Lane LOS	-	-	D			
HCM 95th %tile O(veh)	-	-	1.7			

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	51	55	42	310	422	61
Future Vol, veh/h	51	55	42	310	422	61
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	-	-	-	-	135
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	57	44	323	440	64
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	883	252	504	0	-	0
Stage 1	472	-	-	-	-	-
Stage 2	411	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	300	748	1059	-	-	-
Stage 1	595	-	-	-	-	-
Stage 2	668	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	285	748	1059	-	-	-
Mov Cap-2 Maneuver	285	-	-	-	-	-
Stage 1	565	-	-	-	-	-
Stage 2	668	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	16.6	1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1059	-	420	-	-	
HCM Lane V/C Ratio	0.041	-	0.263	-	-	
HCM Control Delay (s)	8.5	0	16.6	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	1	-	-	

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	61	1	1	4	83	332	0	0	475	16
Future Vol, veh/h	16	0	61	1	1	4	83	332	0	0	475	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	65	1	1	4	88	353	0	0	505	17

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1046	1043	261	782	1051	353	522	0	0	353	0	0
Stage 1	514	514	-	529	529	-	-	-	-	-	-	-
Stage 2	532	529	-	253	522	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	194	229	738	298	226	690	1042	-	-	1204	-	-
Stage 1	512	534	-	532	526	-	-	-	-	-	-	-
Stage 2	530	526	-	730	530	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	177	205	738	250	202	690	1042	-	-	1204	-	-
Mov Cap-2 Maneuver	177	205	-	250	202	-	-	-	-	-	-	-
Stage 1	458	534	-	476	471	-	-	-	-	-	-	-
Stage 2	470	471	-	666	530	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.9	14	1.8	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1042	-	-	445 407	1204	-	-
HCM Lane V/C Ratio	0.085	-	-	0.184 0.016	-	-	-
HCM Control Delay (s)	8.8	0	-	14.9 14	0	-	-
HCM Lane LOS	A	A	-	B B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	0.7 0	0	-	-

Timings
3: Robin Rd & SR 92

Future PM Peak - No Median Opening
01/08/2019

												
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	103	293	1391	128	19	33	1679	50	82	58	100	30
Future Volume (vph)	103	293	1391	128	19	33	1679	50	82	58	100	30
Lane Group Flow (vph)	0	412	1449	133	0	54	1749	52	85	81	104	31
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	1	1	6		5	5	2		3	8	7	4
Permitted Phases	6	6		6	2	2		2	8		4	
Detector Phase	1	1	6	6	5	5	2	2	3	8	7	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	5.0	15.0	15.0	5.0	8.0	5.0	8.0
Minimum Split (s)	11.3	11.3	30.1	30.1	15.0	15.0	37.1	37.1	11.8	50.1	12.0	49.1
Total Split (s)	35.0	35.0	104.0	104.0	15.0	15.0	84.0	84.0	15.0	46.0	15.0	46.0
Total Split (%)	19.4%	19.4%	57.8%	57.8%	8.3%	8.3%	46.7%	46.7%	8.3%	25.6%	8.3%	25.6%
Yellow Time (s)	3.0	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0
All-Red Time (s)	3.3	3.3	1.6	1.6	3.5	3.5	1.6	1.6	3.8	4.1	4.0	4.1
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)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1	7.0	7.1
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	C-Min	C-Min	None	None	C-Min	C-Min	None	None	None	None
v/c Ratio		1.28	0.71	0.14		0.32	1.10	0.07	0.24	0.22	0.30	0.08
Control Delay		192.3	30.7	5.3		21.8	91.8	0.6	49.7	53.9	51.8	57.4
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		192.3	30.7	5.3		21.8	91.8	0.6	49.7	53.9	51.8	57.4
Queue Length 50th (ft)		~566	674	14		25	~1243	0	74	70	92	30
Queue Length 95th (ft)		#796	773	50		m27	m#1181	m0	125	124	148	63
Internal Link Dist (ft)			238				2076			297		211
Turn Bay Length (ft)				150		365		305			80	
Base Capacity (vph)		323	2051	962		182	1588	790	357	393	341	402
Starvation Cap Reductn		0	0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		1.28	0.71	0.14		0.30	1.10	0.07	0.24	0.21	0.30	0.08

Intersection Summary

Cycle Length: 180

Actuated Cycle Length: 180

Offset: 155 (86%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

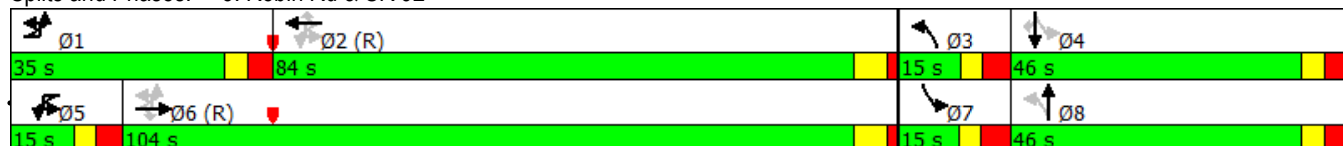
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Robin Rd & SR 92



Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	406
Future Volume (vph)	406
Lane Group Flow (vph)	423
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	8.0
Minimum Split (s)	49.1
Total Split (s)	46.0
Total Split (%)	25.6%
Yellow Time (s)	3.0
All-Red Time (s)	4.1
Lost Time Adjust (s)	0.0
Total Lost Time (s)	7.1
Lead/Lag	Lag
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	0.96
Control Delay	76.7
Queue Delay	0.0
Total Delay	76.7
Queue Length 50th (ft)	332
Queue Length 95th (ft)	#543
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	465
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.91
Intersection Summary	

HCM Signalized Intersection Capacity Analysis

3: Robin Rd & SR 92

Future PM Peak - No Median Opening

01/08/2019

												
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	103	293	1391	128	19	33	1679	50	82	58	20	100
Future Volume (vph)	103	293	1391	128	19	33	1679	50	82	58	20	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0
Lane Util. Factor		1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		1.00
Frt		1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.96		1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95
Satd. Flow (prot)		1770	3539	1583		1770	3539	1583	1770	1790		1770
Flt Permitted		0.05	1.00	1.00		0.12	1.00	1.00	0.74	1.00		0.70
Satd. Flow (perm)		86	3539	1583		222	3539	1583	1373	1790		1312
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	107	305	1449	133	20	34	1749	52	85	60	21	104
RTOR Reduction (vph)	0	0	0	46	0	0	0	29	0	7	0	0
Lane Group Flow (vph)	0	412	1449	87	0	54	1749	23	85	74	0	104
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt
Protected Phases	1	1	6		5	5	2		3	8		7
Permitted Phases	6	6		6	2	2		2	8			4
Actuated Green, G (s)		115.8	103.1	103.1		87.0	80.8	80.8	44.2	36.0		44.0
Effective Green, g (s)		115.8	103.1	103.1		87.0	80.8	80.8	44.2	36.0		44.0
Actuated g/C Ratio		0.64	0.57	0.57		0.48	0.45	0.45	0.25	0.20		0.24
Clearance Time (s)		6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0
Vehicle Extension (s)		3.0	5.0	5.0		3.0	5.0	5.0	3.0	3.0		3.0
Lane Grp Cap (vph)		323	2027	906		160	1588	710	355	358		341
v/s Ratio Prot		c0.20	0.41			0.01	0.49		0.01	0.04		c0.01
v/s Ratio Perm		c0.62		0.06		0.15		0.01	0.05			0.06
v/c Ratio		1.28	0.71	0.10		0.34	1.10	0.03	0.24	0.21		0.30
Uniform Delay, d1		65.3	27.8	17.4		27.4	49.6	27.7	53.8	60.1		54.6
Progression Factor		1.00	1.00	1.00		1.27	0.92	1.00	1.00	1.00		1.00
Incremental Delay, d2		145.9	2.2	0.2		0.4	49.7	0.0	0.4	0.3		0.5
Delay (s)		211.2	30.0	17.6		35.2	95.1	27.8	54.2	60.4		55.1
Level of Service		F	C	B		D	F	C	D	E		E
Approach Delay (s)			66.6				91.5			57.2		
Approach LOS			E				F			E		
Intersection Summary												
HCM 2000 Control Delay			79.7				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			1.17									
Actuated Cycle Length (s)			180.0				Sum of lost time (s)			26.7		
Intersection Capacity Utilization			119.9%				ICU Level of Service			H		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Robin Rd & SR 92

Future PM Peak - No Median Opening
01/08/2019

Movement	SBT	SBR
Lane Configurations	↑	↑
Traffic Volume (vph)	30	406
Future Volume (vph)	30	406
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	7.1	7.1
Lane Util. Factor	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	1863	1583
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1863	1583
Peak-hour factor, PHF	0.96	0.96
Adj. Flow (vph)	31	423
RTOR Reduction (vph)	0	126
Lane Group Flow (vph)	31	297
Turn Type	NA	Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	36.0	36.0
Effective Green, g (s)	36.0	36.0
Actuated g/C Ratio	0.20	0.20
Clearance Time (s)	7.1	7.1
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	372	316
v/s Ratio Prot	0.02	
v/s Ratio Perm		0.19
v/c Ratio	0.08	0.94
Uniform Delay, d1	58.6	71.0
Progression Factor	1.00	1.00
Incremental Delay, d2	0.1	35.3
Delay (s)	58.7	106.3
Level of Service	E	F
Approach Delay (s)	94.1	
Approach LOS	F	
Intersection Summary		

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↱			↱
Traffic Vol, veh/h	0	1915	2154	101	0	167
Future Vol, veh/h	0	1915	2154	101	0	167
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1995	2244	105	0	174
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	1122
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	0	200
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	200
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		82.6		
HCM LOS				F		
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	200			
HCM Lane V/C Ratio	-	-	0.87			
HCM Control Delay (s)	-	-	82.6			
HCM Lane LOS	-	-	F			
HCM 95th %tile Q(veh)	-	-	6.6			

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↗		↗
Traffic Vol, veh/h	0	1915	2127	144	0	112
Future Vol, veh/h	0	1915	2127	144	0	112
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	235	-	-	105	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2016	2239	152	0	118
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	1120
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	0	201
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	201
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		45.6		
HCM LOS				E		
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	201			
HCM Lane V/C Ratio	-	-	0.587			
HCM Control Delay (s)	-	-	45.6			
HCM Lane LOS	-	-	E			
HCM 95th %tile Q(veh)	-	-	3.2			

Timings
6: Bells Ferry Rd & SR 92

Future PM Peak - No Median Opening

01/08/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	416	1107	217	189	1384	194	325	930	144	186	468	97
Future Volume (vph)	416	1107	217	189	1384	194	325	930	144	186	468	97
Lane Group Flow (vph)	429	1141	224	195	1427	200	335	959	148	192	482	100
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	8.0	15.0	15.0	8.0	15.0	15.0	8.0	15.0	15.0	8.0	15.0	15.0
Minimum Split (s)	14.0	49.0	49.0	14.0	51.0	51.0	15.0	50.8	50.8	15.0	52.8	52.8
Total Split (s)	25.0	80.0	80.0	20.0	75.0	75.0	35.0	60.0	60.0	20.0	45.0	45.0
Total Split (%)	13.9%	44.4%	44.4%	11.1%	41.7%	41.7%	19.4%	33.3%	33.3%	11.1%	25.0%	25.0%
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	4.5	4.3	4.3	4.5	4.3	4.3
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	1.19	0.78	0.30	0.76	1.06	0.29	0.77	0.93	0.26	0.79	0.58	0.19
Control Delay	155.5	30.6	2.8	100.4	93.0	11.5	88.3	76.5	7.3	104.8	64.3	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	155.5	30.6	2.8	100.4	93.0	11.5	88.3	76.5	7.3	104.8	64.3	0.8
Queue Length 50th (ft)	~314	633	22	118	~976	38	201	581	0	117	266	0
Queue Length 95th (ft)	#431	607	27	#167	#1115	103	252	#701	57	#177	344	0
Internal Link Dist (ft)		2076			1139			943			995	
Turn Bay Length (ft)	540		280	465		230	270		645	485		210
Base Capacity (vph)	362	1461	742	267	1351	697	534	1045	572	247	838	518
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	0.78	0.30	0.73	1.06	0.29	0.63	0.92	0.26	0.78	0.58	0.19

Intersection Summary

Cycle Length: 180

Actuated Cycle Length: 180

Offset: 1 (1%), Referenced to phase 2:WBT and 6:EBT, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

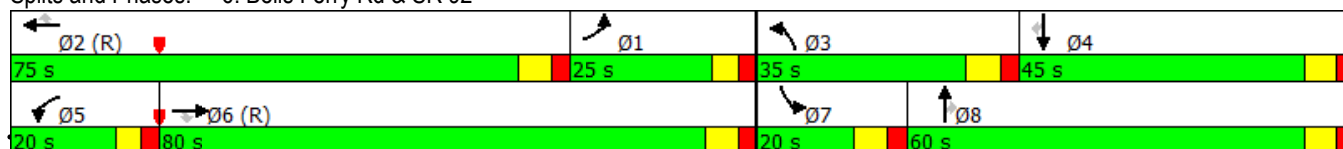
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 6: Bells Ferry Rd & SR 92



Baseline

Synchro 9 Report

Page 9

HCM Signalized Intersection Capacity Analysis

Future PM Peak - No Median Opening

6: Bells Ferry Rd & SR 92

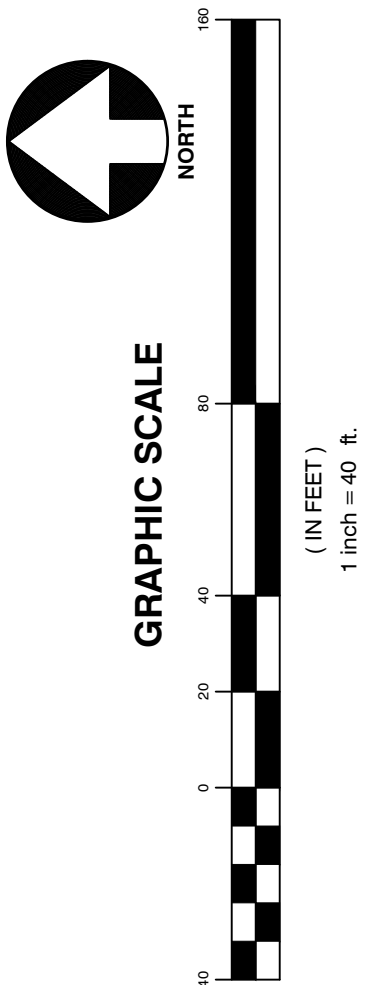
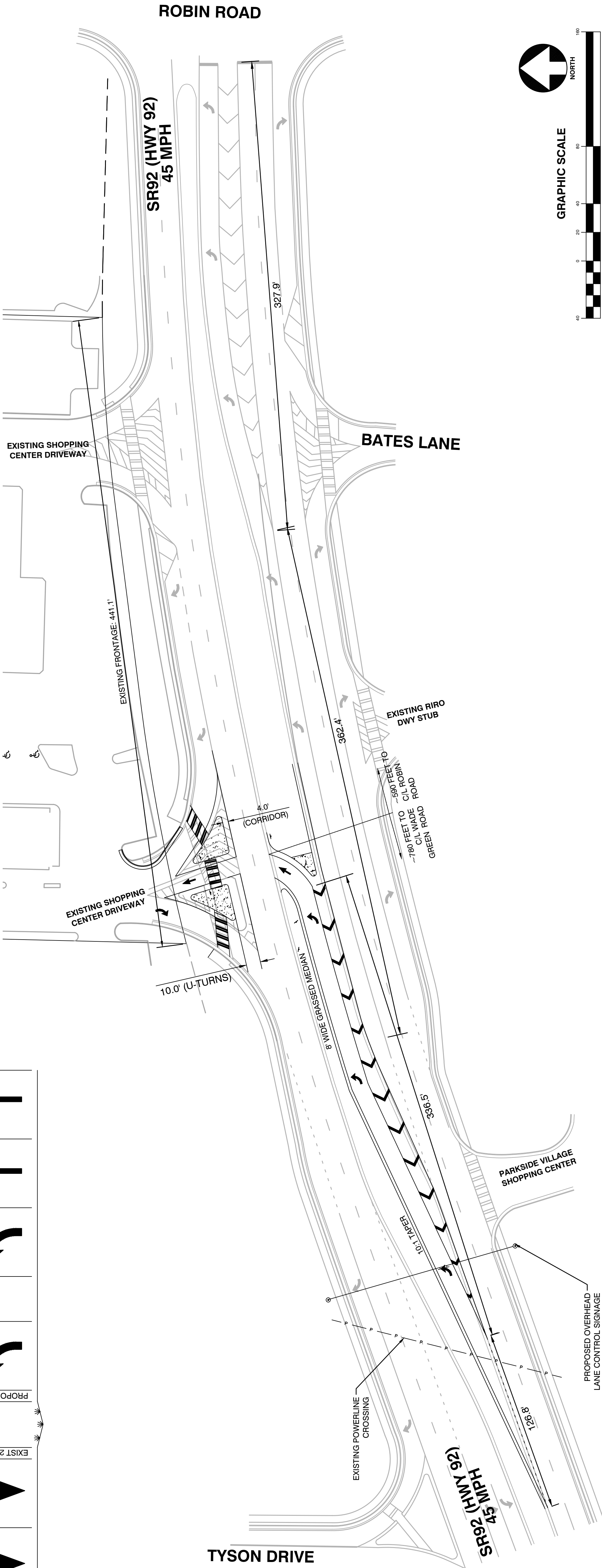
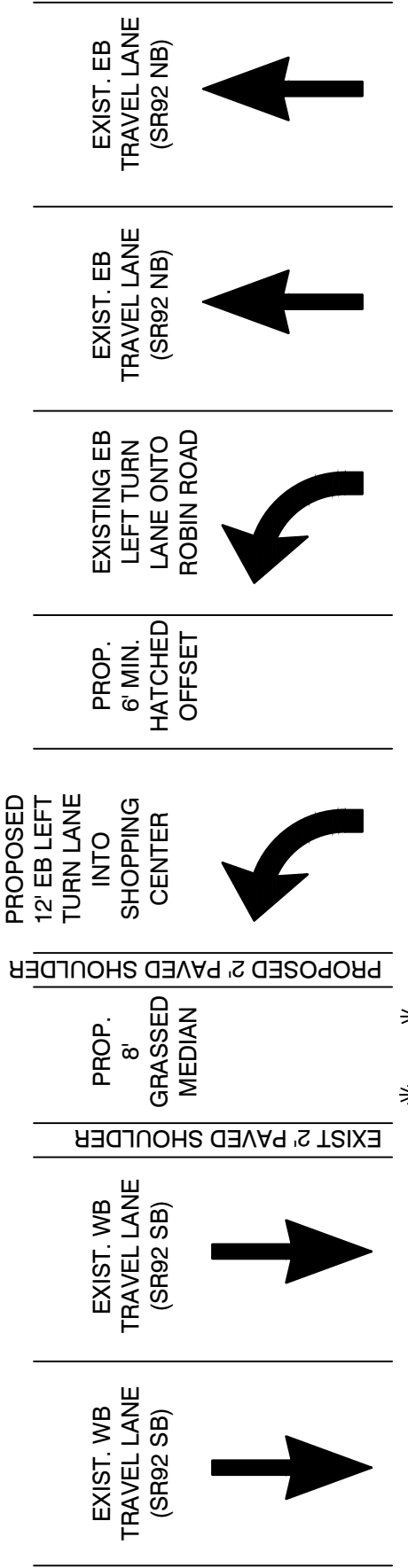
01/08/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	416	1107	217	189	1384	194	325	930	144	186	468	97
Future Volume (vph)	416	1107	217	189	1384	194	325	930	144	186	468	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	429	1141	224	195	1427	200	335	959	148	192	482	100
RTOR Reduction (vph)	0	0	90	0	0	93	0	0	105	0	0	76
Lane Group Flow (vph)	429	1141	134	195	1427	107	335	959	43	192	482	24
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	19.0	74.2	74.2	13.5	68.7	68.7	22.8	52.8	52.8	12.7	42.7	42.7
Effective Green, g (s)	19.0	74.2	74.2	13.5	68.7	68.7	22.8	52.8	52.8	12.7	42.7	42.7
Actuated g/C Ratio	0.11	0.41	0.41	0.08	0.38	0.38	0.13	0.29	0.29	0.07	0.24	0.24
Clearance Time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	362	1458	652	257	1350	604	434	1038	464	242	839	375
v/s Ratio Prot	c0.12	0.32		0.06	c0.40		c0.10	c0.27		0.06	0.14	
v/s Ratio Perm			0.08			0.07			0.03			0.01
v/c Ratio	1.19	0.78	0.21	0.76	1.06	0.18	0.77	0.92	0.09	0.79	0.57	0.06
Uniform Delay, d1	80.5	45.9	34.0	81.7	55.6	36.9	76.1	61.7	46.2	82.4	60.6	53.2
Progression Factor	0.77	0.58	0.17	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	103.9	3.5	0.6	12.1	41.1	0.6	8.3	13.8	0.2	16.2	1.5	0.1
Delay (s)	165.6	30.3	6.4	93.7	96.7	37.6	84.4	75.5	46.4	98.6	62.2	53.3
Level of Service	F	C	A	F	F	D	F	E	D	F	E	D
Approach Delay (s)		59.7			89.9			74.5			70.0	
Approach LOS		E			F			E			E	
Intersection Summary												
HCM 2000 Control Delay			74.2				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			180.0				Sum of lost time (s)			26.8		
Intersection Capacity Utilization			104.8%				ICU Level of Service			G		
Analysis Period (min)			15									

c Critical Lane Group

**LEFT-IN/U-TURN ONLY MEDIAN OPENING
CONCEPT DESIGN**

TYPICAL SECTION



PREPARED BY:

A&R Engineering Inc.
2160 Kingston Court, Ste O
Marietta, GA 30067
Tel: (770) 690-9255

Concept Plan #2		
Cherokee Commons Shopping Center		
SITE	6199 GA-92 Cherokee County, GA	
DATE	2018DEC12	DRAWN BY CAO

**FUTURE INTERSECTIONS ANALYSIS
SCENARIO 2**

Intersection

Int Delay, s/veh 0.8

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations	↔↔			↔	↔↔	
Traffic Vol, veh/h	14	17	28	323	506	18
Future Vol, veh/h	14	17	28	323	506	18
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	-	-	-	-	135
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	19	31	363	569	20

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	1004	295	589	0	-	0
Stage 1	579	-	-	-	-	-
Stage 2	425	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	253	702	984	-	-	-
Stage 1	525	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	243	702	984	-	-	-
Mov Cap-2 Maneuver	243	-	-	-	-	-
Stage 1	505	-	-	-	-	-
Stage 2	659	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s	15.5	0.7	0
HCM LOS	C		

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h)	984	-	379	-	-
HCM Lane V/C Ratio	0.032	-	0.092	-	-
HCM Control Delay (s)	8.8	0	15.5	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	4	0	38	0	0	0	52	347	2	0	492	30
Future Vol, veh/h	4	0	38	0	0	0	52	347	2	0	492	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	42	0	0	0	57	381	2	0	541	33
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1054	1055	287	767	1070	382	574	0	0	383	0	0
Stage 1	558	558	-	496	496	-	-	-	-	-	-	-
Stage 2	496	497	-	271	574	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	192	225	710	305	220	664	997	-	-	1174	-	-
Stage 1	482	511	-	555	544	-	-	-	-	-	-	-
Stage 2	555	544	-	712	502	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	181	209	710	271	204	664	997	-	-	1174	-	-
Mov Cap-2 Maneuver	181	209	-	271	204	-	-	-	-	-	-	-
Stage 1	447	511	-	514	504	-	-	-	-	-	-	-
Stage 2	514	504	-	670	502	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	12.1		0		1.1		0					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	997	-	-	555	-	1174	-	-				
HCM Lane V/C Ratio	0.057	-	-	0.083	-	-	-	-				
HCM Control Delay (s)	8.8	0	-	12.1	0	0	-	-				
HCM Lane LOS	A	A	-	B	A	A	-	-				
HCM 95th %tile Q(veh)	0.2	-	-	0.3	-	0	-	-				

Timings
3: Robin Rd & SR 92

Future AM Peak - No Shift
01/08/2019

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	362	1472	95	5	37	877	23	31	16	44	28	457
Future Volume (vph)	362	1472	95	5	37	877	23	31	16	44	28	457
Lane Group Flow (vph)	389	1583	102	0	45	943	25	33	31	47	30	491
Turn Type	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	1	6		5	5	2		3	8	7	4	
Permitted Phases	6		6	2	2		2	8		4		4
Detector Phase	1	6	6	5	5	2	2	3	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	5.0	15.0	15.0	5.0	8.0	5.0	8.0	8.0
Minimum Split (s)	11.3	30.1	30.1	15.0	15.0	37.1	37.1	11.8	50.1	12.0	49.1	49.1
Total Split (s)	47.0	84.0	84.0	16.0	16.0	53.0	53.0	15.0	45.0	15.0	45.0	45.0
Total Split (%)	29.4%	52.5%	52.5%	10.0%	10.0%	33.1%	33.1%	9.4%	28.1%	9.4%	28.1%	28.1%
Yellow Time (s)	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.3	1.6	1.6	3.5	3.5	1.6	1.6	3.8	4.1	4.0	4.1	4.1
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)	6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1	7.0	7.1	7.1
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.68	0.64	0.09		0.22	0.52	0.03	0.18	0.21	0.26	0.20	0.85
Control Delay	19.2	17.7	1.6		14.8	30.2	0.0	55.0	44.4	57.6	68.6	19.5
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	17.7	1.6		14.8	30.2	0.0	55.0	44.4	57.6	68.6	19.5
Queue Length 50th (ft)	123	451	0		10	334	0	31	17	44	31	0
Queue Length 95th (ft)	303	755	19		31	530	0	57	49	74	61	120
Internal Link Dist (ft)		238				2076			297		211	
Turn Bay Length (ft)			150		365		305			80		
Base Capacity (vph)	636	2465	1139		237	1817	892	188	421	183	441	749
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.64	0.09		0.19	0.52	0.03	0.18	0.07	0.26	0.07	0.66

Intersection Summary

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 10 (6%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Splits and Phases: 3: Robin Rd & SR 92



HCM Signalized Intersection Capacity Analysis

Future AM Peak - No Shift

3: Robin Rd & SR 92

01/08/2019

												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		 				 						
Traffic Volume (vph)	362	1472	95	5	37	877	23	31	16	13	44	28
Future Volume (vph)	362	1472	95	5	37	877	23	31	16	13	44	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0	7.1
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.93		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	3539	1583		1770	3539	1583	1770	1737		1770	1863
Flt Permitted	0.20	1.00	1.00		0.14	1.00	1.00	0.74	1.00		0.72	1.00
Satd. Flow (perm)	368	3539	1583		260	3539	1583	1374	1737		1341	1863
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	389	1583	102	5	40	943	25	33	17	14	47	30
RTOR Reduction (vph)	0	0	33	0	0	0	12	0	13	0	0	0
Lane Group Flow (vph)	389	1583	69	0	45	943	13	33	18	0	47	30
Turn Type	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA
Protected Phases	1	6		5	5	2		3	8		7	4
Permitted Phases	6		6	2	2		2	8			4	
Actuated Green, G (s)	120.7	108.7	108.7		86.2	80.7	80.7	19.0	12.7		19.4	13.0
Effective Green, g (s)	120.7	108.7	108.7		86.2	80.7	80.7	19.0	12.7		19.4	13.0
Actuated g/C Ratio	0.75	0.68	0.68		0.54	0.50	0.50	0.12	0.08		0.12	0.08
Clearance Time (s)	6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0	7.1
Vehicle Extension (s)	3.0	5.0	5.0		3.0	5.0	5.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	572	2404	1075		191	1784	798	178	137		179	151
v/s Ratio Prot	c0.14	0.45			0.01	0.27		0.01	0.01		c0.01	0.02
v/s Ratio Perm	c0.37		0.04		0.12		0.01	0.01			0.02	
v/c Ratio	0.68	0.66	0.06		0.24	0.53	0.02	0.19	0.13		0.26	0.20
Uniform Delay, d1	16.8	14.9	8.6		17.8	26.8	19.8	63.3	68.5		63.5	68.6
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	3.3	1.4	0.1		0.6	1.1	0.0	0.5	0.4		0.8	0.6
Delay (s)	20.1	16.3	8.7		18.5	27.9	19.8	63.8	69.0		64.2	69.3
Level of Service	C	B	A		B	C	B	E	E		E	E
Approach Delay (s)		16.7				27.3			66.3			70.1
Approach LOS		B				C			E			E
Intersection Summary												
HCM 2000 Control Delay			28.6			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			160.0			Sum of lost time (s)			26.7			
Intersection Capacity Utilization			73.4%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Robin Rd & SR 92

Future AM Peak - No Shift

01/08/2019

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	457
Future Volume (vph)	457
Ideal Flow (vphpl)	1900
Total Lost time (s)	7.1
Lane Util. Factor	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1583
Flt Permitted	1.00
Satd. Flow (perm)	1583
Peak-hour factor, PHF	0.93
Adj. Flow (vph)	491
RTOR Reduction (vph)	451
Lane Group Flow (vph)	40
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	13.0
Effective Green, g (s)	13.0
Actuated g/C Ratio	0.08
Clearance Time (s)	7.1
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	128
v/s Ratio Prot	
v/s Ratio Perm	c0.03
v/c Ratio	0.31
Uniform Delay, d1	69.3
Progression Factor	1.00
Incremental Delay, d2	1.4
Delay (s)	70.7
Level of Service	E
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑			↗
Traffic Vol, veh/h	0	1929	1367	30	0	18
Future Vol, veh/h	0	1929	1367	30	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2074	1470	32	0	19
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	735
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	0	362
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	362
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		15.5		
HCM LOS	C					
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	362			
HCM Lane V/C Ratio	-	-	0.053			
HCM Control Delay (s)	-	-	15.5			
HCM Lane LOS	-	-	C			
HCM 95th %tile Q(veh)	-	-	0.2			

Intersection							
Int Delay, s/veh	0.5						
Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Vol, veh/h	2	52	1929	1354	27	0	54
Future Vol, veh/h	2	52	1929	1354	27	0	54
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	Free	-	Yield
Storage Length	-	235	-	-	105	-	0
Veh in Median Storage, #	-	-	0	0	-	0	-
Grade, %	-	-	0	0	-	0	-
Peak Hour Factor	92	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	2	56	2074	1456	29	0	58
Major/Minor	Major1		Major2		Minor2		
Conflicting Flow All	1456	1456	0	-	0	-	728
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-
Critical Hdwy	6.44	4.14	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	2.22	-	-	-	-	3.32
Pot Cap-1 Maneuver	168	461	-	-	0	0	366
Stage 1	-	-	-	-	0	0	-
Stage 2	-	-	-	-	0	0	-
Platoon blocked, %			-	-			
Mov Cap-1 Maneuver	426	426	-	-	-	-	366
Mov Cap-2 Maneuver	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-
Approach	EB		WB		SB		
HCM Control Delay, s	0.4		0		16.7		
HCM LOS	C						
Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1			
Capacity (veh/h)	426	-	-	366			
HCM Lane V/C Ratio	0.136	-	-	0.159			
HCM Control Delay (s)	14.8	-	-	16.7			
HCM Lane LOS	B	-	-	C			
HCM 95th %tile Q(veh)	0.5	-	-	0.6			

Intersection: 3: Robin Rd & SR 92

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	UL	T	T	R	L	TR	L	T
Maximum Queue (ft)	309	313	321	185	208	518	514	210	94	92	92	90
Average Queue (ft)	183	220	234	47	35	245	254	17	30	30	35	22
95th Queue (ft)	307	357	371	178	122	477	485	120	76	73	76	60
Link Distance (ft)	263	263	263			2013	2013		309			190
Upstream Blk Time (%)	6	7	10									
Queuing Penalty (veh)	37	47	62									
Storage Bay Dist (ft)				150	365			305		200	80	
Storage Blk Time (%)			18	0		5	10				2	1
Queuing Penalty (veh)			17	0		2	2				0	0

Intersection: 3: Robin Rd & SR 92

Movement	SB
Directions Served	R
Maximum Queue (ft)	197
Average Queue (ft)	159
95th Queue (ft)	230
Link Distance (ft)	190
Upstream Blk Time (%)	8
Queuing Penalty (veh)	20
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: SR 92 & Kroger W. Drwy

Movement	EB	EB	EB	EB
Directions Served	UL	T	T	T
Maximum Queue (ft)	76	15	14	21
Average Queue (ft)	29	1	1	1
95th Queue (ft)	63	16	19	20
Link Distance (ft)			602	602
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	235	235		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 189

Timings 6: Bells Ferry Rd & SR 92

Future AM Peak - No Shift
01/08/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	1336	335	108	738	84	137	296	126	279	865	32
Future Volume (vph)	106	1336	335	108	738	84	137	296	126	279	865	32
Lane Group Flow (vph)	114	1437	360	116	794	90	147	318	135	300	930	34
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	8.0	15.0	15.0	8.0	15.0	15.0	8.0	15.0	15.0	8.0	15.0	15.0
Minimum Split (s)	14.0	48.0	48.0	14.0	50.0	50.0	15.0	48.8	48.8	15.0	50.8	50.8
Total Split (s)	25.0	85.0	85.0	20.0	80.0	80.0	25.0	50.0	50.0	25.0	50.0	50.0
Total Split (%)	13.9%	47.2%	47.2%	11.1%	44.4%	44.4%	13.9%	27.8%	27.8%	13.9%	27.8%	27.8%
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	4.5	4.3	4.3	4.5	4.3	4.3
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.19	0.91	0.44	0.54	0.66	0.14	0.59	0.67	0.40	0.42	0.98	0.06
Control Delay	68.3	55.4	15.7	90.9	52.5	0.5	90.5	81.1	10.7	65.3	89.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	55.4	15.7	90.9	52.5	0.5	90.5	81.1	10.7	65.3	89.3	0.2
Queue Length 50th (ft)	60	825	119	70	420	0	88	191	0	161	580	0
Queue Length 95th (ft)	101	#973	216	106	446	0	127	240	55	221	#774	0
Internal Link Dist (ft)		2076			1139			943			995	
Turn Bay Length (ft)	540		280	465		230	270		645	485		210
Base Capacity (vph)	585	1587	823	267	1435	731	343	849	490	707	946	529
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.91	0.44	0.43	0.55	0.12	0.43	0.37	0.28	0.42	0.98	0.06

Intersection Summary

Cycle Length: 180

Actuated Cycle Length: 180

Offset: 20 (11%), Referenced to phase 2:WBT and 6:EBT, Start of Green

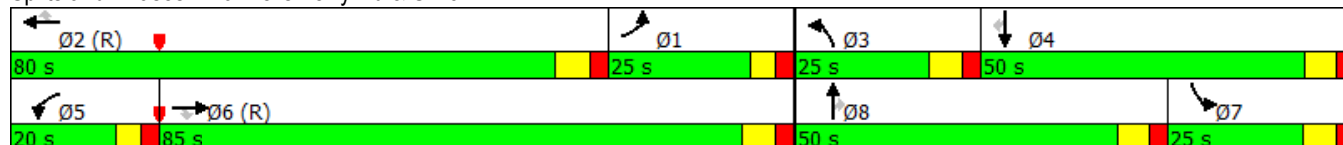
Natural Cycle: 150

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 6: Bells Ferry Rd & SR 92



HCM Signalized Intersection Capacity Analysis

Future AM Peak - No Shift

6: Bells Ferry Rd & SR 92

01/08/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	1336	335	108	738	84	137	296	126	279	865	32
Future Volume (vph)	106	1336	335	108	738	84	137	296	126	279	865	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	114	1437	360	116	794	90	147	318	135	300	930	34
RTOR Reduction (vph)	0	0	113	0	0	59	0	0	117	0	0	25
Lane Group Flow (vph)	114	1437	247	116	794	31	147	318	18	300	930	9
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	30.7	80.7	80.7	11.3	61.3	61.3	13.0	24.1	24.1	37.1	48.2	48.2
Effective Green, g (s)	30.7	80.7	80.7	11.3	61.3	61.3	13.0	24.1	24.1	37.1	48.2	48.2
Actuated g/C Ratio	0.17	0.45	0.45	0.06	0.34	0.34	0.07	0.13	0.13	0.21	0.27	0.27
Clearance Time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	585	1586	709	215	1205	539	247	473	211	707	947	423
v/s Ratio Prot	0.03	c0.41		0.03	c0.22		0.04	c0.09		0.09	c0.26	
v/s Ratio Perm			0.16			0.02			0.01			0.01
v/c Ratio	0.19	0.91	0.35	0.54	0.66	0.06	0.60	0.67	0.09	0.42	0.98	0.02
Uniform Delay, d1	64.0	46.1	32.5	81.8	50.5	39.9	80.9	74.2	68.3	62.2	65.5	48.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	9.0	1.4	2.6	2.8	0.2	3.8	4.9	0.4	0.4	24.9	0.0
Delay (s)	64.2	55.1	33.8	84.4	53.3	40.1	84.8	79.1	68.7	62.6	90.4	48.6
Level of Service	E	E	C	F	D	D	F	E	E	E	F	D
Approach Delay (s)		51.7			55.7			78.1			82.7	
Approach LOS		D			E			E			F	
Intersection Summary												
HCM 2000 Control Delay			64.0				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			180.0				Sum of lost time (s)			26.8		
Intersection Capacity Utilization			94.1%				ICU Level of Service			F		
Analysis Period (min)			15									

c Critical Lane Group

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	41	45	36	316	327	41
Future Vol, veh/h	41	45	36	316	327	41
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	-	-	-	-	135
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	48	39	340	352	44

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	792	198	396	0	-	0
Stage 1	374	-	-	-	-	-
Stage 2	418	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	342	811	1161	-	-	-
Stage 1	667	-	-	-	-	-
Stage 2	663	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	328	811	1161	-	-	-
Mov Cap-2 Maneuver	328	-	-	-	-	-
Stage 1	640	-	-	-	-	-
Stage 2	663	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.4	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1161	-	476	-	-
HCM Lane V/C Ratio	0.033	-	0.194	-	-
HCM Control Delay (s)	8.2	0	14.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	75	9	0	0	48	336	6	1	336	29
Future Vol, veh/h	16	0	75	9	0	0	48	336	6	1	336	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	80	10	0	0	51	357	6	1	357	31

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	837	840	194	643	852	360	388	0	0	363	0	0
Stage 1	375	375	-	462	462	-	-	-	-	-	-	-
Stage 2	462	465	-	181	390	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	272	301	815	372	296	684	1169	-	-	1194	-	-
Stage 1	619	616	-	579	564	-	-	-	-	-	-	-
Stage 2	579	562	-	804	607	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	260	284	815	321	279	684	1169	-	-	1194	-	-
Mov Cap-2 Maneuver	260	284	-	321	279	-	-	-	-	-	-	-
Stage 1	585	615	-	547	533	-	-	-	-	-	-	-
Stage 2	547	531	-	725	606	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.3		16.6		1		0	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1169	-	-	593	321	1194	-
HCM Lane V/C Ratio	0.044	-	-	0.163	0.03	0.001	-
HCM Control Delay (s)	8.2	0	-	12.3	16.6	8	0
HCM Lane LOS	A	A	-	B	C	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.1	0	-

Timings
3: Robin Rd & SR 92

Future Midday Peak - No Shift

01/08/2019

												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations		 				 						
Traffic Volume (vph)	301	951	87	19	42	1418	48	52	27	73	25	322
Future Volume (vph)	301	951	87	19	42	1418	48	52	27	73	25	322
Lane Group Flow (vph)	317	1001	92	0	64	1493	51	55	55	77	26	339
Turn Type	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	1	6		5	5	2		3	8	7	4	
Permitted Phases	6		6	2	2		2	8		4		4
Detector Phase	1	6	6	5	5	2	2	3	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	5.0	15.0	15.0	5.0	8.0	5.0	8.0	8.0
Minimum Split (s)	11.3	30.1	30.1	15.0	15.0	37.1	37.1	11.8	50.1	12.0	49.1	49.1
Total Split (s)	25.0	64.0	64.0	15.0	15.0	54.0	54.0	15.0	46.0	15.0	46.0	46.0
Total Split (%)	17.9%	45.7%	45.7%	10.7%	10.7%	38.6%	38.6%	10.7%	32.9%	10.7%	32.9%	32.9%
Yellow Time (s)	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.3	1.6	1.6	3.5	3.5	1.6	1.6	3.8	4.1	4.0	4.1	4.1
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)	6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1	7.0	7.1	7.1
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	1.02	0.44	0.09		0.17	0.77	0.05	0.26	0.30	0.39	0.15	0.82
Control Delay	94.1	15.2	0.7		9.7	29.8	0.1	47.7	36.4	52.0	57.2	26.2
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.1	15.2	0.7		9.7	29.8	0.1	47.7	36.4	52.0	57.2	26.2
Queue Length 50th (ft)	~232	233	0		15	540	0	43	25	61	23	37
Queue Length 95th (ft)	#450	370	8		40	#798	0	74	63	97	49	141
Internal Link Dist (ft)		237				769			297		211	
Turn Bay Length (ft)			150		365		305			80		
Base Capacity (vph)	311	2296	1075		388	1944	953	217	498	196	517	654
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.44	0.09		0.16	0.77	0.05	0.25	0.11	0.39	0.05	0.52

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 6 (4%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Robin Rd & SR 92

 Ø1	 Ø2 (R)	 Ø3	 Ø4
25 s	54 s	15 s	46 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
15 s	64 s	15 s	46 s

Baseline

Synchro 9 Report

Page 3

HCM Signalized Intersection Capacity Analysis

3: Robin Rd & SR 92

Future Midday Peak - No Shift

01/08/2019

												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		 				 						
Traffic Volume (vph)	301	951	87	19	42	1418	48	52	27	26	73	25
Future Volume (vph)	301	951	87	19	42	1418	48	52	27	26	73	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0	7.1
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.93		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	3539	1583		1770	3539	1583	1770	1726		1770	1863
Flt Permitted	0.07	1.00	1.00		0.28	1.00	1.00	0.74	1.00		0.63	1.00
Satd. Flow (perm)	126	3539	1583		514	3539	1583	1379	1726		1168	1863
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	317	1001	92	20	44	1493	51	55	28	27	77	26
RTOR Reduction (vph)	0	0	34	0	0	0	23	0	25	0	0	0
Lane Group Flow (vph)	317	1001	58	0	64	1493	28	55	30	0	77	26
Turn Type	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA
Protected Phases	1	6		5	5	2		3	8		7	4
Permitted Phases	6		6	2	2		2	8			4	
Actuated Green, G (s)	100.5	88.1	88.1		81.4	75.5	75.5	17.8	11.3		21.0	13.0
Effective Green, g (s)	100.5	88.1	88.1		81.4	75.5	75.5	17.8	11.3		21.0	13.0
Actuated g/C Ratio	0.72	0.63	0.63		0.58	0.54	0.54	0.13	0.08		0.15	0.09
Clearance Time (s)	6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0	7.1
Vehicle Extension (s)	3.0	5.0	5.0		3.0	5.0	5.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	310	2227	996		351	1908	853	193	139		209	172
v/s Ratio Prot	c0.14	0.28			0.01	0.42		0.01	0.02		c0.02	0.01
v/s Ratio Perm	c0.60		0.04		0.10		0.02	0.02			0.03	
v/c Ratio	1.02	0.45	0.06		0.18	0.78	0.03	0.28	0.22		0.37	0.15
Uniform Delay, d1	45.3	13.4	10.0		12.8	25.7	15.1	55.0	60.2		52.9	58.4
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	57.0	0.7	0.1		0.3	3.3	0.1	0.8	0.8		1.1	0.4
Delay (s)	102.3	14.1	10.1		13.0	29.0	15.2	55.9	61.0		54.0	58.8
Level of Service	F	B	B		B	C	B	E	E		D	E
Approach Delay (s)		33.7				27.9			58.4			61.0
Approach LOS		C				C			E			E
Intersection Summary												
HCM 2000 Control Delay			35.2			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.96									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			26.7			
Intersection Capacity Utilization			82.8%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	322
Future Volume (vph)	322
Ideal Flow (vphpl)	1900
Total Lost time (s)	7.1
Lane Util. Factor	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1583
Flt Permitted	1.00
Satd. Flow (perm)	1583
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	339
RTOR Reduction (vph)	269
Lane Group Flow (vph)	70
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	13.0
Effective Green, g (s)	13.0
Actuated g/C Ratio	0.09
Clearance Time (s)	7.1
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	146
v/s Ratio Prot	
v/s Ratio Perm	c0.04
v/c Ratio	0.48
Uniform Delay, d1	60.3
Progression Factor	1.00
Incremental Delay, d2	2.4
Delay (s)	62.7
Level of Service	E
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑			↗
Traffic Vol, veh/h	0	1339	1762	36	0	99
Future Vol, veh/h	0	1339	1762	36	0	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1409	1855	38	0	104
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	928
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	0	270
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	270
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		26.5		
HCM LOS	D					
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	270			
HCM Lane V/C Ratio	-	-	0.386			
HCM Control Delay (s)	-	-	26.5			
HCM Lane LOS	-	-	D			
HCM 95th %tile Q(veh)	-	-	1.7			

Intersection							
Int Delay, s/veh	1.5						
Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↑↑↑	↑↑	↗		↗
Traffic Vol, veh/h	4	94	1339	1754	75	0	98
Future Vol, veh/h	4	94	1339	1754	75	0	98
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	Yield	-	Yield
Storage Length	-	235	-	-	105	-	0
Veh in Median Storage, #	-	-	0	0	-	0	-
Grade, %	-	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	2	2	2	2	2
Mvmt Flow	4	99	1409	1846	79	0	103
Major/Minor	Major1		Major2		Minor2		
Conflicting Flow All	1846	1846	0	-	0	-	923
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-
Critical Hdwy	6.4	4.12	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-
Follow-up Hdwy	2.5	2.21	-	-	-	-	3.32
Pot Cap-1 Maneuver	96	329	-	-	-	0	272
Stage 1	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	0	-
Platoon blocked, %			-	-	-		
Mov Cap-1 Maneuver	279	279	-	-	-	-	272
Mov Cap-2 Maneuver	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-
Approach	EB		WB		SB		
HCM Control Delay, s	1.7		0		26.1		
HCM LOS					D		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	279	-	-	-	272		
HCM Lane V/C Ratio	0.37	-	-	-	0.379		
HCM Control Delay (s)	25.3	-	-	-	26.1		
HCM Lane LOS	D	-	-	-	D		
HCM 95th %tile Q(veh)	1.6	-	-	-	1.7		

Intersection: 3: Robin Rd & SR 92

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	UL	T	T	R	L	TR	L	T
Maximum Queue (ft)	305	284	282	176	499	794	750	382	96	104	115	100
Average Queue (ft)	221	176	171	28	124	522	488	84	44	44	51	24
95th Queue (ft)	338	282	280	134	428	839	809	348	91	98	94	71
Link Distance (ft)	260	260	260			803	803		309			188
Upstream Blk Time (%)	18	1	1			8	7					0
Queuing Penalty (veh)	84	7	6			0	0					0
Storage Bay Dist (ft)				150	365			305		200	80	
Storage Blk Time (%)			10	0		29	29				4	0
Queuing Penalty (veh)			9	0		18	14				1	0

Intersection: 3: Robin Rd & SR 92

Movement	SB
Directions Served	R
Maximum Queue (ft)	198
Average Queue (ft)	146
95th Queue (ft)	224
Link Distance (ft)	188
Upstream Blk Time (%)	6
Queuing Penalty (veh)	13
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: SR 92 & Kroger W. Drwy

Movement	EB	EB
Directions Served	UL	T
Maximum Queue (ft)	135	57
Average Queue (ft)	64	6
95th Queue (ft)	122	62
Link Distance (ft)		
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	235	235
Storage Blk Time (%)		0
Queuing Penalty (veh)		1

Zone Summary

Zone wide Queuing Penalty: 153

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↕	
Traffic Vol, veh/h	51	55	32	310	422	61
Future Vol, veh/h	51	55	32	310	422	61
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	-	-	-	-	135
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	57	33	323	440	64

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	861	252	504
Stage 1	472	-	-
Stage 2	389	-	-
Critical Hdwy	6.63	6.93	4.13
Critical Hdwy Stg 1	5.83	-	-
Critical Hdwy Stg 2	5.43	-	-
Follow-up Hdwy	3.519	3.319	2.219
Pot Cap-1 Maneuver	310	748	1059
Stage 1	595	-	-
Stage 2	684	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	298	748	1059
Mov Cap-2 Maneuver	298	-	-
Stage 1	572	-	-
Stage 2	684	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.1	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1059	-	433	-	-
HCM Lane V/C Ratio	0.031	-	0.255	-	-
HCM Control Delay (s)	8.5	0	16.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	61	1	1	4	70	322	0	0	475	16
Future Vol, veh/h	16	0	61	1	1	4	70	322	0	0	475	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	65	1	1	4	74	343	0	0	505	17

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1008	1005	261	744	1013	343	522	0	0	343	0	0
Stage 1	514	514	-	491	491	-	-	-	-	-	-	-
Stage 2	494	491	-	253	522	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	207	241	738	317	238	699	1042	-	-	1214	-	-
Stage 1	512	534	-	558	547	-	-	-	-	-	-	-
Stage 2	556	547	-	730	530	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	191	220	738	270	217	699	1042	-	-	1214	-	-
Mov Cap-2 Maneuver	191	220	-	270	217	-	-	-	-	-	-	-
Stage 1	467	534	-	509	499	-	-	-	-	-	-	-
Stage 2	503	499	-	666	530	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.4		13.5		1.6		0	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1042	-	-	463 428	1214	-	-
HCM Lane V/C Ratio	0.071	-	-	0.177 0.015	-	-	-
HCM Control Delay (s)	8.7	0	-	14.4 13.5	0	-	-
HCM Lane LOS	A	A	-	B B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.6 0	0	-	-

Timings 3: Robin Rd & SR 92

Future PM Peak - No Shift
01/08/2019

												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	1391	128	19	33	1679	50	82	58	100	30	406
Future Volume (vph)	270	1391	128	19	33	1679	50	82	58	100	30	406
Lane Group Flow (vph)	281	1449	133	0	54	1749	52	85	81	104	31	423
Turn Type	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	1	6		5	5	2		3	8	7	4	
Permitted Phases	6		6	2	2		2	8		4		4
Detector Phase	1	6	6	5	5	2	2	3	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	5.0	15.0	15.0	5.0	8.0	5.0	8.0	8.0
Minimum Split (s)	11.3	30.1	30.1	15.0	15.0	37.1	37.1	11.8	50.1	12.0	49.1	49.1
Total Split (s)	35.0	104.0	104.0	15.0	15.0	84.0	84.0	15.0	46.0	15.0	46.0	46.0
Total Split (%)	19.4%	57.8%	57.8%	8.3%	8.3%	46.7%	46.7%	8.3%	25.6%	8.3%	25.6%	25.6%
Yellow Time (s)	3.0	4.5	4.5	3.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.3	1.6	1.6	3.5	3.5	1.6	1.6	3.8	4.1	4.0	4.1	4.1
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)	6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1	7.0	7.1	7.1
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.92	0.64	0.13		0.26	0.95	0.06	0.31	0.32	0.40	0.12	0.93
Control Delay	92.9	23.8	4.8		19.4	45.6	0.6	57.5	61.7	61.0	63.3	52.6
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.9	23.8	4.8		19.4	45.6	0.6	57.5	61.7	61.0	63.3	52.6
Queue Length 50th (ft)	277	552	11		23	641	0	82	77	102	33	193
Queue Length 95th (ft)	#460	773	50		m27	m#1181	m0	125	124	148	63	320
Internal Link Dist (ft)		238				2076			297		211	
Turn Bay Length (ft)			150		365		305			80		
Base Capacity (vph)	323	2270	1053		218	1842	893	274	393	260	402	557
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.64	0.13		0.25	0.95	0.06	0.31	0.21	0.40	0.08	0.76

Intersection Summary

Cycle Length: 180

Actuated Cycle Length: 180

Offset: 155 (86%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Robin Rd & SR 92

			
Ø1	Ø2 (R)	Ø3	Ø4
35 s	84 s	15 s	46 s
			
Ø5	Ø6 (R)	Ø7	Ø8
15 s	104 s	15 s	46 s

Baseline

Synchro 9 Report
Page 3

HCM Signalized Intersection Capacity Analysis

3: Robin Rd & SR 92

Future PM Peak - No Shift

01/08/2019

												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		 				 						
Traffic Volume (vph)	270	1391	128	19	33	1679	50	82	58	20	100	30
Future Volume (vph)	270	1391	128	19	33	1679	50	82	58	20	100	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0	7.1
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.96		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	3539	1583		1770	3539	1583	1770	1790		1770	1863
Flt Permitted	0.04	1.00	1.00		0.14	1.00	1.00	0.74	1.00		0.70	1.00
Satd. Flow (perm)	75	3539	1583		261	3539	1583	1373	1790		1302	1863
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	281	1449	133	20	34	1749	52	85	60	21	104	31
RTOR Reduction (vph)	0	0	39	0	0	0	25	0	8	0	0	0
Lane Group Flow (vph)	281	1449	94	0	54	1749	27	85	73	0	104	31
Turn Type	pm+pt	NA	Perm	pm+pt	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA
Protected Phases	1	6		5	5	2		3	8		7	4
Permitted Phases	6		6	2	2		2	8			4	
Actuated Green, G (s)	126.7	114.2	114.2		99.7	93.7	93.7	33.3	25.1		33.1	25.1
Effective Green, g (s)	126.7	114.2	114.2		99.7	93.7	93.7	33.3	25.1		33.1	25.1
Actuated g/C Ratio	0.70	0.63	0.63		0.55	0.52	0.52	0.18	0.14		0.18	0.14
Clearance Time (s)	6.3	6.1	6.1		6.5	6.1	6.1	6.8	7.1		7.0	7.1
Vehicle Extension (s)	3.0	5.0	5.0		3.0	5.0	5.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	304	2245	1004		194	1842	824	272	249		260	259
v/s Ratio Prot	c0.14	0.41			0.01	c0.49		0.01	0.04		c0.02	0.02
v/s Ratio Perm	0.52		0.06		0.14		0.02	0.04			0.06	
v/c Ratio	0.92	0.65	0.09		0.28	0.95	0.03	0.31	0.29		0.40	0.12
Uniform Delay, d1	65.2	20.4	12.8		20.0	40.9	21.0	62.8	69.5		63.7	67.8
Progression Factor	1.00	1.00	1.00		1.40	0.98	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	32.3	1.4	0.2		0.3	5.3	0.0	0.7	0.7		1.0	0.2
Delay (s)	97.5	21.8	13.0		28.4	45.5	21.1	63.5	70.2		64.7	68.0
Level of Service	F	C	B		C	D	C	E	E		E	E
Approach Delay (s)		32.6				44.4			66.7			91.9
Approach LOS		C				D			E			F
Intersection Summary												
HCM 2000 Control Delay			46.2			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			180.0			Sum of lost time (s)			26.7			
Intersection Capacity Utilization			92.8%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Robin Rd & SR 92

Future PM Peak - No Shift
01/08/2019

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	406
Future Volume (vph)	406
Ideal Flow (vphpl)	1900
Total Lost time (s)	7.1
Lane Util. Factor	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1583
Flt Permitted	1.00
Satd. Flow (perm)	1583
Peak-hour factor, PHF	0.96
Adj. Flow (vph)	423
RTOR Reduction (vph)	237
Lane Group Flow (vph)	186
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	25.1
Effective Green, g (s)	25.1
Actuated g/C Ratio	0.14
Clearance Time (s)	7.1
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	220
v/s Ratio Prot	
v/s Ratio Perm	c0.12
v/c Ratio	0.85
Uniform Delay, d1	75.6
Progression Factor	1.00
Incremental Delay, d2	24.8
Delay (s)	100.4
Level of Service	F
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑			↗
Traffic Vol, veh/h	0	1789	2102	49	0	167
Future Vol, veh/h	0	1789	2102	49	0	167
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1864	2190	51	0	174
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	1095
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	0	209
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	209
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		73.2		
HCM LOS				F		
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	209			
HCM Lane V/C Ratio	-	-	0.832			
HCM Control Delay (s)	-	-	73.2			
HCM Lane LOS	-	-	F			
HCM 95th %tile Q(veh)	-	-	6.2			

Intersection							
Int Delay, s/veh	3.4						
Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↑↑↑	↑↑	↗		↗
Traffic Vol, veh/h	5	121	1789	2122	98	0	112
Future Vol, veh/h	5	121	1789	2122	98	0	112
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	Yield	-	Yield
Storage Length	-	235	-	-	105	-	0
Veh in Median Storage, #	-	-	0	0	-	0	-
Grade, %	-	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	2	2	2	2	2
Mvmt Flow	5	127	1883	2234	103	0	118
Major/Minor	Major1		Major2		Minor2		
Conflicting Flow All	2234	2234	0	-	0	-	1117
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-
Critical Hdwy	6.4	4.12	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-
Follow-up Hdwy	2.5	2.21	-	-	-	-	3.32
Pot Cap-1 Maneuver	53	232	-	-	-	0	202
Stage 1	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	0	-
Platoon blocked, %			-	-	-		
Mov Cap-1 Maneuver	173	173	-	-	-	-	202
Mov Cap-2 Maneuver	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-
Approach	EB		WB		SB		
HCM Control Delay, s	4.8		0		45.1		
HCM LOS					E		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	173	-	-	-	202		
HCM Lane V/C Ratio	0.767	-	-	-	0.584		
HCM Control Delay (s)	73.4	-	-	-	45.1		
HCM Lane LOS	F	-	-	-	E		
HCM 95th %tile Q(veh)	5	-	-	-	3.2		

Intersection: 3: Robin Rd & SR 92

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	UL	T	T	R	L	TR	L	T
Maximum Queue (ft)	324	324	332	185	500	1343	1357	465	157	154	134	188
Average Queue (ft)	238	268	267	50	127	826	848	114	77	70	75	37
95th Queue (ft)	367	369	367	183	439	1359	1392	423	141	131	127	110
Link Distance (ft)	263	263	263			2013	2013		309			190
Upstream Blk Time (%)	27	14	13									0
Queuing Penalty (veh)	162	82	80									1
Storage Bay Dist (ft)				150	365			305		200	80	
Storage Blk Time (%)			22	0		49	52		0		16	1
Queuing Penalty (veh)			29	0		26	26		0		5	1

Intersection: 3: Robin Rd & SR 92

Movement	SB
Directions Served	R
Maximum Queue (ft)	201
Average Queue (ft)	186
95th Queue (ft)	217
Link Distance (ft)	190
Upstream Blk Time (%)	23
Queuing Penalty (veh)	61
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: SR 92 & Kroger W. Drwy

Movement	EB	EB	EB	EB	WB	SB
Directions Served	UL	T	T	T	T	R
Maximum Queue (ft)	297	359	609	479	2	26
Average Queue (ft)	156	115	125	82	0	1
95th Queue (ft)	294	358	489	405	2	19
Link Distance (ft)			602	602	260	258
Upstream Blk Time (%)			6	1		
Queuing Penalty (veh)			0	0		
Storage Bay Dist (ft)	235	235				
Storage Blk Time (%)	17	7	2			
Queuing Penalty (veh)	102	45	11			

Zone Summary

Zone wide Queuing Penalty: 631

Timings 6: Bells Ferry Rd & SR 92

Future PM Peak - No Shift
01/08/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	416	1107	217	189	1384	194	325	930	144	186	468	97
Future Volume (vph)	416	1107	217	189	1384	194	325	930	144	186	468	97
Lane Group Flow (vph)	429	1141	224	195	1427	200	335	959	148	192	482	100
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	8.0	15.0	15.0	8.0	15.0	15.0	8.0	15.0	15.0	8.0	15.0	15.0
Minimum Split (s)	14.0	49.0	49.0	14.0	51.0	51.0	15.0	50.8	50.8	15.0	52.8	52.8
Total Split (s)	25.0	80.0	80.0	20.0	75.0	75.0	35.0	60.0	60.0	20.0	45.0	45.0
Total Split (%)	13.9%	44.4%	44.4%	11.1%	41.7%	41.7%	19.4%	33.3%	33.3%	11.1%	25.0%	25.0%
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	4.5	4.3	4.3	4.5	4.3	4.3
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	1.19	0.78	0.30	0.76	1.06	0.29	0.77	0.93	0.26	0.79	0.58	0.19
Control Delay	160.2	36.0	4.6	100.4	93.0	11.5	88.3	76.5	7.3	104.8	64.3	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	160.2	36.0	4.6	100.4	93.0	11.5	88.3	76.5	7.3	104.8	64.3	0.8
Queue Length 50th (ft)	~314	633	60	118	~976	38	201	581	0	117	266	0
Queue Length 95th (ft)	#431	608	27	#167	#1115	103	252	#701	57	#177	344	0
Internal Link Dist (ft)		2076			1139			943			995	
Turn Bay Length (ft)	540		280	465		230	270		645	485		210
Base Capacity (vph)	362	1461	742	267	1351	697	534	1045	572	247	838	518
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	0.78	0.30	0.73	1.06	0.29	0.63	0.92	0.26	0.78	0.58	0.19

Intersection Summary

Cycle Length: 180

Actuated Cycle Length: 180

Offset: 1 (1%), Referenced to phase 2:WBT and 6:EBT, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

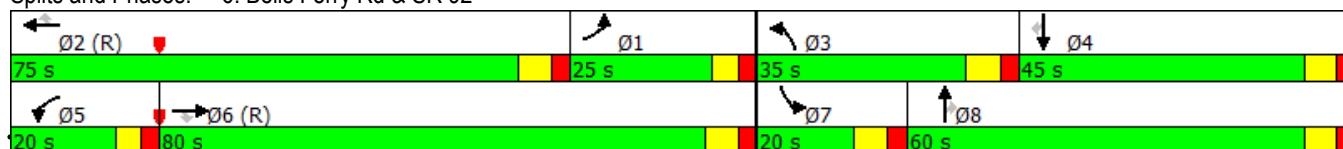
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 6: Bells Ferry Rd & SR 92



Baseline

HCM Signalized Intersection Capacity Analysis

6: Bells Ferry Rd & SR 92

Future PM Peak - No Shift

01/08/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	416	1107	217	189	1384	194	325	930	144	186	468	97
Future Volume (vph)	416	1107	217	189	1384	194	325	930	144	186	468	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	429	1141	224	195	1427	200	335	959	148	192	482	100
RTOR Reduction (vph)	0	0	90	0	0	93	0	0	105	0	0	76
Lane Group Flow (vph)	429	1141	134	195	1427	107	335	959	43	192	482	24
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	19.0	74.2	74.2	13.5	68.7	68.7	22.8	52.8	52.8	12.7	42.7	42.7
Effective Green, g (s)	19.0	74.2	74.2	13.5	68.7	68.7	22.8	52.8	52.8	12.7	42.7	42.7
Actuated g/C Ratio	0.11	0.41	0.41	0.08	0.38	0.38	0.13	0.29	0.29	0.07	0.24	0.24
Clearance Time (s)	6.0	7.0	7.0	6.0	7.0	7.0	7.0	6.8	6.8	7.0	6.8	6.8
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	362	1458	652	257	1350	604	434	1038	464	242	839	375
v/s Ratio Prot	c0.12	0.32		0.06	c0.40		c0.10	c0.27		0.06	0.14	
v/s Ratio Perm			0.08			0.07			0.03			0.01
v/c Ratio	1.19	0.78	0.21	0.76	1.06	0.18	0.77	0.92	0.09	0.79	0.57	0.06
Uniform Delay, d1	80.5	45.9	34.0	81.7	55.6	36.9	76.1	61.7	46.2	82.4	60.6	53.2
Progression Factor	0.83	0.70	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	104.8	3.6	0.6	12.1	41.1	0.6	8.3	13.8	0.2	16.2	1.5	0.1
Delay (s)	171.9	35.6	11.7	93.7	96.7	37.6	84.4	75.5	46.4	98.6	62.2	53.3
Level of Service	F	D	B	F	F	D	F	E	D	F	E	D
Approach Delay (s)		65.2			89.9			74.5			70.0	
Approach LOS		E			F			E			E	
Intersection Summary												
HCM 2000 Control Delay			75.9				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			180.0				Sum of lost time (s)			26.8		
Intersection Capacity Utilization			104.8%				ICU Level of Service			G		
Analysis Period (min)			15									

c Critical Lane Group

TRAFFIC VOLUME WORKSHEETS

18-102 Kroger on SR 92, Acworth, GA - Median Justification Study
Traffic Volumes

A&R Engineering
January 2019

1. Robin Rd @ Kroger N. Drwy

A.M. Peak Hour

Condition	Robin Road Northbound					Robin Road Southbound					Kroger Northern Driveway Eastbound					Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
	0	36	323	0	359	0	0	506	17	523	0	13	0	16	29	0	0	0	0	0
Existing Volumes:	0	36	323	0	359	0	0	506	17	523	0	13	0	16	29	0	0	0	0	0
Shifted Existing Volumes (Scenario 2 - Median Brea	0	-8	0	0	-8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 1 - No Median Break):	0	1	0	0	1	0	0	0	1	1	0	1	0	1	2	0	0	0	0	0
New Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	1	1	0	1	0	1	2	0	0	0	0	0
Passby Trips (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Passby Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Volumes (Scenario 1 - No Median Break):	0	37	323	0	360	0	0	506	18	524	0	14	0	17	31	0	0	0	0	0
Future Volumes (Scenario 2 - Median Break):	0	28	323	0	351	0	0	506	18	524	0	14	0	17	31	0	0	0	0	0

MID Peak Hour

Condition	Robin Road Northbound					Robin Road Southbound					Kroger Northern Driveway Eastbound					Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
	0	42	316	0	358	0	0	327	37	364	0	37	0	41	78	0	0	0	0	0
Existing Volumes:	0	42	316	0	358	0	0	327	37	364	0	37	0	41	78	0	0	0	0	0
Shifted Existing Volumes (Scenario 2 - Median Brea	0	-6	0	0	-6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 1 - No Median Break):	0	4	0	0	4	0	0	0	4	4	0	4	0	3	7	0	0	0	0	0
New Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	4	4	0	4	0	3	7	0	0	0	0	0
Passby Trips (Scenario 1 - No Median Break):	0	1	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
Passby Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
Future Volumes (Scenario 1 - No Median Break):	0	47	316	0	363	0	0	327	41	368	0	41	0	45	86	0	0	0	0	0
Future Volumes (Scenario 2 - Median Break):	0	36	316	0	352	0	0	327	41	368	0	41	0	45	86	0	0	0	0	0

P.M. Peak Hour

Condition	Robin Road Northbound					Robin Road Southbound					Kroger Northern Driveway Eastbound					Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
	0	38	310	0	348	0	0	422	58	480	0	48	0	51	99	0	0	0	0	0
Existing Volumes:	0	38	310	0	348	0	0	422	58	480	0	48	0	51	99	0	0	0	0	0
Shifted Existing Volumes (Scenario 2 - Median Brea	0	-6	0	0	-6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 1 - No Median Break):	0	3	0	0	3	0	0	0	3	3	0	3	0	2	5	0	0	0	0	0
New Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	3	3	0	3	0	2	5	0	0	0	0	0
Passby Trips (Scenario 1 - No Median Break):	0	1	0	0	1	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0
Passby Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0
Future Volumes (Scenario 1 - No Median Break):	0	42	310	0	352	0	0	422	61	483	0	51	0	55	106	0	0	0	0	0
Future Volumes (Scenario 2 - Median Break):	0	32	310	0	342	0	0	422	61	483	0	51	0	55	106	0	0	0	0	0

18-102 Kroger on SR 92, Acworth, GA - Median Justification Study
Traffic Volumes

A&R Engineering
January 2019

2. Robin Rd @ Kroger S. Drwy

A.M. Peak Hour

Condition	Robin Road Northbound					Robin Road Southbound					Kroger Southern Driveway Eastbound					Private Driveway Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
	0	62	355	2	419	0	0	491	30	521	0	4	0	37	41	0	0	0	0	0
Existing Volumes:	0	-11	-8	0	-19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shifted Existing Volumes (Scenario 2 - Median Brea	0	2	1	0	3	0	0	1	0	1	0	0	0	1	1	0	0	0	0	0
New Trips (Scenario 1 - No Median Break):	0	1	0	0	1	0	0	1	0	1	0	0	0	1	1	0	0	0	0	0
New Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Passby Trips (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Passby Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Volumes (Scenario 1 - No Median Break):	0	64	356	2	422	0	0	492	30	522	0	4	0	38	42	0	0	0	0	0
Future Volumes (Scenario 2 - Median Break):	0	52	347	2	401	0	0	492	30	522	0	4	0	38	42	0	0	0	0	0

MID Peak Hour

Condition	Robin Road Northbound					Robin Road Southbound					Kroger Southern Driveway Eastbound					Private Driveway Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
	0	55	342	6	403	0	1	332	29	362	0	16	0	71	87	0	9	0	0	9
Existing Volumes:	0	-10	-6	0	-16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shifted Existing Volumes (Scenario 2 - Median Brea	0	7	4	0	11	0	0	3	0	3	0	0	0	3	3	0	0	0	0	0
New Trips (Scenario 1 - No Median Break):	0	3	0	0	3	0	0	3	0	3	0	0	0	3	3	0	0	0	0	0
New Trips (Scenario 2 - Median Break):	0	1	1	0	2	0	0	1	0	1	0	0	0	1	1	0	0	0	0	0
Passby Trips (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	1	0	1	0	0	0	1	1	0	0	0	0	0
Passby Trips (Scenario 2 - Median Break):	0	63	347	6	416	0	1	336	29	366	0	16	0	75	91	0	9	0	0	9
Future Volumes (Scenario 1 - No Median Break):	0	48	336	6	390	0	1	336	29	366	0	16	0	75	91	0	9	0	0	9
Future Volumes (Scenario 2 - Median Break):	0	48	336	6	390	0	1	336	29	366	0	16	0	75	91	0	9	0	0	9

P.M. Peak Hour

Condition	Robin Road Northbound					Robin Road Southbound					Kroger Southern Driveway Eastbound					Private Driveway Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
	0	77	328	0	405	0	0	471	16	487	0	16	0	57	73	0	1	1	4	6
Existing Volumes:	0	-9	-6	0	-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shifted Existing Volumes (Scenario 2 - Median Brea	0	5	3	0	8	0	0	2	0	2	0	0	0	2	2	0	0	0	0	0
New Trips (Scenario 1 - No Median Break):	0	2	0	0	2	0	0	2	0	2	0	0	0	2	2	0	0	0	0	0
New Trips (Scenario 2 - Median Break):	0	1	1	0	2	0	0	2	0	2	0	0	0	2	2	0	0	0	0	0
Passby Trips (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	2	0	2	0	0	0	2	2	0	0	0	0	0
Passby Trips (Scenario 2 - Median Break):	0	83	332	0	415	0	0	475	16	491	0	16	0	61	77	0	1	1	4	6
Future Volumes (Scenario 1 - No Median Break):	0	70	322	0	392	0	0	475	16	491	0	16	0	61	77	0	1	1	4	6
Future Volumes (Scenario 2 - Median Break):	0	70	322	0	392	0	0	475	16	491	0	16	0	61	77	0	1	1	4	6

18-102 Kroger on SR 92, Acworth, GA - Median Justification Study
Traffic Volumes

A&R Engineering
 January 2019

3. Robin Rd @ SR 92

A.M. Peak Hour

Condition	QuikTrip/Furniture Store Driveway Northbound						Robin Road Southbound						SR 92 Eastbound						SR 92 Westbound					
	U	L	T	R	Tot		U	L	T	R	Tot		U	L	T	R	Tot		U	L	T	R	Tot	
	0	31	16	13	60		0	43	28	457	528		32	381	1472	95	1980		5	37	876	22	940	
Existing Volumes:	0	31	16	13	60		0	43	28	457	528		32	381	1472	95	1980		5	37	876	22	940	
Shifted Existing Volumes (Scenario 2 - Median Brea	0	0	0	0	0		0	0	0	0	0		-32	-19	0	0	-51		0	0	0	0	0	
New Trips (Scenario 1 - No Median Break):	0	0	0	0	0		0	1	0	0	1		0	3	0	0	3		0	0	1	1	2	
New Trips (Scenario 2 - Median Break):	0	0	0	0	0		0	1	0	0	1		0	0	0	0	0		0	0	1	1	2	
Passby Trips (Scenario 1 - No Median Break):	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	
Passby Trips (Scenario 2 - Median Break):	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	
Future Volumes (Scenario 1 - No Median Break):	0	31	16	13	60		0	44	28	457	529		32	384	1472	95	1983		5	37	877	23	942	
Future Volumes (Scenario 2 - Median Break):	0	31	16	13	60		0	44	28	457	529		0	362	1472	95	1929		5	37	877	23	942	

MID Peak Hour

Condition	QuikTrip/Furniture Store Driveway Northbound						Robin Road Southbound						SR 92 Eastbound						SR 92 Westbound					
	U	L	T	R	Tot		U	L	T	R	Tot		U	L	T	R	Tot		U	L	T	R	Tot	
	0	52	27	26	105		0	65	25	322	412		72	317	953	87	1429		19	42	1415	45	1521	
Existing Volumes:	0	52	27	26	105		0	65	25	322	412		72	317	953	87	1429		19	42	1415	45	1521	
Shifted Existing Volumes (Scenario 2 - Median Brea	0	0	0	0	0		0	0	0	0	0		-72	-16	0	0	-88		0	0	0	0	0	
New Trips (Scenario 1 - No Median Break):	0	0	0	0	0		0	6	0	0	6		0	8	0	0	8		0	0	3	3	6	
New Trips (Scenario 2 - Median Break):	0	0	0	0	0		0	6	0	0	6		0	0	0	0	0		0	0	3	3	6	
Passby Trips (Scenario 1 - No Median Break):	0	0	0	0	0		0	2	0	0	2		0	2	-2	0	0		0	0	0	0	0	
Passby Trips (Scenario 2 - Median Break):	0	0	0	0	0		0	2	0	0	2		0	0	-2	0	-2		0	0	0	0	0	
Future Volumes (Scenario 1 - No Median Break):	0	52	27	26	105		0	73	25	322	420		72	327	951	87	1437		19	42	1418	48	1527	
Future Volumes (Scenario 2 - Median Break):	0	52	27	26	105		0	73	25	322	420		0	301	951	87	1339		19	42	1418	48	1527	

P.M. Peak Hour

Condition	QuikTrip/Furniture Store Driveway						Robin Road						SR 92											
	Northbound						Southbound						Eastbound						Westbound					
	U	L	T	R	Tot		U	L	T	R	Tot		U	L	T	R	Tot		U	L	T	R	Tot	
Existing Volumes:	0	82	58	20	160		0	93	30	406	529		103	284	1394	128	1909		19	33	1677	48	1777	
Shifted Existing Volumes (Scenario 2 - Median Break)	0	0	0	0	0		0	0	0	0	0		-103	-14	0	0	-117		0	0	0	0	0	
New Trips (Scenario 1 - No Median Break):	0	0	0	0	0		0	4	0	0	4		0	6	0	0	6		0	0	2	2	4	
New Trips (Scenario 2 - Median Break):	0	0	0	0	0		0	4	0	0	4		0	0	0	0	0		0	0	2	2	4	
Passby Trips (Scenario 1 - No Median Break):	0	0	0	0	0		0	3	0	0	3		0	3	-3	0	0		0	0	0	0	0	
Passby Trips (Scenario 2 - Median Break):	0	0	0	0	0		0	3	0	0	3		0	0	-3	0	-3		0	0	0	0	0	
Future Volumes (Scenario 1 - No Median Break):	0	82	58	20	160		0	100	30	406	536		103	293	1391	128	1915		19	33	1679	50	1781	
Future Volumes (Scenario 2 - Median Break):	0	82	58	20	160		0	100	30	406	536		0	270	1391	128	1789		19	33	1679	50	1781	

18-102 Kroger on SR 92, Acworth, GA - Median Justification Study
Traffic Volumes

A&R Engineering
 January 2019

4. SR 92 @ Kroger E. Drwy
A.M. Peak Hour

Condition	Northbound					Kroger Eastern Driveway Southbound					SR 92 Eastbound					SR 92 Westbound				
	-					-					-					-				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing Volumes:	0	0	0	0	0	0	0	0	17	17	0	0	1980	0	1980	0	0	1383	45	1428
Shifted Existing Volumes (Scenario 2 - Median Brea	0	0	0	0	0	0	0	0	0	0	0	0	-51	0	-51	0	0	-16	-16	-32
New Trips (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	1	1	0	0	3	0	3	0	0	0	1	1
New Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
Passby Trips (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Passby Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Volumes (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	18	18	0	0	1983	0	1983	0	0	1383	46	1429
Future Volumes (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	18	18	0	0	1929	0	1929	0	0	1367	30	1397

MID Peak Hour

Condition	Northbound					Kroger Eastern Driveway Southbound					SR 92 Eastbound					SR 92 Westbound				
	-					-					-					-				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing Volumes:	0	0	0	0	0	0	0	0	94	94	0	0	1429	0	1429	0	0	1799	68	1867
Shifted Existing Volumes (Scenario 2 - Median Brea	0	0	0	0	0	0	0	0	0	0	0	0	-88	0	-88	0	0	-36	-36	-72
New Trips (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	4	4	0	0	8	0	8	0	0	0	3	3
New Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	3	3
Passby Trips (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	-1	1	0
Passby Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	1	1	0	0	-2	0	-2	0	0	-1	1	0
Future Volumes (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	99	99	0	0	1437	0	1437	0	0	1798	72	1870
Future Volumes (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	99	99	0	0	1339	0	1339	0	0	1762	36	1798

P.M. Peak Hour

Condition	Northbound					Kroger Eastern Driveway Southbound					SR 92 Eastbound					SR 92 Westbound				
	-					-					-					-				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing Volumes:	0	0	0	0	0	0	0	0	162	162	0	0	1909	0	1909	0	0	2156	97	2253
Shifted Existing Volumes (Scenario 2 - Median Brea	0	0	0	0	0	0	0	0	0	0	0	0	-117	0	-117	0	0	-52	-52	-104
New Trips (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	3	3	0	0	6	0	6	0	0	0	2	2
New Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	2	2
Passby Trips (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	-2	2	0
Passby Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	2	2	0	0	-3	0	-3	0	0	-2	2	0
Future Volumes (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	167	167	0	0	1915	0	1915	0	0	2154	101	2255
Future Volumes (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	167	167	0	0	1789	0	1789	0	0	2102	49	2151

18-102 Kroger on SR 92, Acworth, GA - Median Justification Study
Traffic Volumes

A&R Engineering
 January 2019

5. SR 92 @ Kroger W. Drwy

A.M. Peak Hour

Condition	Northbound					Kroger Western Drwy/Wendy's Drwy Southbound					SR 92 Eastbound					SR 92 Westbound				
	-					-					-					-				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing Volumes:	0	0	0	0	0	0	0	0	0	53	0	0	1980	0	1980	0	0	1355	41	1396
Shifted Existing Volumes (Scenario 2 - Median Brea	0	0	0	0	0	0	0	0	0	0	2	49	-51	0	0	0	0	-2	-14	-16
New Trips (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	1	1	0	0	3	0	3	0	0	1	0	1
New Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	1	1	0	3	0	0	3	0	0	1	0	1
Passby Trips (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Passby Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Volumes (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	0	54	0	0	1983	0	1983	0	0	1356	41	1397
Future Volumes (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	0	54	2	52	1929	0	1983	0	0	1354	27	1381

MID Peak Hour

Condition	Northbound					Kroger Western Drwy/Wendy's Drwy Southbound					SR 92 Eastbound					SR 92 Westbound				
	-					-					-					-				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing Volumes:	0	0	0	0	0	0	0	0	93	93	0	0	1429	0	1429	0	0	1755	106	1861
Shifted Existing Volumes (Scenario 2 - Median Brea	0	0	0	0	0	0	0	0	0	0	4	84	-88	0	0	0	0	-4	-32	-36
New Trips (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	4	4	0	0	8	0	8	0	0	4	0	4
New Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	4	4	0	8	0	0	8	0	0	4	0	4
Passby Trips (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	-1	1	0
Passby Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	1	1	0	2	-2	0	0	0	0	-1	1	0
Future Volumes (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	98	98	0	0	1437	0	1437	0	0	1758	107	1865
Future Volumes (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	98	98	4	94	1339	0	1437	0	0	1754	75	1829

P.M. Peak Hour

Condition	Northbound					Kroger Western Drwy/Wendy's Drwy Southbound					SR 92 Eastbound					SR 92 Westbound				
	-					-					-					-				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing Volumes:	0	0	0	0	0	0	0	0	107	107	0	0	1909	0	1909	0	0	2126	142	2268
Shifted Existing Volumes (Scenario 2 - Median Brea	0	0	0	0	0	0	0	0	0	0	5	112	-117	0	0	0	0	-5	-46	-51
New Trips (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	3	3	0	0	6	0	6	0	0	3	0	3
New Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	3	3	0	6	0	0	6	0	0	3	0	3
Passby Trips (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	-2	2	0
Passby Trips (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	2	2	0	3	-3	0	0	0	0	-2	2	0
Future Volumes (Scenario 1 - No Median Break):	0	0	0	0	0	0	0	0	112	112	0	0	1915	0	1915	0	0	2127	144	2271
Future Volumes (Scenario 2 - Median Break):	0	0	0	0	0	0	0	0	112	112	5	121	1789	0	1915	0	0	2122	98	2220