Traffic Impact Study

Proposed Retail and Restaurant Development
Lawrenceville Highway at Lynburn Drive
City of Tucker, Georgia

August 9, 2019

MARC R. ACAMPORA, PE, LLC
TRAFFIC ENGINEERING

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study prepared for:

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Introduction

This study assesses the traffic impact of a proposed commercial development in the City of Tucker, Georgia. The site is located on the southwest corner of Lawrenceville Highway and Lynburn Drive, as shown in the location map in Figure 1. For purposes of this traffic study it was assumed that the site will be developed with 6,020 square feet of retail, a 2,545 square foot fast food restaurant with drive-through window, and a 2,140 square foot high-turnover restaurant. A right-in/right-out (RIRO) access will be provided on Lawrenceville Highway and a full-movement access will be provided on Railroad Avenue.

The purpose of this traffic impact study is to determine existing traffic operating conditions in the vicinity of the proposed development, project future traffic volumes, assess the impact of the subject development, then develop conclusions and recommendations to mitigate the project traffic impact and ensure safe and efficient existing and future traffic conditions in the vicinity of the project.

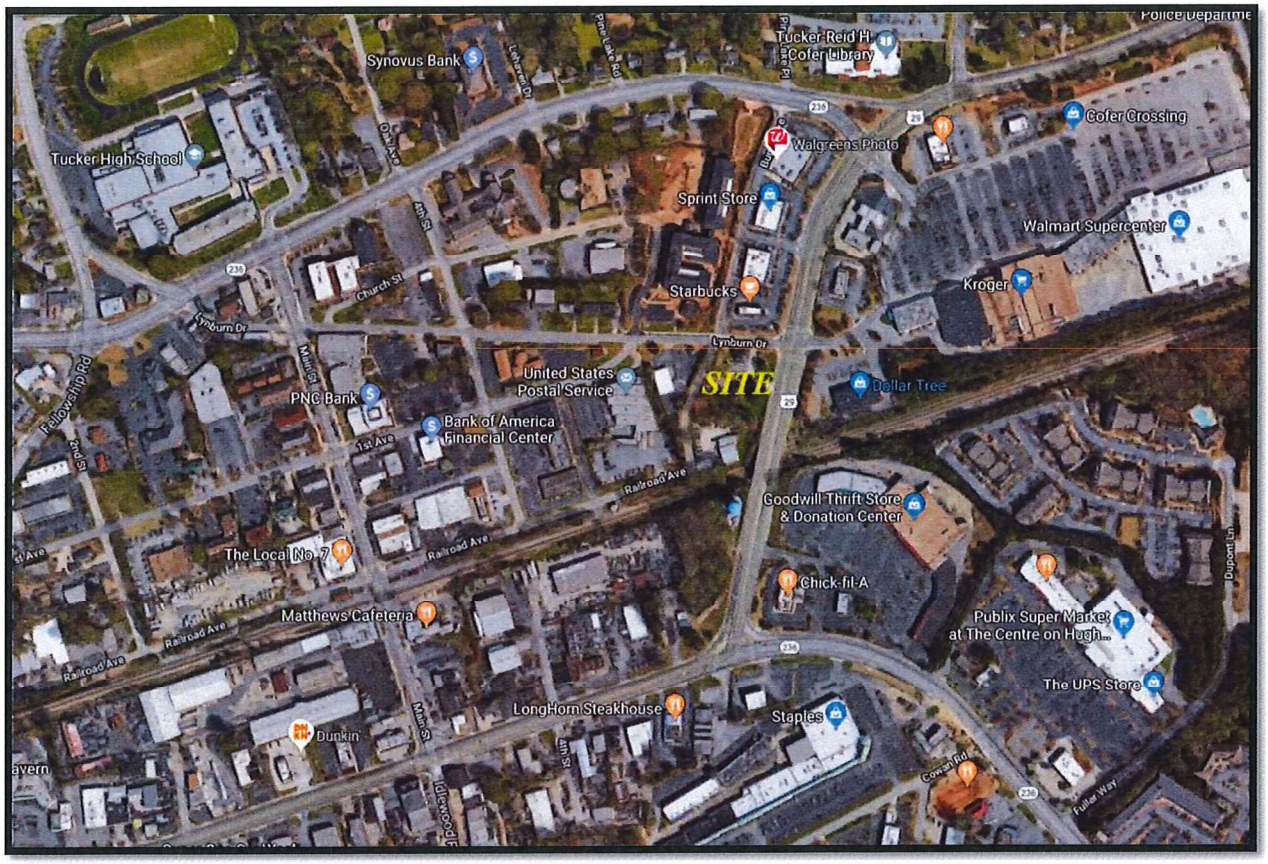

Figure 1 – Site Location Map

Existing Traffic Conditions

Existing traffic operating conditions in the vicinity of the proposed retail and restaurant development were assessed. The following is a description of existing transportation facilities, traffic volumes, and intersection operations.

Description of Existing Roadways

Lawrenceville Highway (US 29, GA 8) is a principal urban arterial (Georgia DOT designation) with a general northeast/southwest orientation. The road has two through lanes per direction in the vicinity of the site, with northbound exclusive left and right turn lanes and a southbound exclusive left turn lane at Lynburn Drive. Land uses along Lawrenceville Highway include large and small retail centers, with primarily commercial uses to the south and residential uses to the north. The terrain along the adjacent segment of Lawrenceville Highway is very gently rolling and the posted speed limit is 45 mph in this area. In 2018 (the latest year for which data was available at the time of this study) the Georgia Department of Transportation (Georgia DOT) recorded an Annual Average Daily Traffic (AADT) volume of 24,800 vehicles per day (vpd) on Lawrenceville Highway just north of Lynburn Drive.

Lynburn Drive is a local street that connects Lavista Road to Lawrenceville Highway, then continues to the east into a large shopping center. The road has two lanes and is controlled by a traffic signal at Lawrenceville Highway. The terrain is gently rolling and the posted speed limit is 25 mph. Railroad Avenue is a narrow local street with very low traffic volumes.

Pedestrian, Bicycle, and Transit Accessibility

Sidewalk is provided along both sides of Lawrenceville Highway in the vicinity of the site. There is sidewalk along the north side of Lynburn Drive but not adjacent to the subject site. Crosswalks and pedestrian crossing signals are provided on all approaches at the signalized intersection of Lawrenceville Highway / Lynburn Drive. There are no designated bicycle lanes in this vicinity. There is regularly scheduled MARTA bus service in this area, with bus stops located on both sides of Lawrenceville Highway at Lynburn Drive.

Photographs 1 through 3 show the roadway conditions in the vicinity of the site.

Photograph 1 – Lawrenceville Highway Facing North from Proposed RIRO Access Location

Photograph 2 – Lynburn Drive Facing East at Lawrenceville Highway

Photograph 3 – Railroad Avenue Facing North Along Site Frontage (Site to Right)

Existing Traffic Volumes

The following intersections were counted and evaluated in the existing condition:

1. Lawrenceville Highway (US 29, GA 8) at Lynburn Drive / Shopping Center Access
2. Lynburn Drive at Railroad Avenue / Burns Avenue

The counts at the Lawrenceville Highway intersection were provided by the City of Tucker. Those counts were collected on Tuesday, May 15, 2018. The counts at the Railroad Avenue intersection were collected for this study on Wednesday, July 31, 2019, from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 6:00 p.m. Area schools were in standard session on the day on which the Tucker-provided counts were recorded but were not in session when the July counts were collected for this study. From the count data, the highest four consecutive 15-minute interval volumes at each intersection, during each time period, were determined. The eastbound and westbound through volumes on Lynburn Drive, in the counts collected at the Railroad Avenue intersection, were adjusted to account for school not being in session. The eastbound through movement was increased by 50% and the westbound through movement was increased by 10% in the a.m. peak hour. Since the July counts were higher than the May 2018 counts in the p.m. peak hour, no adjustment was made to the July counts in the p.m. These volumes (adjusted as appropriate) make up the typical weekday a.m. and p.m. peak hour traffic volumes at each intersection. The existing a.m. and p.m. peak hour turning movement volumes are shown in Figure 2. The raw count data is found in Appendix A.

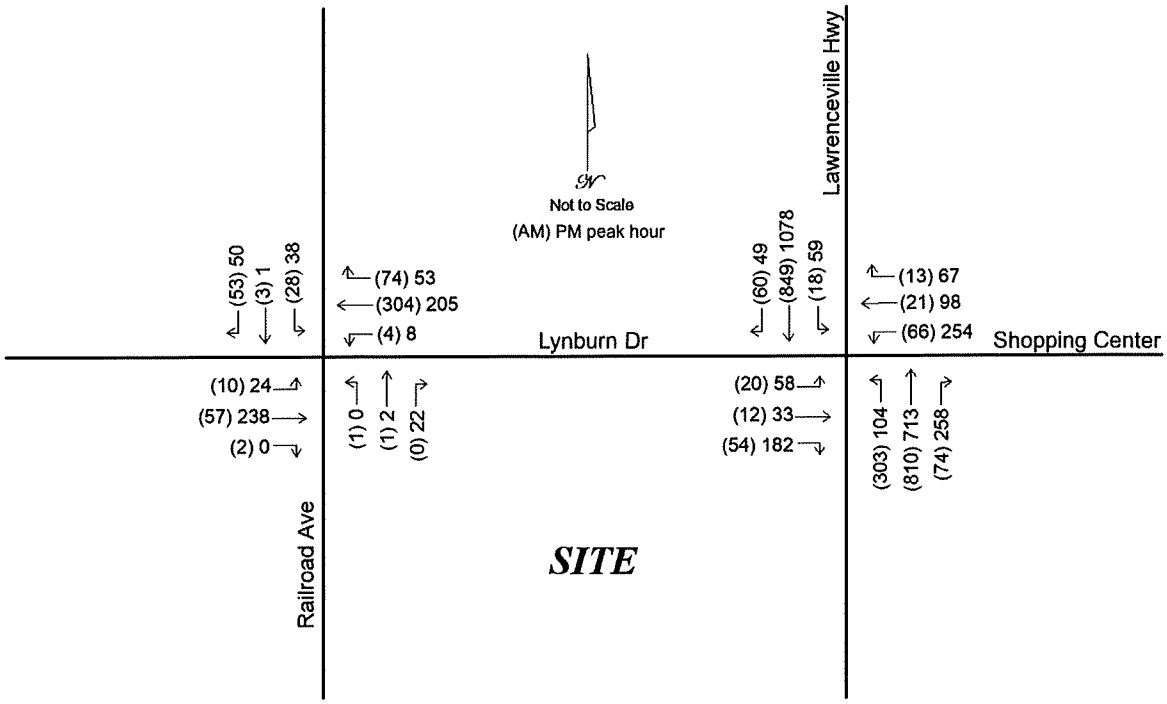

Figure 2 – Existing Weekday A.M. and P.M. Peak Hour Traffic Volumes

Georgia DOT AADT volume counts were also obtained on nearby roadways for the five years from 2014 to 2018 (the latest year for which volumes are available). Table 1 presents the historic Georgia DOT counts and the annual growth rates between the counts.

Table 1 – Historic Georgia DOT Traffic Volume Counts and Annual Growth Rates

Year	L'ville N of Lynburn	Annual Growth	L'ville W of Idlewood	Annual Growth	Lavista W of L'ville	Annual Growth
Station ID	**089-3027**		**089-3025**		**089-3272**	
2014	20,800		25,700		23,300	
2015	21,000	1.0%	26,600	3.5%	25,100	7.7%
2016	21,700	3.3%	25,700	-3.4%	23,200	-7.6%
2017	24,800	14.3%	27,200	5.8%	24,600	6.0%
2018	24,800	0.0%	25,100	-7.7%	24,600	0.0%
avg growth		*4.5%*		*-0.6%*		*1.4%*

Growth in the area has been moderately positive. However, in the last year of data, the count station closest to the site showed no growth, another showed a solid decrease, and another also showed zero growth. This is discussed more when developing future growth projections in the No-Build Traffic Conditions section of this report.

Existing Intersection Operations

Existing traffic operations were analyzed at the counted intersections using Synchro software, version 10, in accordance with the methodology presented in the Transportation Research Board's 2016 *Highway Capacity Manual* (*HCM 6*). This methodology is presented in Appendix B. The results of the analysis are shown in Table 2. Computer printouts containing detailed results of the existing analysis are located in Appendix C. Levels of service and delays are provided for each overall intersection and for each controlled approach or movement. Locations that operate unacceptably are presented in bold type.

Table 2 – Existing Intersection Operations

Intersection / Approach	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay (s/veh)	LOS	Delay (s/veh)
1. Lawrenceville Highway / Lynburn Drive	B	10.1	C	28.1
northbound approach	A	4.9	C	22.1
southbound approach	A	7.5	C	31.1
eastbound approach	D	48.7	C	28.1
westbound approach	D	47.4	D	36.2
2. Lynburn Drive / Railroad Avenue / Burns Avenue	A	2.3	A	2.6
northbound approach	B	13.6	B	10.5
southbound approach	B	12.6	B	13.7
eastbound left turn	A	8.2	A	7.9
westbound left turn	A	7.4	A	7.9

The existing analysis reveals acceptable operations at both study intersections. It is recommended that the lane and crosswalk striping be refreshed at the Lawrenceville / Lynburn intersection. A centerline stripe should be added to Lynburn Drive, especially at its intersection at Lawrenceville Highway. Stop bars should be added on the Railroad Avenue and Burns Avenue side street stop sign controlled approaches. These recommendations should be implemented whether or not the proposed development is built and are, therefore, system improvements.

No-Build Traffic Conditions

A 2022 no-build condition was developed. This represents the traffic conditions that will exist in the future after the anticipated date of the build-out of the proposed retail / restaurant development, but not including the project's trips. The purpose of the analysis of this condition is to isolate the traffic impacts of the proposed development from background growth in volumes that are expected to occur in the area while the project is under construction.

In order to develop no-build volumes, a background growth factor was developed using the historic Georgia DOT 24-hour traffic counts that were presented previously in this report, in Table 1. Based on the growth trends identified in Table 1, a 1.0% annual growth factor was applied to the existing volumes when projecting the future no-build volumes. The growth factor was applied for three years, for a total of 3.0% growth that will occur while the proposed development is under construction. The existing traffic volumes were increased by the 3.0% growth factor. The results are the 2022 no-build traffic volumes that will be on the roadway network in the future when the proposed development is built and operational, but excluding the project's trips.

Programmed Transportation Infrastructure Improvements

The Atlanta Regional Commission's Transportation Improvement Program was reviewed for planned or programmed transportation improvements in the vicinity of the proposed development which might impact traffic operations at the study intersections. No roadway infrastructure changes were identified in the vicinity of the subject site.

No-Build Intersection Operations

The no-build condition includes the no-build traffic volumes, as described above. These were entered into the Synchro model and the 2022 no-build traffic operations were analyzed at the study intersections using Synchro 10 software in accordance with the HCM 6 methodology. The results of the no-build analysis are shown in Table 3. Computer printouts containing detailed results of the no-build analysis are located in Appendix D. Levels of service and delays are provided for the overall intersection and for each controlled approach or movement. Locations that operate unacceptably are presented in bold type.

Table 3 – No-Build Intersection Operations

Intersection / Approach	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay (s/veh)	LOS	Delay (s/veh)
1. Lawrenceville Highway / Lynburn Drive	B	10.4	C	30.2
northbound approach	A	5.3	C	23.8
southbound approach	A	7.9	C	34.9
eastbound approach	D	48.6	C	27.6
westbound approach	D	47.4	D	36.4
2. Lynburn Drive / Railroad Avenue / Burns Avenue	A	2.4	A	2.7
northbound approach	B	13.8	B	10.6
southbound approach	B	12.8	B	14.0
eastbound left turn	A	8.3	A	7.9
westbound left turn	A	7.4	A	7.9

As with the existing condition, both study intersections will operate acceptably in the no-build condition. Increases in delays due to the anticipated modest growth in background volumes will be in the magnitude of a few seconds or tenths of seconds. No mitigation is identified for the no-build condition.

Project Traffic Characteristics

This section describes the anticipated traffic characteristics of the proposed commercial development, including a site description, how much traffic the project will generate, and where that traffic will travel.

Project Description

For purposes of this traffic study, it was assumed that the site will be developed with 6,020 square feet of retail, a 2,545 square foot fast food restaurant with drive-through window, and a 2,140 square foot high-turnover restaurant. A right-in/right-out (RIRO) access will be provided on Lawrenceville Highway and a full-movement access will be provided on Railroad Avenue. The site plan is presented in Figure 3.

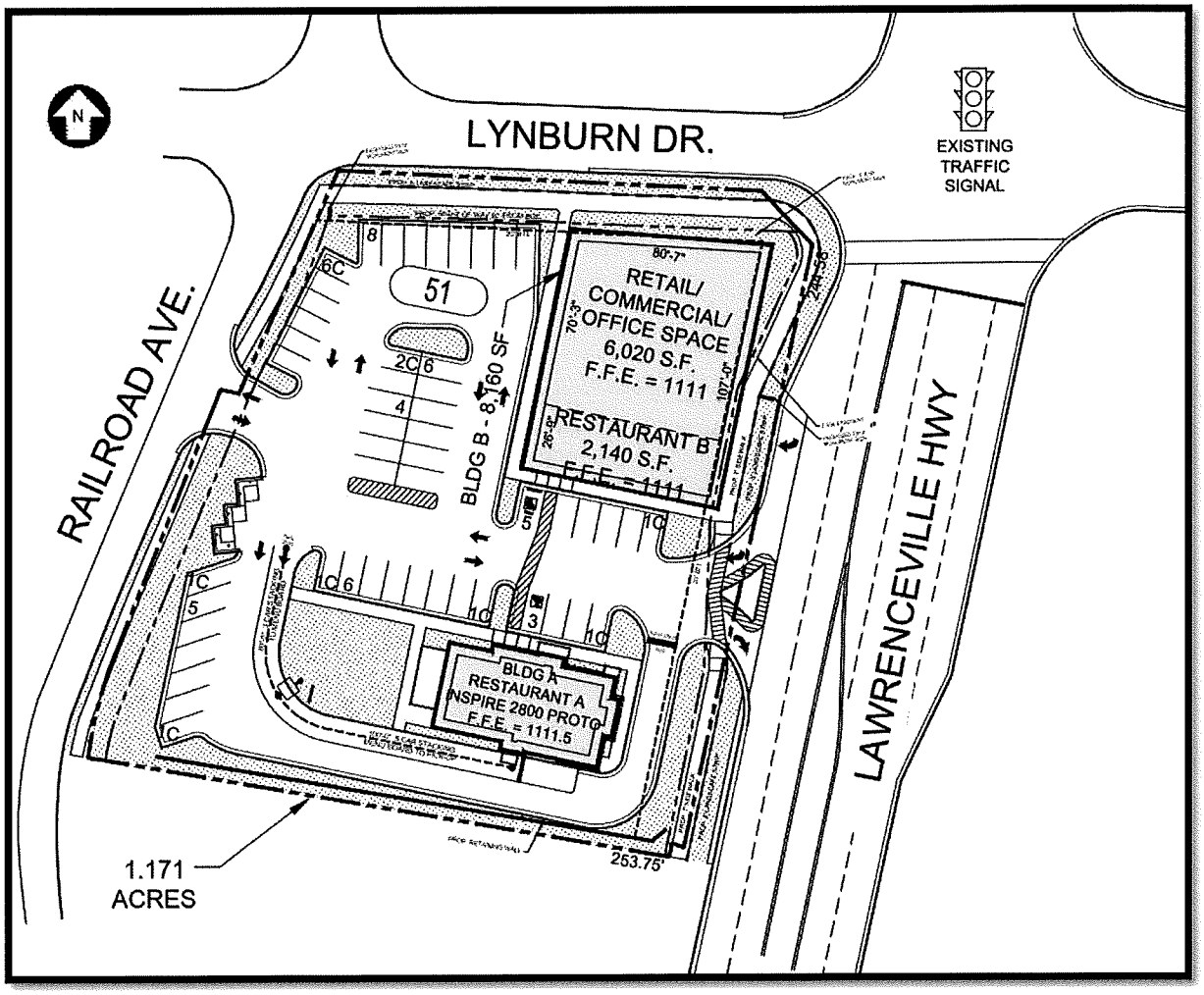

Figure 3 – Site Plan

Trip Generation

Trip generation is an estimate of the number of entering and exiting vehicular trips that will be generated by the proposed development. The volume of traffic that will be generated by the project was calculated using the equations and rates in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th Edition. ITE Land Use 820 – Shopping Center was chosen as representative of the retail land use. The trip generation of the Restaurant A was based on ITE Land Use 934 – Fast Food Restaurant with Drive-Through Window while Restaurant B's trip generation was calculated using ITE Land Use 932 – High Turnover (Sit-Down) Restaurant. The developer has agreed to a condition of zoning that the fast food restaurant will not open before 10:00 a.m. Therefore, the a.m. peak hour trip generation for the fast food restaurant was zeroed and the 24-hour trips were reduced by 20%.

The raw trips were adjusted to reflect the effect of pass-by trips. These are trips that are already passing the site enroute to their final destination, but will turn into the site for retail shopping or dining, then continue on to their original destination. These trips appear entering and exiting the site driveways, but they are not new trips on the adjacent roadways. Based on the ITE *Trip Generation Handbook*, 3rd Edition, the pass-by percentage identified for the retail is 34% for the p.m. peak hour. The a.m. and 24-hour pass-by percentages were estimated each at 24% based on the p.m. percentage. For the fast food restaurant, the average a.m. pass-by percentage is 49%, the average p.m. percentage is 50%, and the 24-hour percentage was estimated at 49%. For the sit-down restaurant, the average p.m. peak hour pass-by percentage is 43% and the a.m. and 24-hour percentages were estimated each at 33%. Table 4 summarizes the trip generation calculations for the proposed development.

Table 4 – Trip Generation

Land Use	ITE Code	Size	A.M. Peak Hour			P.M. Peak Hour			24-Hour
			In	Out	Total	In	Out	Total	2-Way
Retail	820	6,020 ft²*	4	2	6	11	12	23	228
-pass-by trips		24%/34%/24%	-1	-0	-1	-4	-4	-8	-56
New Trips			*3*	*2*	*5*	*7*	*8*	*15*	*172*
Restaurant A**	932	2,545 ft²	0	0	0	43	40	83	960
-pass-by trips		na/50%/49%	-0	-0	-0	-22	-20	-42	-470
New Trips			*0*	*0*	*0*	*21*	*20*	*41*	*490*
Restaurant B	*932*	2,140 ft²	11	10	21	13	8	21	240
-pass-by trips		33%/43%/33%	-4	-3	-7	-6	-3	-9	-80
New Trips			*7*	*7*	*14*	*7*	*5*	*12*	*160*
Total Project Raw Trips			*15*	*12*	*27*	*67*	*60*	*127*	*1,428*
-pass-by trips			-5	-3	-8	-32	-27	-59	-606
New Trips			*10*	*9*	*19*	*35*	*33*	*68*	*822*

*trip rates were used due to small square footage

** see text for explanation of a.m. and 24-hour trip calculations

Trip Distribution and Assignment

The trip distribution percentages indicate what proportion of the project's trips will travel to and from various directions. The trip distribution percentages for the new trips were developed based on population densities and the distances of those populations to the site. The pass-by trips were assigned to the site driveways and the adjacent intersections based on the existing traffic flows passing the site. The project trips, shown in Table 4, were assigned to the roadway network based on the new trip distribution percentages and pass-by trip percentages. The new trip distribution percentages and the a.m. and p.m. peak hour project trips are shown in Figure 4.

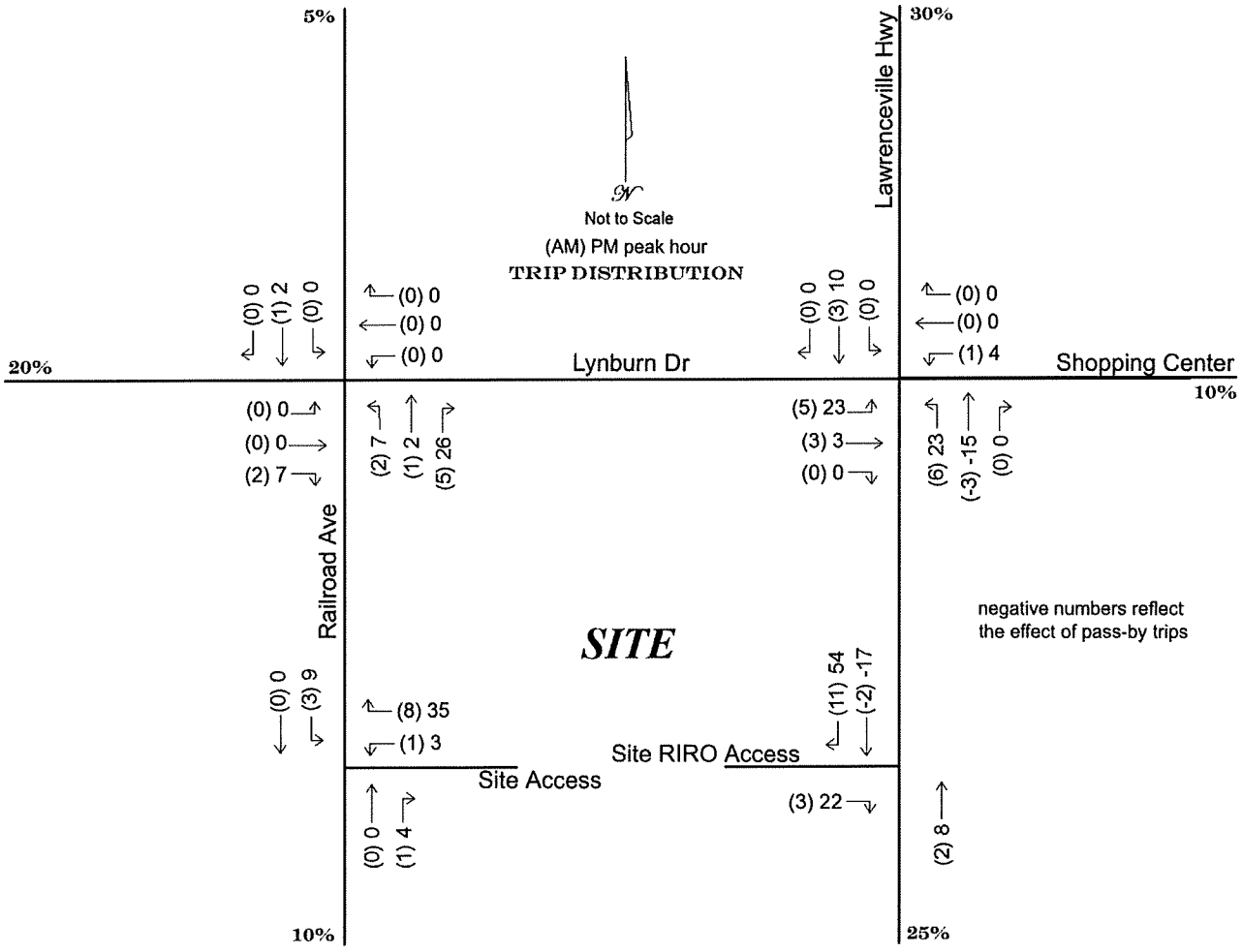

Figure 4 – Weekday A.M. and P.M. Peak Hour Site Trips and Distribution Percentages

Future Traffic Conditions

The future volumes consist of the no-build volumes plus the trips that will be generated by the proposed retail and restaurant development. The future volumes are shown in Figure 5.

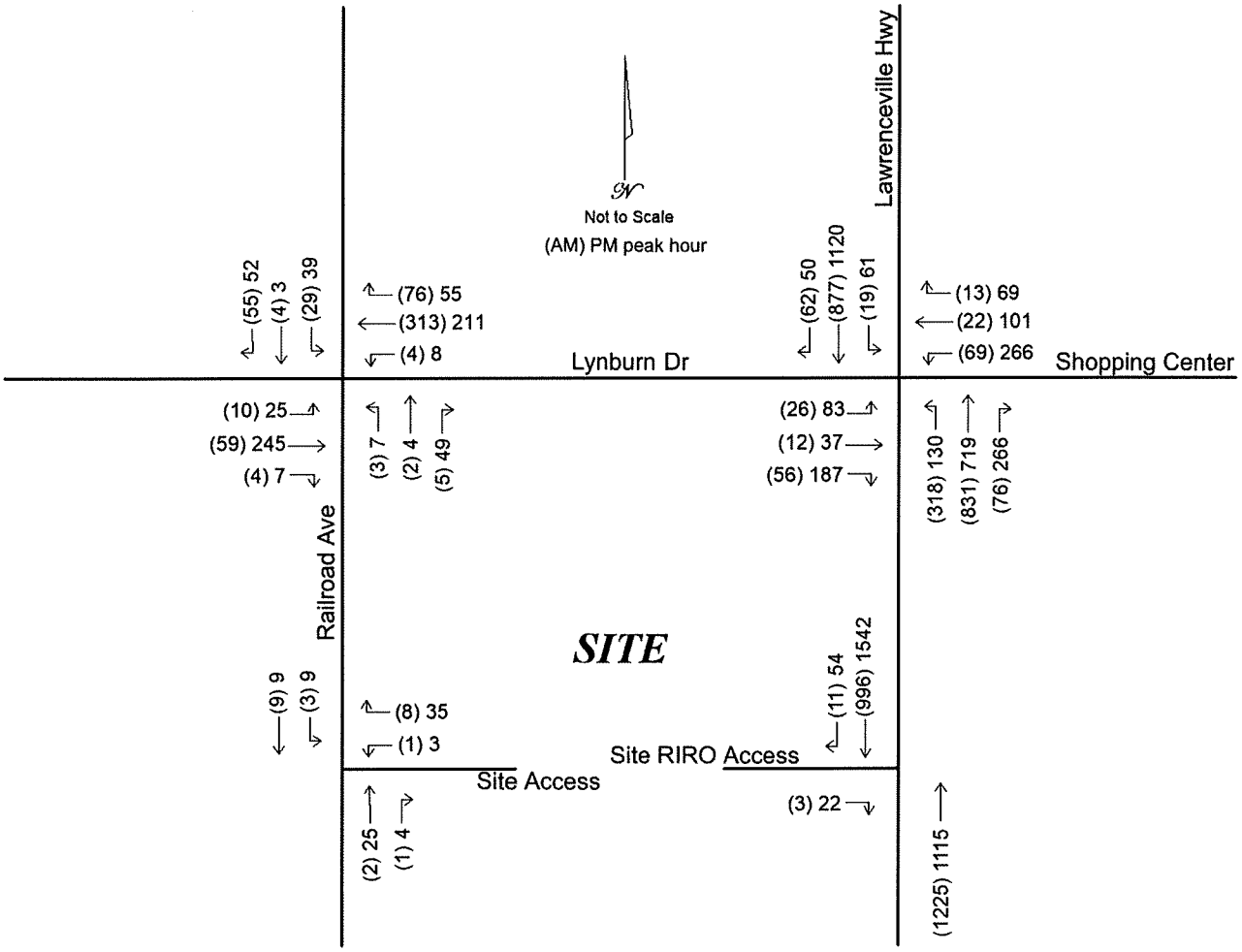

Figure 5 – Future Weekday A.M. and P.M. Peak Hour Volumes

Georgia DOT Turn Lane Requirements at Site Right-In / Right-Out Access

Lawrenceville Highway is US 29 and GA 8 and therefore the proposed site access on that route requires a permit from the Georgia DOT. A review of the Georgia DOT standards for auxiliary lanes reveals that a southbound right turn lane will be required on Lawrenceville Highway at the proposed RIRO access. Since the movements will be limited to RIRO, no northbound left turn lane is necessary on Lawrenceville Highway. The site engineer should comply with all applicable Georgia DOT design standards at this access, including right turn lane design, sight distance, turn radii, driveway widths, islands, angles with the adjacent roadways, and grades.

Future Intersection Operations

An operational analysis was performed for the anticipated future project build-out, at the study intersections and the site accesses. The analysis of the RIRO site access assumes that a right turn lane will be built on Lawrenceville Highway, as identified above. Table 5 presents the results of the future analysis. Computer printouts containing detailed results of the future analysis are located in Appendix E. Levels of service and delays are provided for the overall intersection and for each controlled approach or movement. Locations that operate unacceptably are presented in bold type.

Table 5 – Future Intersection Operations

Intersection / Approach	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay (s/veh)	LOS	Delay (s/veh)
1. Lawrenceville Highway / Lynburn Drive	B	10.8	C	33.8
northbound approach	A	5.5	C	26.0
southbound approach	A	8.1	D	40.6
eastbound approach	D	48.9	C	30.0
westbound approach	D	47.3	D	39.0
2. Lynburn Drive / Railroad Avenue / Burns Avenue	A	2.6	A	3.4
northbound approach	B	11.5	B	12.1
southbound approach	B	13.0	B	14.9
eastbound left turn	A	8.3	A	7.9
westbound left turn	A	7.4	A	7.9
3. Lawrenceville Highway / Site RIRO Access	A	0.0	A	0.2
eastbound right turn (exiting site)	B	12.8	C	17.6
4. Railroad Avenue / Site Access	A	3.7	A	4.5
southbound left turn (entering site)	A	7.2	A	7.3
westbound (exiting site)	A	8.4	A	8.7

As with the existing and no-build conditions, the future build condition will continue to see acceptable traffic operations at the study intersections.

Both site accesses are expected to operate well. Each access should be constructed with one entering and one exiting lane. The exiting approaches should be controlled with side street stop sign and accompanying stop bar.

There is dense vegetation along the site frontage on Railroad Avenue which somewhat limits sight distance. It appears that clearing of the vegetation will allow for clear lines of sight and this is recommended.

No mitigation is identified for the future condition.

Conclusions and Recommendations

This traffic impact study evaluates the impact of a proposed retail and restaurant development in the City of Tucker. The site is located on the southwest corner of Lawrenceville Highway and Lynburn Drive. For this traffic study, it is assumed that the site will be developed with 6,020 square feet of retail, a 2,545 square foot fast food restaurant with drive-through window, and a 2,140 square foot high-turnover restaurant. The fast food restaurant will not open before 10:00 a.m. A right-in/right-out (RIRO) access will be provided on Lawrenceville Highway and a full-movement access will be provided on Railroad Avenue. The following are the findings and recommendations of this study:

1. Existing operations at both study intersections are acceptable. It is recommended that the striping and crosswalks be refreshed at the Lawrenceville Highway / Lynburn Drive intersection and a centerline stripe be added on Lynburn Drive. It is recommended that stop bars be added to the side street approaches of Railroad Avenue / Burns Avenue at Lynburn Drive. These recommendations should be implemented whether or not the proposed development is built and are, therefore, system improvements.

2. Traffic volume growth in this area has been moderately positive and this is expected to continue into the future.

3. The no-build condition reveals traffic operations comparable to the existing condition with small increases in delays due to background increases in volumes. No mitigation was identified for the no-build condition.

4. The proposed retail and restaurant development will generate 19 new a.m. peak hour trips, 68 new p.m. peak hour trips, and 822 new weekday trips. The project will intercept additional pass-by trips from Lawrenceville Highway.

5. With the addition of the project's trips, future operations will continue to be acceptable at the study intersections. No additional mitigation was identified for the future condition at the study intersections.

6. A right turn lane analysis concluded that a southbound exclusive right turn lane will be required by Georgia DOT on Lawrenceville Highway at the site RIRO access. The site plan includes this right turn lane.

7. Both site accesses should include one inbound lane and one outbound lane. Each exiting approach should be controlled by side street stop sign and accompanying stop bar.

8. It is recommended that vegetation along the site frontage on Railroad Avenue be cleared to ensure that sufficient sight distance is provided at that proposed site access.

9. The site engineer should comply with all applicable design standards at both site accesses, including turn lane design, sight distance, turn radii, driveway widths, islands, angles with the adjacent roadways, and grades.

Appendix A

Traffic Count Data and Volume Worksheets

Lawrenceville Highway at Lynburn Drive Commercial Develeopment Traffic Impact Study
City of Tucker, Georgia

August 2019

Intersection: 1. Lawrenceville Highway at Lynburn Drive / Shopping Center Access

Weekday A.M. Peak Hour	Northbound Lawrenceville Highway				Southbound Lawrenceville Highway				Eastbound Lynburn Drive				Westbound Shopping Center			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Counted Volumes (Tuesday May 15, 2018, 7:45-8:45)	303	810	74	1187	18	849	60	927	20	12	54	86	66	21	13	100
Total Annual Background Growth	3.0%	3.0%	3.0%		3.0%	3.0%	3.0%		3.0%	3.0%	3.0%		3.0%	3.0%	3.0%	
No-Build Volumes	312	834	76	1223	19	874	62	955	21	12	56	89	68	22	13	103
Proposed Development New Trips	3	0	0	3	0	3	0	3	3	0	0	3	1	0	0	1
Proposed Development Pass-by Trips	3	-3	0	0	0	0	0	0	2	0	0	2	0	0	0	0
Total Proposed Development Trips	6	-3	0	3	0	3	0	3	5	0	0	5	1	0	0	1
Build Volumes	318	831	76	1226	19	877	62	958	26	12	56	94	69	22	13	104

Weekday P.M. Peak Hour	Northbound Lawrenceville Highway				Southbound Lawrenceville Highway				Eastbound Lynburn Drive				Westbound Shopping Center			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Counted Volumes (Tuesday May 15, 2018, 5:15-6:15)	104	713	258	1075	59	1078	49	1186	58	33	182	273	254	98	67	419
Total Annual Background Growth	3.0%	3.0%	3.0%		3.0%	3.0%	3.0%		3.0%	3.0%	3.0%		3.0%	3.0%	3.0%	
No-Build Volumes	107	734	266	1107	61	1110	50	1222	60	34	187	281	262	101	69	432
Proposed Development New Trips	8	0	0	8	0	10	0	10	10	3	0	13	4	0	0	4
Proposed Development Pass-by Trips	15	-15	0	0	0	0	0	0	13	0	0	13	0	0	0	0
Total Proposed Development Trips	23	-15	0	8	0	10	0	10	23	3	0	26	4	0	0	4
Build Volumes	130	719	266	1115	61	1120	50	1232	83	37	187	307	266	101	69	436

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Lawrenceville Highway at Lynburn Drive Commercial Develeopment Traffic Impact Study
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Intersection: 2. Lynburn Drive at Railroad Avenue / Retail Access

Weekday A.M. Peak Hour	Northbound Railroad Avenue				Southbound Retail Access				Eastbound Lynburn Drive				Westbound Lynburn Drive			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Counted Volumes Lynburn East of Railroad Ave May 2018										86		86		384		384
Counted Volumes (Wednesday, July 31, 2019, 8:00-9:00)	1	1	0	2	28	3	53	84	10	38	2	50	4	276	74	354
Counted Volumes Lynburn East of Railroad Ave July 2019										66				354		
Adjustment to Balance with Counts with School in Session										50%				10%		
Adjusted July 2019 Count	1	1	0	2	28	3	53	84	10	57	2	69	4	304	74	382
Total Annual Background Growth	3.0%	3.0%	3.0%		3.0%	3.0%	3.0%		3.0%	3.0%	3.0%		3.0%	3.0%	3.0%	
No-Build Volumes	1	1	0	2	29	3	55	87	10	59	2	71	4	313	76	393
Proposed Development New Trips	2	1	3	6	0	1	0	1	0	0	2	2	0	0	0	0
Proposed Development Pass-by Trips	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
Total Proposed Development Trips	2	1	5	8	0	1	0	1	0	0	2	2	0	0	0	0
Build Volumes	3	2	5	10	29	4	55	88	10	59	4	73	4	313	76	393

Weekday P.M. Peak Hour	Northbound Railroad Avenue				Southbound Retail Access				Eastbound Lynburn Drive				Westbound Lynburn Drive			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Counted Volumes Lynburn East of Railroad Ave May 2018										273		273		251		251
Counted Volumes (Wednesday, July 31, 2019, 4:00-5:00)	0	2	22	24	38	1	50	89	24	238	0	262	8	205	53	266
Counted Volumes Lynburn East of Railroad Ave July 2019										298				266		
Adjustment to Balance with Counts with School in Session										0%				0%		
Adjusted July 2019 Count (no p.m. adjustment)	0	2	22	24	38	1	50	89	24	238	0	262	8	205	53	266
Total Annual Background Growth	3.0%	3.0%	3.0%		3.0%	3.0%	3.0%		3.0%	3.0%	3.0%		3.0%	3.0%	3.0%	
No-Build Volumes	0	2	23	25	39	1	52	92	25	245	0	270	8	211	55	274
Proposed Development New Trips	7	2	13	22	0	2	0	2	0	0	7	7	0	0	0	0
Proposed Development Pass-by Trips	0	0	13	13	0	0	0	0	0	0	0	0	0	0	0	0
Total Proposed Development Trips	7	2	26	35	0	2	0	2	0	0	7	7	0	0	0	0
Build Volumes	7	4	49	60	39	3	52	94	25	245	7	277	8	211	55	274

Lawrenceville Highway at Lynburn Drive Commercial Develeopment Traffic Impact Study
City of Tucker, Georgia

August 2019

Intersection: 3. Lawrenceville Highway at Site Access

Weekday A.M. Peak Hour	Northbound Lawrenceville Highway		Southbound Lawrenceville Highway			Eastbound Site RIRO Access		
	T	Tot	T	R	Tot	R	Tot	
Counted Volumes (Tuesday May 15, 2018, 7:45-8:45)	1187	1187	969		969			
Total Annual Background Growth	3.0%		3.0%					
No-Build Volumes	1223	1223	998		998			
Proposed Development New Trips	2	2	0	6	6	2	2	
Proposed Development Pass-by Trips	0	0	-2	5	3	1	1	
Total Proposed Development Trips	2	2	-2	11	9	3	3	
Build Volumes	1225	1225	996	11	1007	3	3	

Weekday P.M. Peak Hour	Northbound Lawrenceville Highway		Southbound Lawrenceville Highway			Eastbound Site RIRO Access		
	T	Tot	T	R	Tot	R	Tot	
Counted Volumes (Tuesday May 15, 2018, 5:15-6:15)	1075	1075	1514		1514			
Total Annual Background Growth	3.0%		3.0%					
No-Build Volumes	1107	1107	1559		1559			
Proposed Development New Trips	8	8	0	22	22	8	8	
Proposed Development Pass-by Trips	0	0	-17	32	15	14	14	
Total Proposed Development Trips	8	8	-17	54	37	22	22	
Build Volumes	1115	1115	1542	54	1596	22	22	

MARC R. ACAMPORA, PE, LLC

Lawrenceville Highway at Lynburn Drive Commercial Develeopment Traffic Impact Study
City of Tucker, Georgia

August 2019

Intersection: 4. Railroad Avenue at Site Access

Weekday A.M. Peak Hour	Northbound Railroad Avenue			Southbound Railroad Avenue				Westbound Site Access		
	T	R	Tot	L	T	Tot		L	R	Tot
Counted Volumes (Wednesday, July 31, 2019, 8:00-9:00)	2		2		9	9				
Total Annual Background Growth	3.0%				3.0%					
No-Build Volumes	**2**		**2**		**9**	**9**				
Proposed Development New Trips	0	1	1	3	0	3		1	6	7
Proposed Development Pass-by Trips	0	0	0	0	0	0		0	2	2
Total Proposed Development Trips	**0**	**1**	**1**	**3**	**0**	**3**		**1**	**8**	**9**
Build Volumes	**2**	**1**	**3**	**3**	**9**	**12**		**1**	**8**	**9**

Weekday P.M. Peak Hour	Northbound Railroad Avenue			Southbound Railroad Avenue				Westbound Site Access		
	T	R	Tot	L	T	Tot		L	R	Tot
Counted Volumes (Wednesday, July 31, 2019, 4:00-5:00)	24		24		9	9				
Total Annual Background Growth	3.0%				3.0%					
No-Build Volumes	**25**		**25**		**9**	**9**				
Proposed Development New Trips	0	4	4	9	0	9		3	22	25
Proposed Development Pass-by Trips	0	0	0	0	0	0		0	13	13
Total Proposed Development Trips	**0**	**4**	**4**	**9**	**0**	**9**		**3**	**35**	**38**
Build Volumes	**25**	**4**	**29**	**9**	**9**	**18**		**3**	**35**	**38**

MARC R. ACAMPORA, PE, LLC

Project ID: 18-09285-007
Location: Lawrenceville Hwy & Lynburn Dr
City: Tucker

Day: Tuesday
Date: 05/15/2018

Groups Printed - Cars, PU, Vans - Heavy Trucks

	Lawrenceville Hwy Northbound						Lawrenceville Hwy Southbound						Lynburn Dr Eastbound						Lynburn Dr Westbound						
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Int. Total
7:00 AM	84	150	17	0	1	251	2	168	13	0	0	183	5	0	4	0	0	9	8	5	6	0	1	19	462
7:15 AM	71	197	19	0	1	287	3	178	13	0	0	194	5	3	7	0	1	15	12	3	6	0	2	21	517
7:30 AM	77	212	16	0	0	305	2	178	16	0	0	196	7	3	18	0	0	28	8	6	3	0	1	17	546
7:45 AM	80	196	12	0	0	288	6	206	16	1	2	229	2	2	15	0	0	19	15	4	5	0	1	24	560
Total	312	755	64	0	2	1131	13	730	58	1	2	802	19	8	44	0	1	71	43	18	20	0	5	81	2085
8:00 AM	74	206	19	0	0	299	3	249	14	0	0	266	3	2	11	0	0	16	14	2	3	0	0	19	600
8:15 AM	73	202	22	0	4	297	6	196	15	0	0	217	5	3	15	0	0	23	21	8	3	0	0	32	569
8:30 AM	76	206	21	0	0	303	3	198	15	0	1	216	10	5	13	0	0	28	16	7	2	0	3	25	572
8:45 AM	58	175	24	0	1	257	4	183	11	1	0	199	9	5	11	0	1	25	23	8	2	0	1	33	514
Total	281	789	86	0	5	1156	16	826	55	1	1	898	27	15	50	0	1	92	74	25	10	0	4	109	2255
9:00 AM	33	143	20	0	0	196	7	189	13	0	0	209	6	7	8	0	0	21	30	11	3	0	1	44	470
9:15 AM	48	148	38	0	0	234	8	169	11	0	0	188	2	5	13	0	1	20	23	9	13	0	0	45	487
9:30 AM	52	127	25	0	0	204	4	167	13	0	1	184	5	4	15	0	0	24	30	12	6	0	1	48	460
9:45 AM	41	147	33	0	0	221	12	157	18	0	0	187	12	5	19	0	1	36	38	8	6	0	0	52	496
Total	174	565	116	0	0	855	31	682	55	0	1	768	25	21	55	0	2	101	121	40	28	0	2	189	1913
BREAK																									
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	39	180	48	0	3	267	12	223	14	1	0	250	13	12	57	0	0	82	42	18	14	0	1	74	673
3:45 PM	26	190	56	0	3	272	22	248	9	0	3	279	12	10	41	0	8	63	64	28	15	0	0	107	721
Total	65	370	104	0	6	539	34	471	23	1	3	529	25	22	98	0	8	145	106	46	29	0	1	181	1394
4:00 PM	31	217	54	0	1	302	18	238	14	0	1	270	19	12	41	0	4	72	70	14	18	0	1	102	746
4:15 PM	31	184	61	0	2	276	17	242	6	0	4	265	13	7	43	0	0	63	77	19	15	0	0	111	715
4:30 PM	36	188	48	0	1	272	20	270	16	1	0	307	17	13	43	0	0	73	44	16	12	0	0	72	724
4:45 PM	28	206	45	0	0	279	15	233	11	1	0	260	19	12	61	0	1	92	62	15	17	0	0	94	725
Total	126	795	208	0	4	1129	70	983	47	2	5	1102	68	44	188	0	5	300	253	64	62	0	1	379	2910
5:00 PM	16	196	51	0	2	263	7	285	5	0	2	297	20	13	44	0	0	77	43	12	15	0	1	70	707
5:15 PM	26	230	63	0	1	319	13	300	6	0	0	319	15	6	27	0	0	48	69	17	14	0	1	100	786
5:30 PM	24	122	52	0	1	198	13	261	17	0	2	291	12	9	55	0	1	76	79	31	17	0	2	127	692
5:45 PM	15	151	77	0	0	243	9	269	8	0	1	286	19	9	46	0	0	74	54	29	17	0	1	100	703
Total	81	699	243	0	4	1023	42	1115	36	0	5	1193	66	37	172	0	1	275	245	89	63	0	5	397	2888
6:00 PM	39	210	66	0	1	315	24	248	18	1	1	291	12	9	54	0	0	75	52	21	19	0	0	92	773
6:15 PM	27	172	70	0	1	269	18	268	13	0	0	299	10	11	30	0	0	51	69	22	17	0	1	108	727
Total	66	382	136	0	2	584	42	516	31	1	1	590	22	20	84	0	0	126	121	43	36	0	1	200	1500
Grand Total	1105	4355	957	0	23	6417	248	5323	305	6	18	5882	252	167	691	0	18	1110	963	325	248	0	19	1536	14945
Apprch %	17.2	67.9	14.9	0.0	0.4		4.2	90.5	5.2	0.1	0.3		22.7	15.0	62.3	0.0	1.6		62.7	21.2	16.1	0.0	1.2		
Total %	7.4	29.1	6.4	0.0	0.2	42.9	1.7	35.6	2.0	0.0	0.1	39.4	1.7	1.1	4.6	0.0	0.1	7.4	6.4	2.2	1.7	0.0	0.1	10.3	
Cars, PU, Vans	1105	4311	956	0	23	6372	247	5272	303		18	5828	252	167	686	0		1105	962	324	244		19	1530	14835
% Cars, PU, Vans	100.0	99.0	99.9	0.0	100.0	99.3	99.6	99.0	99.3	0.0	100.0	99.1	100.0	100.0	99.3	0.0	0.0	99.5	99.9	99.7	98.4	0.0	100.0	99.6	99.3
Heavy Trucks	0	44	1	0		45	1	51	2	0		54	0	0	5	0		5	1	1	4	0		6	110
%Heavy Trucks	0.0	1.0	0.1	0.0	0.0	0.7	0.4	1.0	0.7	0.0	0.0	0.9	0.0	0.0	0.7	0.0	0.0	0.5	0.1	0.3	1.6	0.0	0.0	0.4	0.7

Project ID: 18-09285-007
Location: Lawrenceville Hwy & Lynburn Dr
City: Tucker

PEAK HOURS

Day: Tuesday
Date: 05/15/2018

AM

	Lawrenceville Hwy Northbound					Lawrenceville Hwy Southbound					Lynburn Dr Eastbound					Lynburn Dr Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM to 10:00 AM																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
7:45 AM	80	196	12	0	288	6	206	16	1	229	2	2	15	0	19	15	4	5	0	24	560
8:00 AM	74	206	19	0	299	3	249	14	0	266	3	2	11	0	16	14	2	3	0	19	600
8:15 AM	73	202	22	0	297	6	196	15	0	217	5	3	15	0	23	21	8	3	0	32	569
8:30 AM	76	206	21	0	303	3	198	15	0	216	10	5	13	0	28	16	7	2	0	25	572
Total Volume	303	810	74	0	1187	18	849	60	1	928	20	12	54	0	86	66	21	13	0	100	2301
% App. Total	25.5	68.2	6.2	0.0	100	1.9	91.5	6.5	0.1	100	23.3	14.0	62.8	0.0	100	66.0	21.0	13.0	0.0	100	
PHF					0.979					0.872					0.768					0.781	0.959
Cars, PU, Vans	303	800	74	0	1177	18	837	59	1	915	20	12	53	0	85	65	21	13	0	99	2276
% Cars, PU, Vans	100.0	98.8	100.0	0.0	99.2	100.0	98.6	98.3	100.0	98.6	100.0	100.0	98.1	0.0	98.8	98.5	100.0	100.0	0.0	99.0	98.9
Heavy Trucks	0	10	0	0	10	0	12	1	0	13	0	0	1	0	1	1	0	0	0	1	25
%Heavy Trucks	0.0	1.2	0.0	0.0	0.8	0.0	1.4	1.7	0.0	1.4	0.0	0.0	1.9	0.0	1.2	1.5	0.0	0.0	0.0	1.0	1.1

PM

	Lawrenceville Hwy Northbound					Lawrenceville Hwy Southbound					Lynburn Dr Eastbound					Lynburn Dr Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 03:30 PM to 06:30 PM																					
Peak Hour for Entire Intersection Begins at 05:15 PM																					
5:15 PM	26	230	63	0	319	13	300	6	0	319	15	6	27	0	48	69	17	14	0	100	786
5:30 PM	24	122	52	0	198	13	261	17	0	291	12	9	55	0	76	79	31	17	0	127	692
5:45 PM	15	151	77	0	243	9	269	8	0	286	19	9	46	0	74	54	29	17	0	100	703
6:00 PM	39	210	66	0	315	24	248	18	1	291	12	9	54	0	75	52	21	19	0	92	773
Total Volume	104	713	258	0	1075	59	1078	49	1	1187	58	33	182	0	273	254	98	67	0	419	2954
% App. Total	9.7	66.3	24.0	0.0	100	5.0	90.8	4.1	0.1	100	21.2	12.1	66.7	0.0	100	60.6	23.4	16.0	0.0	100	
PHF					0.842					0.930					0.898					0.825	0.940
Cars, PU, Vans	104	706	258	0	1068	59	1074	48	1	1182	58	33	181	0	272	254	98	66	0	418	2940
% Cars, PU, Vans	100.0	99.0	100.0	0.0	99.3	100.0	99.6	98.0	100.0	99.6	100.0	100.0	99.5	0.0	99.6	100.0	100.0	98.5	0.0	99.8	99.5
Heavy Trucks	0	7	0	0	7	0	4	1	0	5	0	0	1	0	1	0	0	1	0	1	14
%Heavy Trucks	0.0	1.0	0.0	0.0	0.7	0.0	0.4	2.0	0.0	0.4	0.0	0.0	0.5	0.0	0.4	0.0	0.0	1.5	0.0	0.2	0.5

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TMC Data
Lynburn Dr @ Railroad Ave/
Starbucks Access
7-9am | 4-6pm

File Name : 43240001
Site Code : 43240001
Start Date : 7/31/2019
Page No : 1

Groups Printed- Cars, Trucks, Buses

	Railroad Ave Northbound					Burns Ave/ Starbucks Access Southbound					Lynburn Dr Eastbound					Lynburn Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	2	1	0	3	7	1	10	0	18	2	8	0	0	10	1	51	20	0	72	103
07:15 AM	0	2	0	0	2	7	2	13	0	22	3	13	0	0	16	0	45	12	0	57	97
07:30 AM	0	3	0	0	3	2	2	17	0	21	6	2	0	0	8	0	49	11	0	60	92
07:45 AM	0	0	0	0	0	6	0	11	0	17	4	4	0	0	8	6	55	12	0	73	98
Total	0	7	1	0	8	22	5	51	0	78	15	27	0	0	42	7	200	55	0	262	390
08:00 AM	0	0	0	0	0	8	0	12	0	20	3	7	1	0	11	1	58	18	0	77	108
08:15 AM	1	0	0	0	1	7	1	11	0	19	1	8	0	0	9	1	74	17	0	92	121
08:30 AM	0	1	0	0	1	7	0	18	0	25	2	12	1	0	15	1	64	17	0	82	123
08:45 AM	0	0	0	0	0	6	2	12	0	20	4	11	0	0	15	1	80	22	0	103	138
Total	1	1	0	0	2	28	3	53	0	84	10	38	2	0	50	4	276	74	0	354	490
*** BREAK ***																					
04:00 PM	0	1	6	0	7	11	0	14	0	25	5	60	0	0	65	1	52	16	0	69	166
04:15 PM	0	0	2	0	2	4	1	14	0	19	6	57	0	0	63	2	45	13	0	60	144
04:30 PM	0	1	7	0	8	12	0	10	0	22	7	44	0	0	51	3	51	10	0	64	145
04:45 PM	0	0	7	0	7	11	0	12	0	23	6	77	0	0	83	2	57	14	0	73	186
Total	0	2	22	0	24	38	1	50	0	89	24	238	0	0	262	8	205	53	0	266	641
05:00 PM	1	0	7	0	8	9	0	13	0	22	7	60	1	0	68	1	48	11	0	60	158
05:15 PM	0	0	7	0	7	9	0	13	0	22	5	56	0	0	61	3	36	11	0	50	140
05:30 PM	0	0	3	0	3	9	0	13	0	22	5	39	2	0	46	1	55	9	0	65	136
05:45 PM	0	1	5	0	6	10	0	9	0	19	3	33	0	0	36	1	25	8	0	34	95
Total	1	1	22	0	24	37	0	48	0	85	20	188	3	0	211	6	164	39	0	209	529
Grand Total	2	11	45	0	58	125	9	202	0	336	69	491	5	0	565	25	845	221	0	1091	2050
Apprch %	3.4	19	77.6	0		37.2	2.7	60.1	0		12.2	86.9	0.9	0		2.3	77.5	20.3	0		
Total %	0.1	0.5	2.2	0	2.8	6.1	0.4	9.9	0	16.4	3.4	24	0.2	0	27.6	1.2	41.2	10.8	0	53.2	

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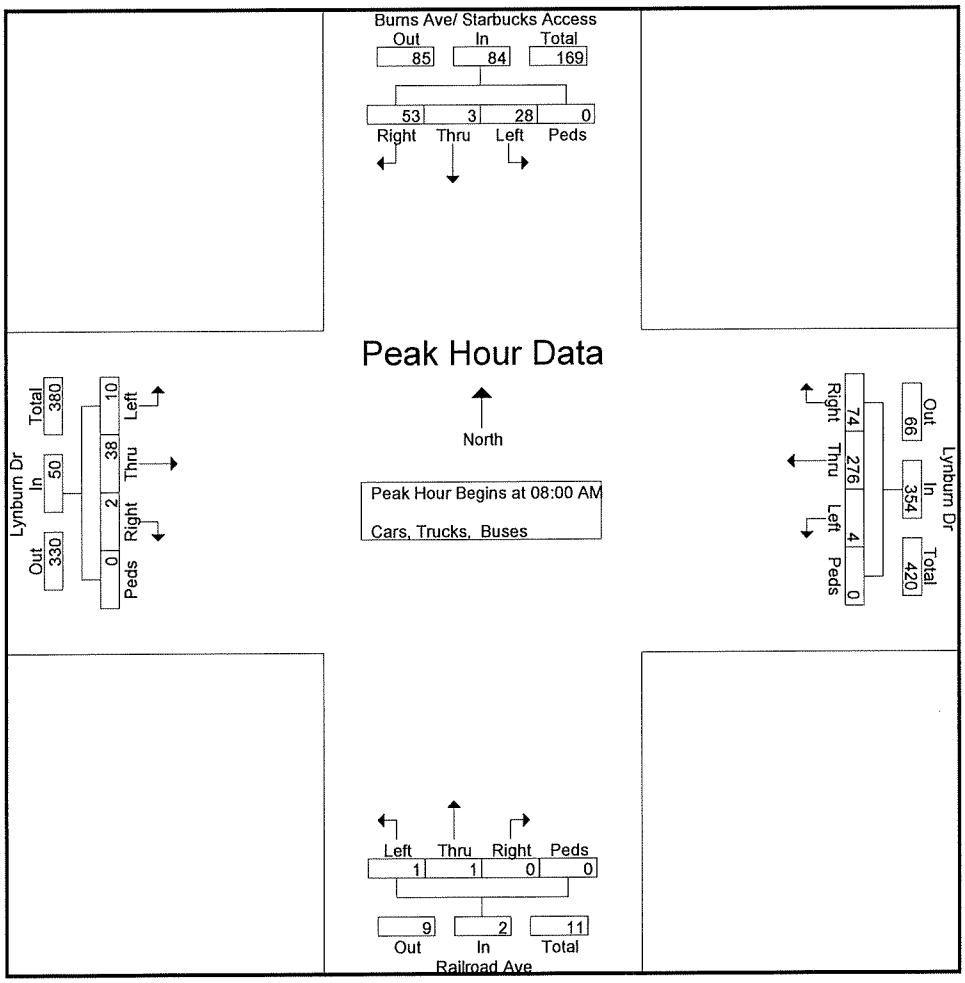
TMC Data
Lynburn Dr @ Railroad Ave/
Starbucks Access
7-9am | 4-6pm

File Name : 43240001
Site Code : 43240001
Start Date : 7/31/2019
Page No : 2

	Railroad Ave Northbound					Burns Ave/ Starbucks Access Southbound					Lynburn Dr Eastbound					Lynburn Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	0	0	0	**8**	0	12	0	20	3	7	**1**	0	11	**1**	58	18	0	77	108
08:15 AM	**1**	0	0	0	**1**	7	1	11	0	19	1	8	0	0	9	1	74	17	0	92	121
08:30 AM	0	**1**	0	0	1	7	0	**18**	0	**25**	2	**12**	1	0	**15**	1	64	17	0	82	123
08:45 AM	0	0	0	0	0	6	**2**	12	0	20	**4**	11	0	0	15	1	**80**	**22**	0	**103**	**138**
Total Volume	1	1	0	0	2	28	3	53	0	84	10	38	2	0	50	4	276	74	0	354	490
% App. Total						33.3		63.1										20.9			
PHF	.250	.250	.000	.000	.500	.875	.375	.736	.000	.840	.625	.792	.500	.000	.833	1.00	.863	.841	.000	.859	.888



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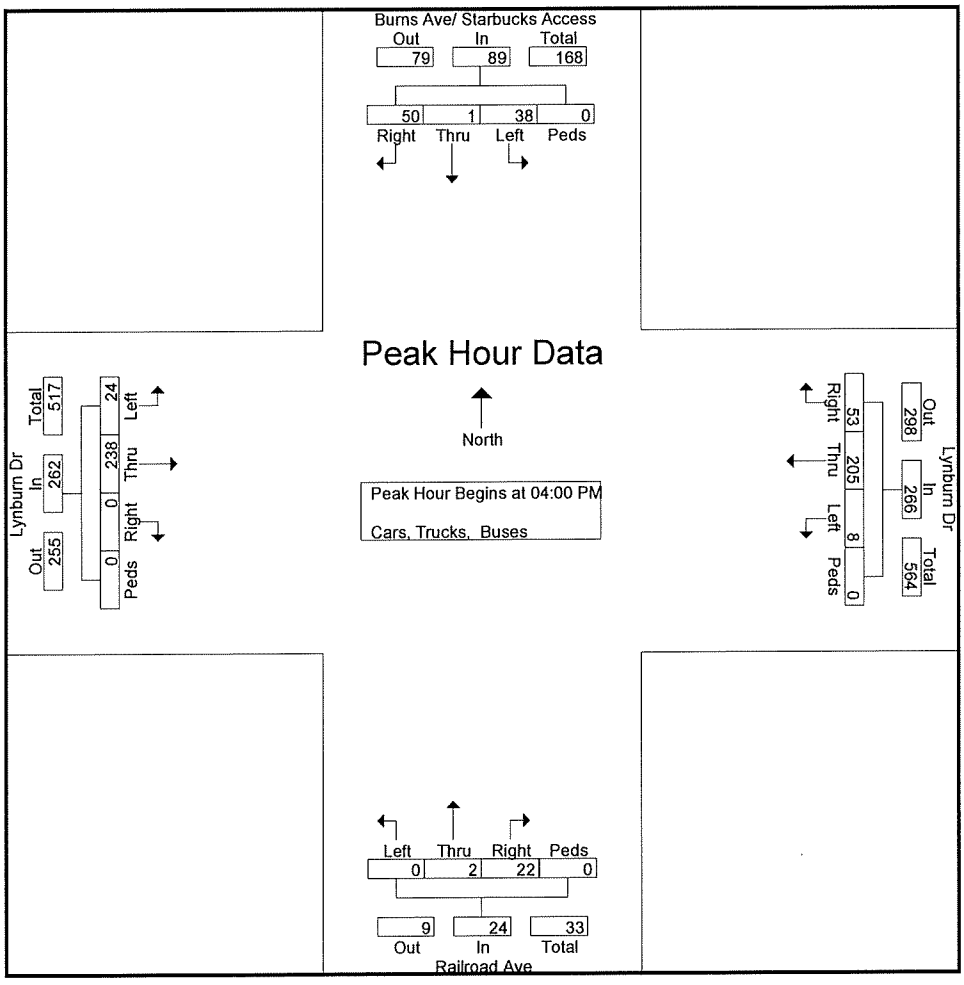
TMC Data
Lynburn Dr @ Railroad Ave/
Starbucks Access
7-9am | 4-6pm

File Name : 43240001
Site Code : 43240001
Start Date : 7/31/2019
Page No : 3

	Railroad Ave Northbound					Burns Ave/ Starbucks Access Southbound					Lynburn Dr Eastbound					Lynburn Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	**1**	6	0	7	11	0	**14**	0	**25**	5	60	0	0	65	1	52	**16**	0	69	166
04:15 PM	0	0	2	0	2	4	**1**	14	0	19	6	57	0	0	63	2	45	13	0	60	144
04:30 PM	0	1	**7**	0	**8**	**12**	0	10	0	22	**7**	44	0	0	51	**3**	51	10	0	64	145
04:45 PM	0	0	7	0	7	11	0	12	0	23	6	**77**	0	0	**83**	2	**57**	14	0	**73**	**186**
Total Volume	0	2	22	0	24	38	1	50	0	89	24	238	0	0	262	8	205	53	0	266	641
% App. Total			91.7			42.7		56.2				90.8					77.1	19.9			
PHF	.000	.500	.786	.000	.750	.792	.250	.893	.000	.890	.857	.773	.000	.000	.789	.667	.899	.828	.000	.911	.862



Appendix B

Intersection Analysis Methodology

Intersection Analysis Methodology

The methodology used for evaluating traffic operations at intersections is presented in the Transportation Research Board's *Highway Capacity Manual*, 2016 edition (HCM 6). Synchro 10 software, which emulates the HCM 6 methodology, was used for all analyses. The following is an overview of the methodology employed for the analysis of signalized intersections and roundabouts and stop-sign controlled (unsignalized) intersections. Levels of service (LOS) are assigned letters A through F. LOS A indicates operations with very low control delay while LOS F describes operations with high control delay. LOS F is considered to be unacceptable by most drivers, while LOS E is typically considered to be the limit of acceptable delay.

Signalized Intersections and Roundabouts – Level of service for a signalized intersection and a roundabout is defined in terms of control delay per vehicle. For signalized intersections and roundabouts, a composite intersection level of service is determined. The thresholds for each level of service are higher for signalized intersections and roundabouts than for unsignalized intersections. This is attributable to a variety of factors including expectation and acceptance of higher delays at signals/roundabouts, and the fact that drivers can relax when waiting at a signal as opposed to having to remain attentive as they proceed through the unsignalized intersection. The level of service criteria for signalized intersections and roundabouts are shown in Table A.

Table A – Level of Service Criteria for Signalized Intersections and Roundabouts

Control Delay (s/veh)	LOS
≤ 10	A
> 10 and ≤ 20	B
> 20 and ≤ 35	C
> 35 and ≤ 55	D
> 55 and ≤ 80	E
> 80	F

Source: Highway Capacity Manual 6

Unsignalized Intersections – Level of service for an unsignalized intersection is defined in terms of control delay per vehicle. Control delay is that portion of delay attributable to the control device and includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The delays at unsignalized intersections are based on gap acceptance theory, factoring in availability of gaps, usefulness of the gaps, and the priority of right-of-way given to each traffic stream. The level of service criteria for unsignalized intersections are presented in Table B.

Table B – Level of Service Criteria for Unsignalized Intersections

Control Delay (s/veh)	LOS
0 – 10	A
> 10 and ≤ 15	B
> 15 and ≤ 25	C
> 25 and ≤ 35	D
> 35 and ≤ 50	E
> 50	F

Source: Highway Capacity Manual 6

Appendix C

Existing Intersection Operational Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	12	54	66	21	13	303	810	74	18	849	60
Future Volume (veh/h)	20	12	54	66	21	13	303	810	74	18	849	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	16	70	85	27	17	309	827	76	21	976	69
Peak Hour Factor	0.77	0.77	0.77	0.78	0.78	0.78	0.98	0.98	0.98	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	67	33	98	180	105	66	508	2675	1193	525	2370	168
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.07	0.75	0.75	0.02	0.70	0.70
Sat Flow, veh/h	257	341	997	1311	1073	676	1781	3554	1585	1781	3366	238
Grp Volume(v), veh/h	112	0	0	85	0	44	309	827	76	21	515	530
Grp Sat Flow(s),veh/h/ln	1595	0	0	1311	0	1749	1781	1777	1585	1781	1777	1828
Q Serve(g_s), s	4.1	0.0	0.0	0.9	0.0	2.5	4.6	7.9	1.3	0.3	12.8	12.8
Cycle Q Clear(g_c), s	7.1	0.0	0.0	8.0	0.0	2.5	4.6	7.9	1.3	0.3	12.8	12.8
Prop In Lane	0.23		0.62	1.00		0.39	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	198	0	0	180	0	171	508	2675	1193	525	1251	1287
V/C Ratio(X)	0.57	0.00	0.00	0.47	0.00	0.26	0.61	0.31	0.06	0.04	0.41	0.41
Avail Cap(c_a), veh/h	363	0	0	319	0	356	897	2675	1193	579	1251	1287
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.1	0.0	0.0	46.7	0.0	44.1	5.1	4.2	3.4	4.1	6.5	6.5
Incr Delay (d2), s/veh	2.5	0.0	0.0	1.9	0.0	0.8	1.2	0.3	0.1	0.0	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	0.0	2.3	0.0	1.1	1.1	2.1	0.3	0.1	4.1	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.7	0.0	0.0	48.6	0.0	44.9	6.3	4.5	3.5	4.1	7.5	7.5
LnGrp LOS	D	A	A	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		112			129			1212			1066	
Approach Delay, s/veh		48.7			47.3			4.9			7.4	
Approach LOS		D			D			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.8	84.0		14.8	11.9	78.9		14.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	79.5		21.5	30.5	54.5		21.5				
Max Q Clear Time (g_c+I1), s	2.3	9.9		9.1	6.6	14.8		10.0				
Green Ext Time (p_c), s	0.0	6.5		0.4	0.9	7.4		0.3				
Intersection Summary												
HCM 6th Ctrl Delay			10.1									
HCM 6th LOS			B									

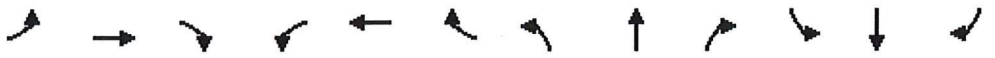
Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	57	2	4	304	74	1	1	0	28	3	53
Future Vol, veh/h	10	57	2	4	304	74	1	1	0	28	3	53
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	86	86	86	50	50	50	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	69	2	5	353	86	2	2	0	33	4	63

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	439	0	0	71	0	0	534	543	70	501	501	396
Stage 1	-	-	-	-	-	-	94	94	-	406	406	-
Stage 2	-	-	-	-	-	-	440	449	-	95	95	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1121	-	-	1529	-	-	457	447	993	480	472	653
Stage 1	-	-	-	-	-	-	913	817	-	622	598	-
Stage 2	-	-	-	-	-	-	596	572	-	912	816	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1121	-	-	1529	-	-	406	440	993	473	465	653
Mov Cap-2 Maneuver	-	-	-	-	-	-	406	440	-	473	465	-
Stage 1	-	-	-	-	-	-	903	808	-	615	596	-
Stage 2	-	-	-	-	-	-	533	570	-	900	807	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.1	13.6	12.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	422	1121	-	-	1529	-	-	572
HCM Lane V/C Ratio	0.009	0.011	-	-	0.003	-	-	0.175
HCM Control Delay (s)	13.6	8.2	0	-	7.4	0	-	12.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	33	182	254	98	67	104	713	258	59	1078	49
Future Volume (veh/h)	58	33	182	254	98	67	104	713	258	59	1078	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	64	37	202	306	118	81	124	849	307	63	1159	53
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.84	0.84	0.84	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	133	91	371	398	389	267	240	1651	736	277	1552	71
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	0.05	0.46	0.46	0.04	0.45	0.45
Sat Flow, veh/h	250	243	986	1141	1033	709	1781	3554	1585	1781	3461	158
Grp Volume(v), veh/h	303	0	0	306	0	199	124	849	307	63	595	617
Grp Sat Flow(s),veh/h/ln	1478	0	0	1141	0	1743	1781	1777	1585	1781	1777	1842
Q Serve(g_s), s	9.5	0.0	0.0	19.9	0.0	9.0	4.2	18.8	14.4	2.1	31.1	31.1
Cycle Q Clear(g_c), s	18.5	0.0	0.0	38.5	0.0	9.0	4.2	18.8	14.4	2.1	31.1	31.1
Prop In Lane	0.21		0.67	1.00		0.41	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	595	0	0	398	0	656	240	1651	736	277	797	826
V/C Ratio(X)	0.51	0.00	0.00	0.77	0.00	0.30	0.52	0.51	0.42	0.23	0.75	0.75
Avail Cap(c_a), veh/h	681	0	0	463	0	755	294	1651	736	304	797	826
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	0.0	0.0	36.9	0.0	24.6	20.8	21.1	19.9	16.8	25.6	25.6
Incr Delay (d2), s/veh	0.7	0.0	0.0	6.7	0.0	0.3	1.7	1.1	1.7	0.4	6.3	6.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	0.0	0.0	8.8	0.0	3.8	1.7	7.6	5.3	0.8	13.5	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.1	0.0	0.0	43.5	0.0	24.8	22.5	22.2	21.6	17.2	31.9	31.7
LnGrp LOS	C	A	A	D	A	C	C	C	C	B	C	C
Approach Vol, veh/h		303			505			1280			1275	
Approach Delay, s/veh		28.1			36.2			22.1			31.1	
Approach LOS		C			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	56.5		46.6	10.6	54.7		46.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.0	52.0		48.5	9.5	48.5		48.5				
Max Q Clear Time (g_c+I1), s	4.1	20.8		20.5	6.2	33.1		40.5				
Green Ext Time (p_c), s	0.0	7.4		2.2	0.1	6.6		1.6				
Intersection Summary												
HCM 6th Ctrl Delay			28.2									
HCM 6th LOS			C									

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	24	238	0	8	205	53	0	2	22	38	1	50
Future Vol, veh/h	24	238	0	8	205	53	0	2	22	38	1	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	91	91	91	75	75	75	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	301	0	9	225	58	0	3	29	43	1	56

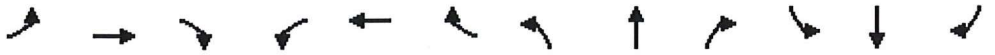
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	283	0	0	301	0	0	662	662	301	649	633	254
Stage 1	-	-	-	-	-	-	361	361	-	272	272	-
Stage 2	-	-	-	-	-	-	301	301	-	377	361	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1279	-	-	1260	-	-	375	382	739	383	397	785
Stage 1	-	-	-	-	-	-	657	626	-	734	685	-
Stage 2	-	-	-	-	-	-	708	665	-	644	626	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1279	-	-	1260	-	-	338	368	739	355	382	785
Mov Cap-2 Maneuver	-	-	-	-	-	-	338	368	-	355	382	-
Stage 1	-	-	-	-	-	-	639	608	-	713	679	-
Stage 2	-	-	-	-	-	-	650	659	-	598	608	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.2	10.5	13.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	682	1279	-	-	1260	-	-	513
HCM Lane V/C Ratio	0.047	0.024	-	-	0.007	-	-	0.195
HCM Control Delay (s)	10.5	7.9	0	-	7.9	0	-	13.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.7

Appendix D

No-Build Intersection Operational Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	12	56	68	22	13	312	834	76	19	874	62
Future Volume (veh/h)	21	12	56	68	22	13	312	834	76	19	874	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	16	73	87	28	17	318	851	78	22	1005	71
Peak Hour Factor	0.77	0.77	0.77	0.78	0.78	0.78	0.98	0.98	0.98	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	68	34	102	181	110	67	497	2662	1187	511	2352	166
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.07	0.75	0.75	0.02	0.70	0.70
Sat Flow, veh/h	258	333	1003	1308	1090	662	1781	3554	1585	1781	3367	238
Grp Volume(v), veh/h	116	0	0	87	0	45	318	851	78	22	530	546
Grp Sat Flow(s),veh/h/ln	1593	0	0	1308	0	1751	1781	1777	1585	1781	1777	1828
Q Serve(g_s), s	4.3	0.0	0.0	1.0	0.0	2.5	4.8	8.4	1.4	0.4	13.6	13.6
Cycle Q Clear(g_c), s	7.4	0.0	0.0	8.4	0.0	2.5	4.8	8.4	1.4	0.4	13.6	13.6
Prop In Lane	0.23		0.63	1.00		0.38	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	203	0	0	181	0	178	497	2662	1187	511	1241	1277
V/C Ratio(X)	0.57	0.00	0.00	0.48	0.00	0.25	0.64	0.32	0.07	0.04	0.43	0.43
Avail Cap(c_a), veh/h	361	0	0	314	0	355	895	2662	1187	564	1241	1277
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.1	0.0	0.0	46.8	0.0	44.0	5.8	4.4	3.5	4.2	6.9	6.9
Incr Delay (d2), s/veh	2.5	0.0	0.0	2.0	0.0	0.7	1.4	0.3	0.1	0.0	1.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	0.0	2.4	0.0	1.1	1.2	2.3	0.3	0.1	4.4	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.6	0.0	0.0	48.7	0.0	44.7	7.1	4.7	3.6	4.3	7.9	7.9
LnGrp LOS	D	A	A	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		116			132			1247			1098	
Approach Delay, s/veh		48.6			47.4			5.3			7.9	
Approach LOS		D			D			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	84.0		15.3	12.2	78.7		15.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	79.5		21.5	31.5	53.5		21.5				
Max Q Clear Time (g_c+I1), s	2.4	10.4		9.4	6.8	15.6		10.4				
Green Ext Time (p_c), s	0.0	6.8		0.4	0.9	7.6		0.3				
Intersection Summary												
HCM 6th Ctrl Delay			10.4									
HCM 6th LOS			B									

Intersection												
Int Delay, s/veh	2.4											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	59	2	4	313	76	1	1	0	29	3	55
Future Vol, veh/h	10	59	2	4	313	76	1	1	0	29	3	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	86	86	86	50	50	50	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	71	2	5	364	88	2	2	0	35	4	65

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	452	0	0	73	0	0	549	558	72	515	515	408
Stage 1	-	-	-	-	-	-	96	96	-	418	418	-
Stage 2	-	-	-	-	-	-	453	462	-	97	97	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1109	-	-	1527	-	-	446	438	990	470	464	643
Stage 1	-	-	-	-	-	-	911	815	-	612	591	-
Stage 2	-	-	-	-	-	-	586	565	-	910	815	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1109	-	-	1527	-	-	394	431	990	463	457	643
Mov Cap-2 Maneuver	-	-	-	-	-	-	394	431	-	463	457	-
Stage 1	-	-	-	-	-	-	901	806	-	605	589	-
Stage 2	-	-	-	-	-	-	521	563	-	898	806	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.1	13.8	12.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	412	1109	-	-	1527	-	-	562
HCM Lane V/C Ratio	0.01	0.011	-	-	0.003	-	-	0.184
HCM Control Delay (s)	13.8	8.3	0	-	7.4	0	-	12.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	34	187	262	101	69	107	734	266	61	1110	50
Future Volume (veh/h)	60	34	187	262	101	69	107	734	266	61	1110	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	67	38	208	316	122	83	127	874	317	66	1194	54
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.84	0.84	0.84	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	93	380	405	405	275	225	1606	716	261	1504	68
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.06	0.45	0.45	0.04	0.43	0.43
Sat Flow, veh/h	255	237	974	1134	1037	706	1781	3554	1585	1781	3463	157
Grp Volume(v), veh/h	313	0	0	316	0	205	127	874	317	66	612	636
Grp Sat Flow(s),veh/h/ln	1466	0	0	1134	0	1743	1781	1777	1585	1781	1777	1842
Q Serve(g_s), s	10.3	0.0	0.0	21.1	0.0	9.2	4.4	20.2	15.5	2.3	33.6	33.7
Cycle Q Clear(g_c), s	19.5	0.0	0.0	40.6	0.0	9.2	4.4	20.2	15.5	2.3	33.6	33.7
Prop In Lane	0.21		0.66	1.00		0.40	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	610	0	0	405	0	680	225	1606	716	261	772	800
V/C Ratio(X)	0.51	0.00	0.00	0.78	0.00	0.30	0.57	0.54	0.44	0.25	0.79	0.79
Avail Cap(c_a), veh/h	678	0	0	456	0	759	261	1606	716	290	772	800
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	0.0	0.0	36.8	0.0	23.8	22.8	22.5	21.2	18.0	27.6	27.6
Incr Delay (d2), s/veh	0.7	0.0	0.0	7.6	0.0	0.2	2.2	1.3	2.0	0.5	8.2	8.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	0.0	0.0	9.3	0.0	3.9	1.8	8.2	5.8	0.9	15.0	15.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.6	0.0	0.0	44.3	0.0	24.1	25.1	23.8	23.2	18.5	35.8	35.6
LnGrp LOS	C	A	A	D	A	C	C	C	C	B	D	D
Approach Vol, veh/h		313			521			1318			1314	
Approach Delay, s/veh		27.6			36.4			23.8			34.9	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	55.6		48.6	10.9	53.6		48.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.2	51.1		49.2	8.7	48.6		49.2				
Max Q Clear Time (g_c+I1), s	4.3	22.2		21.5	6.4	35.7		42.6				
Green Ext Time (p_c), s	0.0	7.6		2.3	0.1	6.2		1.5				

Intersection Summary			
HCM 6th Ctrl Delay		30.2	
HCM 6th LOS		C	

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	245	0	8	211	55	0	2	23	39	1	52
Future Vol, veh/h	25	245	0	8	211	55	0	2	23	39	1	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	91	91	91	75	75	75	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	310	0	9	232	60	0	3	31	44	1	58

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	292	0	0	310	0	0	684	684	310	671	654	262
Stage 1	-	-	-	-	-	-	374	374	-	280	280	-
Stage 2	-	-	-	-	-	-	310	310	-	391	374	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1270	-	-	1250	-	-	363	371	730	370	386	777
Stage 1	-	-	-	-	-	-	647	618	-	727	679	-
Stage 2	-	-	-	-	-	-	700	659	-	633	618	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1270	-	-	1250	-	-	325	357	730	342	371	777
Mov Cap-2 Maneuver	-	-	-	-	-	-	325	357	-	342	371	-
Stage 1	-	-	-	-	-	-	628	599	-	705	673	-
Stage 2	-	-	-	-	-	-	640	653	-	586	599	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.2	10.6	14
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	674	1270	-	-	1250	-	-	501
HCM Lane V/C Ratio	0.049	0.025	-	-	0.007	-	-	0.206
HCM Control Delay (s)	10.6	7.9	0	-	7.9	0	-	14
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.8

Appendix E

Future Intersection Operational Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	12	56	69	22	13	318	831	76	19	877	62
Future Volume (veh/h)	26	12	56	69	22	13	318	831	76	19	877	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	34	16	73	88	28	17	324	848	78	22	1008	71
Peak Hour Factor	0.77	0.77	0.77	0.78	0.78	0.78	0.98	0.98	0.98	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	33	98	182	114	69	495	2652	1183	510	2338	165
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.07	0.75	0.75	0.02	0.69	0.69
Sat Flow, veh/h	324	319	938	1308	1090	662	1781	3554	1585	1781	3367	237
Grp Volume(v), veh/h	123	0	0	88	0	45	324	848	78	22	532	547
Grp Sat Flow(s),veh/h/ln	1580	0	0	1308	0	1751	1781	1777	1585	1781	1777	1828
Q Serve(g_s), s	5.3	0.0	0.0	0.9	0.0	2.5	5.0	8.5	1.4	0.4	13.9	13.9
Cycle Q Clear(g_c), s	8.0	0.0	0.0	8.8	0.0	2.5	5.0	8.5	1.4	0.4	13.9	13.9
Prop In Lane	0.28		0.59	1.00		0.38	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	208	0	0	182	0	183	495	2652	1183	510	1234	1269
V/C Ratio(X)	0.59	0.00	0.00	0.48	0.00	0.25	0.65	0.32	0.07	0.04	0.43	0.43
Avail Cap(c_a), veh/h	359	0	0	309	0	353	872	2652	1183	562	1234	1269
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.2	0.0	0.0	46.8	0.0	43.8	6.1	4.5	3.6	4.4	7.1	7.1
Incr Delay (d2), s/veh	2.7	0.0	0.0	2.0	0.0	0.7	1.5	0.3	0.1	0.0	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	0.0	2.4	0.0	1.1	1.3	2.3	0.4	0.1	4.5	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.9	0.0	0.0	48.8	0.0	44.5	7.5	4.8	3.7	4.4	8.2	8.2
LnGrp LOS	D	A	A	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		123			133			1250			1101	
Approach Delay, s/veh		48.9			47.3			5.5			8.1	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	84.0		15.6	12.4	78.5		15.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	79.5		21.5	30.5	54.5		21.5				
Max Q Clear Time (g_c+I1), s	2.4	10.5		10.0	7.0	15.9		10.8				
Green Ext Time (p_c), s	0.0	6.8		0.5	0.9	7.7		0.3				

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

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	59	4	4	313	76	3	2	5	29	4	55
Future Vol, veh/h	10	59	4	4	313	76	3	2	5	29	4	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	86	86	86	50	50	50	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	71	5	5	364	88	6	4	10	35	5	65

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	452	0	0	76	0	0	551	560	74	523	518	408
Stage 1	-	-	-	-	-	-	98	98	-	418	418	-
Stage 2	-	-	-	-	-	-	453	462	-	105	100	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1109	-	-	1523	-	-	445	437	988	465	462	643
Stage 1	-	-	-	-	-	-	908	814	-	612	591	-
Stage 2	-	-	-	-	-	-	586	565	-	901	812	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1109	-	-	1523	-	-	392	430	988	452	455	643
Mov Cap-2 Maneuver	-	-	-	-	-	-	392	430	-	452	455	-
Stage 1	-	-	-	-	-	-	898	805	-	605	589	-
Stage 2	-	-	-	-	-	-	520	563	-	878	803	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.1	11.5	13
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	576	1109	-	-	1523	-	-	555
HCM Lane V/C Ratio	0.035	0.011	-	-	0.003	-	-	0.189
HCM Control Delay (s)	11.5	8.3	0	-	7.4	0	-	13
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	0	1225	996	11
Future Vol, veh/h	0	3	0	1225	996	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	85	92	98	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	0	1250	1145	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	573	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	463	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	463	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	463	-	-
HCM Lane V/C Ratio	-	0.008	-	-
HCM Control Delay (s)	-	12.8	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	8	2	1	3	9
Future Vol, veh/h	1	8	2	1	3	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	60	60	65	65
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	10	3	2	5	14

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	28	4	0	0	5	0
Stage 1	4	-	-	-	-	-
Stage 2	24	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	987	1080	-	-	1616	-
Stage 1	1019	-	-	-	-	-
Stage 2	999	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	984	1080	-	-	1616	-
Mov Cap-2 Maneuver	984	-	-	-	-	-
Stage 1	1016	-	-	-	-	-
Stage 2	999	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	1.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1068	1616	-
HCM Lane V/C Ratio	-	-	0.011	0.003	-
HCM Control Delay (s)	-	-	8.4	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	37	187	266	101	69	130	719	266	61	1120	50
Future Volume (veh/h)	83	37	187	266	101	69	130	719	266	61	1120	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	92	41	208	320	122	83	155	856	317	66	1204	54
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.84	0.84	0.84	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	168	88	340	398	420	285	224	1573	702	256	1435	64
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.07	0.44	0.44	0.04	0.41	0.41
Sat Flow, veh/h	320	217	840	1131	1037	706	1781	3554	1585	1781	3464	155
Grp Volume(v), veh/h	341	0	0	320	0	205	155	856	317	66	617	641
Grp Sat Flow(s),veh/h/ln	1377	0	0	1131	0	1743	1781	1777	1585	1781	1777	1842
Q Serve(g_s), s	15.8	0.0	0.0	19.9	0.0	9.3	5.7	20.7	16.3	2.5	36.5	36.6
Cycle Q Clear(g_c), s	25.1	0.0	0.0	44.9	0.0	9.3	5.7	20.7	16.3	2.5	36.5	36.6
Prop In Lane	0.27		0.61	1.00		0.40	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	596	0	0	398	0	705	224	1573	702	256	736	763
V/C Ratio(X)	0.57	0.00	0.00	0.80	0.00	0.29	0.69	0.54	0.45	0.26	0.84	0.84
Avail Cap(c_a), veh/h	610	0	0	409	0	721	251	1573	702	281	736	763
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.7	0.0	0.0	37.9	0.0	23.6	25.5	24.0	22.8	19.8	30.8	30.8
Incr Delay (d2), s/veh	1.2	0.0	0.0	10.8	0.0	0.2	6.9	1.4	2.1	0.5	11.0	10.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	0.0	0.0	10.2	0.0	3.9	2.6	8.5	6.2	1.0	16.9	17.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.0	0.0	0.0	48.7	0.0	23.8	32.4	25.3	24.8	20.3	41.8	41.5
LnGrp LOS	C	A	A	D	A	C	C	C	C	C	D	D
Approach Vol, veh/h		341			525			1328			1324	
Approach Delay, s/veh		30.0			39.0			26.0			40.6	
Approach LOS		C			D			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	56.4		51.9	12.2	53.1		51.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.1	51.9		48.5	9.5	48.5		48.5				
Max Q Clear Time (g_c+I1), s	4.5	22.7		27.1	7.7	38.6		46.9				
Green Ext Time (p_c), s	0.0	7.4		2.4	0.1	5.2		0.5				

Intersection Summary			
HCM 6th Ctrl Delay		33.8	
HCM 6th LOS		C	

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	245	7	8	211	55	7	4	49	39	3	52
Future Vol, veh/h	25	245	7	8	211	55	7	4	49	39	3	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	91	91	91	75	75	75	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	310	9	9	232	60	9	5	65	44	3	58

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	292	0	0	319	0	0	690	689	315	694	663	262
Stage 1	-	-	-	-	-	-	379	379	-	280	280	-
Stage 2	-	-	-	-	-	-	311	310	-	414	383	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1270	-	-	1241	-	-	359	369	725	357	382	777
Stage 1	-	-	-	-	-	-	643	615	-	727	679	-
Stage 2	-	-	-	-	-	-	699	659	-	616	612	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1270	-	-	1241	-	-	320	354	725	311	367	777
Mov Cap-2 Maneuver	-	-	-	-	-	-	320	354	-	311	367	-
Stage 1	-	-	-	-	-	-	623	596	-	704	673	-
Stage 2	-	-	-	-	-	-	637	653	-	538	593	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.2	12	14.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	595	1270	-	-	1241	-	-	469
HCM Lane V/C Ratio	0.134	0.025	-	-	0.007	-	-	0.225
HCM Control Delay (s)	12	7.9	0	-	7.9	0	-	14.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	0.9

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↱		↑↑	↑↑	↱
Traffic Vol, veh/h	0	22	0	1115	1542	54
Future Vol, veh/h	0	22	0	1115	1542	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	80	92	84	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	28	0	1327	1658	58

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	829	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	314	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	314	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	314	-	-
HCM Lane V/C Ratio	-	0.088	-	-
HCM Control Delay (s)	-	17.6	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-

Intersection	
Int Delay, s/veh	4.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	35	25	4	9	9
Future Vol, veh/h	3	35	25	4	9	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	75	75	65	65
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	44	33	5	14	14

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	78	36	0	0	38	0
Stage 1	36	-	-	-	-	-
Stage 2	42	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	925	1037	-	-	1572	-
Stage 1	986	-	-	-	-	-
Stage 2	980	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	917	1037	-	-	1572	-
Mov Cap-2 Maneuver	917	-	-	-	-	-
Stage 1	977	-	-	-	-	-
Stage 2	980	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	3.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1026	1572	-
HCM Lane V/C Ratio	-	-	0.046	0.009	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-